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ORIGINAL ARTICLE

EVALUATION OF TARGET MATCHING FOOT STEPPING EXERCISE IN OSTEOARTHRITIS KNEE

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ABSTRACT

Backgroud and objective of the study: *Osteoarthritis is considered to be a common condition that is widely prevalent among the older age groups that could lead to chronic disability. Objective of the study was to investigate efficacy of a foot stepping target matching exercise for subjects having osteoarthritis knee.* ***Methodology:*** *This was a study with pre-post experimental study design. Twenty subjects of both genders having unilateral and bilateral knee OA patients with age group between 40 to 65 years were selected for this study. Simple random sampling method was used to conduct the study at out patient physiotherapy department, A.C.S medical college and hospital, Chennai. Visual analogue scale was used as measurement tool to measure the outcome of osteo arthritis knee pain.* ***Result:*** *The study observed that there was a statistical difference in foot stepping target matching exercise on reducing pain, improving propriception, reducing stiffness, and improving physical function between pre test and post test values of treatment groups with P<0.001.* ***Conclusion:*** *The foot stepping target matching exercise was effective in treating subjects with knee osteoarthritis. Hence the study concluded that foot stepping target matching exercise is beneficial and can be recommended in subjects with osteoarthritis knee to improve their physical function.*

Key word*:* Osteoarthritis knee**,** foot stepping target matching exercise, Visual Analogue Scale

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INTRODUCTION

Osteoarthritis is considered to be a common condition that is widely prevalent among the older age groups that could lead to chronic disability[1,2]. It is a degenerative condition that leads to cartilage destruction and joint repair[3].

The weakness of quadriceps is one of the most common symptom in OA subjects[9,10]. Osteoarthritis principally affects the large weight bearing joints such as hip, knee and spinal apophyseal joints , usually occurs in elderly predominantly characterized by pain and limitations in the ability to perform activities of daily living such as stair climbing, walking and household chores[12,14, 15].

These limitations are partly due to muscle weakness. It has been suggested that functional ability is affected by proprioception[8,10,11]. it is considered to be the major cause of impairment and disability worldwide. When the joint develop osteoarthritis,the cartilage gradually roughens and becomes thin[7,16].

The surrounding bone reacts by growing thicker thereby causing the destruction of the cartilage. Numerous studies have been demonstrated in the recent year that the effectiveness of the physical activities on improving the limitation of the OA knee subjects [4,5,6]. There by this study is an attempt to evaluate the efficacy of targe matching foot stepping exercise on proprioception and function ability in OA knee using the WOMAC scale.

METHODOLOGY

The subjects were recruited from Department of Physiotherapy, ACS General Hospital. The subjects of 40-65 years of age were selected for the study. 32 subjects satisfied the inclusion criteria. But 10 subjects were not able to continue the exercise programme for a period of 6 weeks. Two discontinued the study because of acute illness. Finally 20 subjects were selected and all the subjects completed the full exercise programme. After receiving the inform consent the subjects were included in this study. Unilateral or bilateral OA knee with the VAS score below 8 along with the history of the knee pain more than 6 months were included in this study.

Subjects with polyarthritis, RA, any inflammatory arthropathies and any knee surgeries within last 12 months or arthroplastic surgery, intraarticular steroid injections in past 3 months,any other systemic illness and neuropathies were excluded from the study. The outcome measured used in the study is WOMAC score for the pain and functional evaluation among the OA knee subjects.

The target matching exercise programme was based on 11 exercise, done with mild modification based on the subjects requirements. The exercise programme was designed in such that simple exercise were taught initially and later progressed to tougher exercises. The exercises were given for a period of six weeks. The therapy duration which includes 60 minutes per session for the exercise and rest time.

The exercise was given for 5 days per week. The total duration of the therapy was 6 weeks. After the initial assessment the subjects were ready for the study. The target matching foot stepping exercise programme was given to the subjects. The WOMAC Scale was used to evaluate the function. The pre and post test results were evaluated and statistically analyzed.

RESULTS

Pre	Post	P value	Significance
79.6 +/- 4.29	65.25 +/- 3.97	0.012	Significant

Table 1. Pre and post-test values of overall WOMAC

Pre	Post	P value	Significance
18.05 +/- 0.76	8.6 +/- 1.046	0.0001	Significant

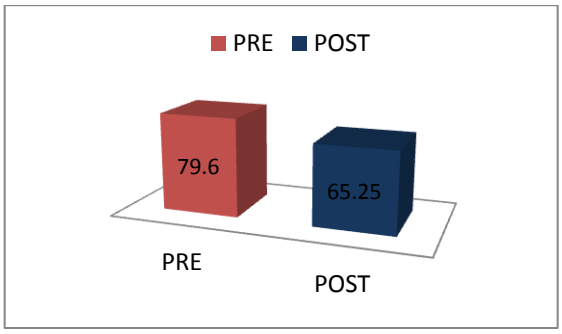
Table 2. Pre and post-test values of pain score

Pre	Post	P value	Significance
7.15 +/- 0.75	4.1 +/- 0.967	0.005	Significant

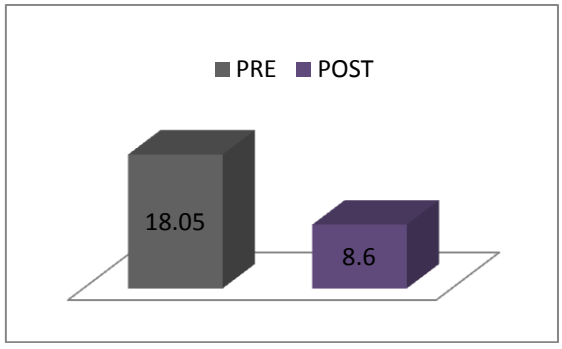
Table 3. Pre and post-test values of stiffness score

Pre	Post	P value	Significance
62.25 +/- 1.86	42.05 +/- 4.989	0.001	Significant

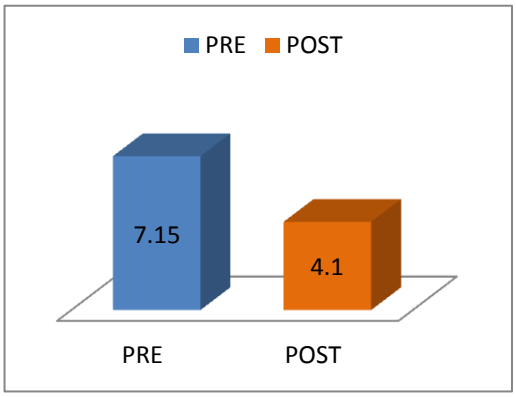
Table 4. Pre and post-test for physical functional score



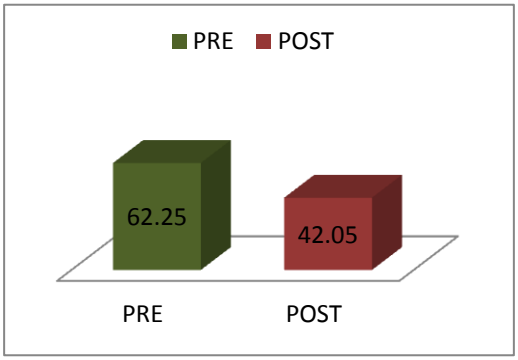
Graph-1: Graphical representation of the pre and post-test values of overall WOMAC



Graph-2: Graphical representation of the pre and post-test values of pain score



Graph 3: Graphical representation of Pre and post-test values of stiffness score



Graph-4: Graphical representation of posttest values of physical functional score

The results reveal that there was a statistical difference between pre and post test values of treatment groups. Target matching foot stepping exercise is effective in reducing pain, improving propriception , reducing stiffness, and improving physical function.

DISCUSSION

The O'Reily and co workers used the dynamic stepping exercises and evaluated that pain was perceived during walking, ascending descending stairs. Rogind et al, have investigated the effects of exercise program,and observed that pain perceived during night hours and muscle strength showed significant improvements.

Sharma et al suggested that there is deterioration in proprioception that could

ultimately lead to falls and other impairments in these subjects . Thereby this study was an attempt to evaluate the efficacy of target matching foot stepping exercise on proprioception and function in OA subjects using the WOMAC scale. Functional ability is strongly affected by the presence of both proprioceptive inaccuracy and muscle weakness[17,18,19]. Pai et al, found a significant corelation between the proprioception and the WOMAC score .

In table1 pre and post test values of overall WOMAC score has significant difference between two values with p value = 0.012. However the poor proprioception can be compensated by adequate muscle strength and functional ability. In table 2 pre and post test values of pain score has significant difference with p value = 0.0001.

The target matching foot stepping exercise are considered to facilitate the proprioceptive receptors in spindles, tendons and knee joints.There by the exercise intervention has resulted in significant improvement in accuracy of knee function in the exercise group improved knee function was associated with the proprioception,pain,muscle strength.

Gauchard et al suggested that the regular proprioceptive exercises increase the muscular strength in the elderly population with OA. Table 4 includes the pre and post test values of the physical function score that shows the significant improvement with p value =0.001.

This study reveals the OA knee subjects with proprioceptive impairment have showed improvement in all the components such as the pain and the physical function. Thereby the target matching foot stepping exercise could be more effective in improving the physical function and thereby preventing the falls that is common in the elderly population.

CONCLUSION

The aim of the study was to evaluate the effectiveness of target matching foot stepping exercise on knee osteoarthritis subjects. From the results we can observe that there was a statistical difference between pre and post treatments groups. So the target matching foot stepping exercise will be effective to increase propriception and function in subjects with knee osteoarthritis.

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