



IMPACT OF REGULAR EXERCISE PROGRAM ON PAIN, STIFFNESS AND PHYSICAL FUNCTIONING OF OSTEOARTHRITIS PATIENTS

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Abstract

Osteoarthritis (OA) is one of the most fatal disorders that affect patients amongst musculoskeletal disorders. Clinically, patients suffer from osteoarthritis, particularly while using the joint, and stiffness after long immobility periods. To achieve the purpose of this study, total fifty (50) male subjects were purposively selected for this study from Etawah (U.P.) with age ranging from 45-60 years. Subjects were randomly separated into 2 groups (25 in experimental group and 25 in control group). Training program is given to the experimental group for 14 weeks (6 days/week) and total time duration of every session was 25 to 40 minutes. Knee pain, stiffness and physical function ability were selected as variables and were measured by WOMAC (Western Ontario and McMaster Universities) index of knee osteoarthritis. Results revealed that present study support the efficacy of prescribing various physical-training programs to the patients with osteoarthritis of the knee as a method to enhance their physical functional ability and to reduce their knee joint pain and stiffness. Data was analyzed with the

help of dependent 't' test and level of significance was set at 0.05 level.

Keywords: Osteoarthritis, Musculoskeletal, Physical- training program and knee joint pain.

Introduction

Osteoarthritis (OA) is one of the most fatal disorders that affect patients amongst musculoskeletal disorders. Clinically, patients suffer from osteoarthritis, particularly while using the joint, and stiffness after long immobility periods. The joints that are affected by osteoarthritis include any or all of the small joints of the fingers (distal and proximal interphalangeal joints), thumb's base, the spine, hips, knees and small joints of the feet. Clinically, knee and hip osteoarthritis is the most debilitating because pain and stiffness of these joints leads to problems with mobility and therefore adversely affect an individual's quality of living and capability to function independently. People with knee OA suffers with knee pain, joint inflexibility, reduced proprioception, and reduced muscular power. Osteoarthritis management is typically intended to



decrease pain and improve the functional capacity. Traditional physical therapy for knee OA comprises isometric and isotonic quadriceps strengthening and is assumed to develop muscular stamina and power. However uniform schedule of physical activity has proven fitness and functional advantages, sedentary lifestyle enhances as people age. Surely, people suffering with knee osteoarthritis can have better control over by pain, improved proprioception, enhanced muscular strength, better balancing and stamina by doing physical activities on regular basis, or in short an overall improved functioning of body which leads towards better and improved self-dependence.

Methodology

To achieve the purpose of this study, total fifty (50) male subjects were purposively selected from Etawah (U.P.), with age ranging 45-60 years. The subjects were randomly separated into 2 groups (25 in experimental group and 25 in control group). The variables selected for the study were knee pain, stiffness, physical function ability was measured by WOMAC (Western Ontario and McMaster Universities) index of knee osteoarthritis. Training program is given to the subjects of experimental group 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 data was collected for each variable by administering their respective tests. To

ensure the reliability of data, sufficient number of trials was given to each subject. To analyze the data dependent 't' test was applied at 0.05 level of significance.

Results and Findings

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 VALUES OF PAIN OF GROUPS

Group	Test	Mean	S.D.	Mean Diff	S. E.	t ratio	p-value
Exp.	Pre	42.00	15.41				
	Post	37.00	13.14	5.00	1.08	4.62*	0.00
Control	Pre	45.60	16.26				
	Post	53.80	14.45	8.20	4.34	1.88	0.07

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

Table no.3 shows that significant difference in pre and post test results of pain of experimental group was found as the obtained 't' value 4.62 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 1.88 is significantly lower than the tabulated 't' value 2.06 at the 0.05 level of significance.



TABLE No. 2
COMPARISON OF VALUES OF STIFFNESS OF GROUPS

Group	Test	Mean	S. D.	M. D.	S. E.	t ratio	p-value
Exp.	Pre	45.50	17.99	6.38	2.42	2.63*	0.01
	Post	39.12	14.80				
Control	Pre	43.74	18.39	3.76	4.77	0.78	0.40
	Post	47.50	14.87				

*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 stiffness of experimental group was found as the obtained 't' value 2.63 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 stiffness of control group as the obtained 't' value 0.78 is significantly lower than the tabulated 't' value 2.06 at the 0.05 level of significance.

TABLE No. 3
COMPARISON OF VALUES OF PHYSICAL FUNCTION OF GROUPS

Group	Test	Mean	S. D.	M. D.	S. E.	t ratio	p-value
Exp.	Pre	45.89	8.37	3.48	1.04	3.34*	0.03
	Post	42.40	8.00				
Control	Pre	45.47	9.15	1.11	2.68	0.41	0.68
	Post	46.58	10.89				

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

Table no.3 shows that significant difference in pre and post test results of physical function of experimental group was found as the obtained 't' value 3.34 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 physical function of control group as the obtained 't' value 0.68 is significantly lower than the tabulated 't' value 2.06 at the 0.05 level of significance.

Discussion of Findings

The present study was conducted to investigate the effect of 14 weeks physical training program on selected variables like pain, stiffness and physical function ability of knee osteoarthritis patients. For both the groups pre and post data was collected and dependent t- test was applied for analysis. In case of pain, it can be seen in table no.1 that the value of t- statistic is 4.62. This t value is significant as the tabulated value is 2.14 which is less than calculated value. So, in the experimental group significant difference was found in pain. In terms of Stiffness, It can be seen in table no.2 that the value of t- statistic is 2.63 which is greater than the tabulated value i.e. 2.14. So, in the experimental group significant difference was found in stiffness. In case of physical function, it can be seen in table no.3 that the value of t- statistic is 3.34. This t value is significant as the tabulated value is 2.14 which is less than calculated value. So, in the experimental group significant difference was found in physical function ability also. These findings revealed that after 14 weeks of training, significant difference was found in pain, stiffness and physical function ability of knee osteoarthritis patients.



Conclusion

From the above discussion of the finding, it can be concluded that the present study supports the efficacy of prescribing various physical-training programs with general exercise, Thera-Tube and cool down exercises to the patients with osteoarthritis of the knee as a method to enhance their physical functional ability and to reduce their knee joint pain and stiffness. This is an important finding that deserves further investigation since few treatments are available that have a formidable impact on physical function in knee OA. Similar kind of study can be conducted on different age groups.

References

- Ahmed, H Al-Johani., Shaj, i John Kachanathu, Ashraf, Ramadan Hafez., and Aziz, Abdul. (2014), Comparative Study of Hamstring and Quadriceps Strength Treatments in the Management of Knee Osteoarthritis, *J. Phys. Ther. Sci.* p.817-20
- Bennell, K., and Hinman, R. (2011). A Review of the Clinical Evidence for Exercise in Osteoarthritis of the Hip and Knee. *J Sci Med Sport*, 14 pp. 4-9.
- James, R. Morrow., Allen, W. Jackson., James, G. Disch, and Dale, P. Mood. (2005), *Measurement and Evaluation in Human Performance, Human Kinetics*, p.254.
- Kansal, Devendra K. (1996) *Test and Measurement in Sports and Physical Education*, D.V.S. Publications, p. 173.
- Kellgren, J.H., and Lawrence, J. S. (1957) Radiological Assessment of Osteoarthritis. *Ann Rheum Dis* ; 16:494–520.

Mc Alindon, TE., Cooper, C., Kirwan, J.R., and Dieppe, P.A. (1993) Determinants of Disability in Osteoarthritis of the Knee. *Ann Rheum Dis*; 52:258–62.

Tan J, Balci N., Sepici, V., and Gener, F.A. (1995), Isokinetic and Isometric Strength in Osteoarthritis of the Knee. A comparative study with healthy women. *Am J Phys Med Rehabil*;74: 364–9.

Verma, J.P. (2011) *Statistical Methods for Sports and Physical Education*, Tata McGraw Hill Education Private Limited, pp. 111-115.