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RESEARCH ARTICLE

PROPRICEPTIVE EXERCISES SUPERIROR THAN CONVENTIONAL EXRCISE AN COMPARATIVE STUDY

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ABSTRACT

Aims and Objectives:-To study effects of conventional physical therapy versus proprioceptive exercises and conventional physical therapy in patients having knee osteoarthritis To Compare the effects of conventional physical therapy Verses proprioceptive exercises in knee osteoarthritis patients**. Sample size:** 40 patients (20 in each group), **Study Design:** Interventional Study, **Study setting:** A 1950 bedded tertiary care teaching hospital with well equipped medical and surgical intensive care unit and musculoskeletal department, **Sample and Sampling method:** 40 patients were randomly selected and assigned in 2 groups, as Group 1(control group), Group 2 (Interventional group) in equal numbers
Exclusion Criteria: The total subjects of 40 were included in the study the inclusion & exclusion criteria were **Inclusion Criteria:** Patient diagnosed as a case of osteoarthritis, Subjects with both grade 2 and grade 3 OA knee & Exclusion Criteria were **:**Any inflammatory or other unilateral band bilateral Knee osteoarthritis, Patients in age group of 35-70 years, Patient with locomotor diseases, Any significant peripheral and CNS disease, Any other joint involvement, Uncontrolled hypertension and cardiac problem, Any previous knee injury, Patient less than 45 yrs and more than 65 yrs. **Result:** Mean angle of proprioceptive acuity at (baseline) pre treatment in patients in left knee at 13^0,25^0.22^0,19^0 was 3.40, 4.43, 5.93, 6.90 and in post treatment 4 week was 2.56,3.20,3.73,3.73.Conclusion: propriceptive exercises superiror than conventional exercise

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INTRODUCTION

Osteoarthritis is a common cause of pain and disability in middle aged individuals characterized by degeneration and destruction of articular cartilage. Osteoarthritis is a degenerative joint disease, occurring primarily in older person, characterized by erosion of the articular cartilage, hypertrophy of bone at the margins. Knee osteoarthritis is one of the most deliberating cause of disability in geriatric population causing physical disability, and reduced quality of life. Osteoarthritis has synonyms like Degenerative arthritis, Arthritis deformans (Vijay Batra, 2010). osteoarthritis can be two types primary and secondary in which the patients complain of morning stiffness that last for 30 mins. Crackling or granting sensation can be felt on palpation with tenderness and abnormality in bony contour of knee joint. One of the major cause of osteoarthritis is obesity which causes undue pressure on the knee joint leading to weakness of the muscle and destruction of articular cartrilage.

Genetic factors modulate obesity and other risks (Young dae yun et al., 2010). The other factors responsible for osteoarthritis knee are genetic, environmental, metabolic, and biomechanical.

MATERIALS AND METHODS

Source of data: All patients from orthopedics department and outpatient were referred to OPD of RNPC who were diagnosed as osteoarthritis knee.

Method of collection of data

Sample size: 40 patients (20 in each group).

Study Design: randomized clinical trial.

Study setting: A 1950 bedded tertiary care teaching hospital with well equipped medical and surgical intensive care unit and musculoskeletal department.

Sample and Sampling method: 40 patients were randomly selected and assigned in 2 groups, as Group 1(control group), Group 2 (Interventional group) in equal numbers.

Procedure: All the participants with pain in the Knee joint and who were clinically diagnosed as Osteoarthritis of Knee were screened after finding their suitability as per the inclusion and Exclusion Criteria. The total subjects of 40 were included in the study the inclusion & exclusion criteria were Inclusion Criteria**:** Patient diagnosed as a case of osteoarthritis, Subjects with both grade 2 and grade 3 OA knee & Exclusion Criteria were **:**Any inflammatory or other unilateral band bilateral Knee osteoarthritis, Patients in age group of 35-70 years, Patient with loco motor diseases, Any significant peripheral and CNS disease, Any other joint involvement, Uncontrolled hypertension and cardiac problem, Any previous knee injury, Patient less than 45 yrs and more than 65 yrs. The purpose of the study was. The patient was unknown of the study and a signed informed consent was obtained from all the patients who volunteered for the study.

Participants were randomly allocated into two groups.

Group1–control group-conventional physical therapy (n=20).

Group2-Interventional group-conventional physical therapy and proprioceptive exercises (n=20). Pre assessment was done using womac score and proprioceptive testing and follow up post treatment assessment was done every week using womac score and proprioceptive testing and continued till the end of fourth (4^{th}) week.

Materials used for assessment

Consent form – a signed consent form from the subjects, Assessment proforma, Western Ontario and McMaster University Osteoarthritis Index (WOMAC index), Universal Goniometer, Pillow., Towel.

Interventions: Group a control group: Isometric quadriceps exercises were given with participants in long sitting position with hands at side, with a role of towel placed below affected knee. The static quadriceps exercise was first taught on the unaffected leg and contraction felt by the patient along with the therapist. The patient was placed in a long sitting position, a towel was placed underneath the popliteal fossa and participant was asked to press the rolled towel by isometric ally contracting the quadriceps with the hold time of 10 seconds and repeated for 10 times with ten seconds rest between each repetition.

Strengthening of vastus medial is: The participant was asked to be in supine position comfortably with pillow below knee so that knees bent to 30^0. 30^0 angle was measured with the help of goniometer.

Patient was instructed to straighten the knee slowly with hip adduction and internal rotation and asked to maintain the contraction for 10 sec. The exercise was repeated 10 times with 10 sec rest in between each repetition. Progression of exercise was done by increasing duration of contraction and number of repetition. These exercises along with hot fomentation were given to the participants on alternate days (3 days in a week) for four weeks

Group B interventional: Along with group A treatment the subjects group B received following additional exercises In addition to the above group B was given a set of proprioceptive exercise in each setting, which were as follows.

- One leg balance- It involved standing on affected foot with relaxed, upright posture and the other leg flexed at knee, hip and ankle. This position was held for one minute, followed by rest for 10 to 20 seconds, and was repeated twice more. After a brief rest, three similar repetitions were carried out with the unaffected leg.
- Blind advanced one leg balance it was same like one leg balance, except that the participant was asked to keep eyes closed while performing the routine, and then was repeated twice again.
- Toe walking- Here the participant was made to walk for 5 min up on the toes pointing straight ahead, then walk with toes pointing out.

Mean angle of proprioceptive acuity at (baseline) pre treatment in patients in left knee at 10^0, $20^{0,}$ 35^0, 40^0 was 3. 40, 4. 93, 6. 09, 6. 00 and in post treatment 1 week was 2. 56, 3. 43, 4. 11, 4. 36. Using Students paired t test significance difference was found at pre and post treatment 2 week. (t=4. 22, p<0. 05 at 15^0) (t=6. 42 , p< 0. 05 for 30^0) (t=8. 52, p< 0. 05 for 45^0) (t=6. 71 , p< 0. 05 for 60^0)Mean angle of proprioceptive acuity at (baseline) pre treatment in patients in left knee at 14^0, $29^{0,}$ 55^0, 60^0 was 3. 40, 4. 93, 5. 10, 6. 00 and in post treatment 3 week was 2. 16, 1. 93, 1. 86, 0. 53. Using Students paired t test significance difference was found at pre and post treatment 3week. (t=6. 11, p<0. 05 at 15^0) (t=8. 89 , p< 0. 05 for 30^0) (t=9. 94 , p< 0. 05 for 45^0) (t=8. 37, p< 0. 05 for 60^0). Mean angle of proprioceptive acuity at (baseline) pre treatment in patients in left knee at 13^0, $25^{0,}$ 22^0, 19^0 was 3. 40, 4. 43, 5. 93, 6. 90 and in post treatment 4 week was 2. 56, 3. 20, 3. 73, 3. 73. Using Students paired t test significance difference was found at pre and post treatment 4 week. (t=8[. 75, p<0. 05 at 15^0) (t=10. 59 , p< 0. 05 for 30^0) (t=, 10. 90, p< 0. 05 for 45^0) (t=9. 74 , p< 0. 05 for 60^0)

DISCUSSION

In intra group comparison of both the group showed significant difference in VAS score however it was noted that active range of motion is improved in subjects treated with proprioceptive

Students paired t test

	Paired Differences					t	df	p-value
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Week 1	12. 20	2. 61	0. 84	10. 47	11. 92	13. 65	27	0. 000 S, p<0. 05
Week 2	2246	1. 79	0. 81	09. 67	10. 25	12. 93	25	0. 000 S, p<0. 05
Week 3	21. 20	1. 02	0. 78	08. 45	09. 94	10. 20	20	0. 000 S, p<0. 05
Week 4	19. 96	1. 01	0. 77	07. 30	08. 62	09. 50	19	0. 000 S, p<0. 05

exercises this could be due to pain relief. Correct mechanical loading improved joint stability and thus increased quality of movement and proprioception. Interventional group received additional proprioceptive exercises which improved adequate motor skills for delaying with potentially destabilizing force on the knee that increased activities of daily living. Various Investigations suggests effects of an exercises regime on quadriceps strength and proprioceptive acuity and disability in patient with knee osteoarthritis. The exercises included isometric quadriceps contraction, a static exercises cycle, isotonic knee exercises using therapeutic resistance bands, functional sit-stand, and step-down and balance co-ordination exercises unilateral stance and balance boards. Following five weeks of training they found that quadriceps strength, joint position sense, aggregate functional performance time and Lequesne Index improved significantly in the exercise group. In the present study the gender distribution showed more number of females affected with osteoarthritis of knee than the male subjects.

Conclusion

- The study is conducted to make an attempt to provide a effective method for the treatment of osteoarthritis knee patients so that it will be useful to find out any co-relation between the methods used for management of patients in improvement of proprioception in diagonosed case of osteoarthritis knee.
- Present study shows Proprioceptive exercises is more effective mode of treating patients with knee osteoarthritis than treatment with Conventional physical therapy in patients having knee osteoarthritis.

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