Multi-Disciplinary Journal
ISSN No- 2581-9879 (Online), 0076-2571 (Print)
www.mahratta.org, editor@mahratta.org

Effect of Stretching And Muscle Energy Technique In Post Operative Knee

Dr. Monali Mahendra Kashyap,
Assistant Professor,Faculty of Physiotherapy, TMV Pune-37
Ph. No. - 9067244298
Email id- monali.kashyap@tmv.edu.in

Dr.Manasi Tendulkar-Sukhatankar,
Assistant professor,Faculty of Physiotherapy, TMV Pune-37
Ph. No. -7588229247
Email id- manasi.sukhatankar@tmv.edu.in

Abstract

Objectives- The purpose of this study was to check the effect of stretching and muscle energy technique in post-operative knee stiffness

Method: Participants diagnosed with post-operative knee stiffness were included in this study. 30 subjects were allocated by block random sampling method. Musculoskeletal assessment of eachsubject was taken as per data collection sheet. Intervention period was 3 weeks. Pre and post intervention VAS and knee range of motion were assessed. And collected data filled in Microsoft excel sheet and data analysis was done.

Result: Pre and post treatment protocol was analyzed by using paired t test. Data analysis showed extremely significance in group B for VAS (p=<0.0001) and ROM (p=<0.0001).

Conclusion: This study concludes that muscle energy technique is more effective as compare to the stretching on post of knee stiffness.

Keywords: VAS, range of motion, muscle energy technique.

Introduction

After knee surgery knee stiffness is one of the commonest cause. A stiff knee occurs when you have difficulty moving the knee joint due to injury to or inflammation of the joint. Anything that leads to restricted movement of the knee joint may be considered to cause stiffness of the knee.

There are 13 ligaments present in knee, which were performing various role in maintaining in knee function. In that, four ligaments are important in maintaining the stability and function of the knee joint, these are anterior and posterior cruciate ligaments, and the medial and lateral collateral ligaments. The menisci are two pieces of cartilage that permit the bones of the knee joint to move smoothly against one another.

Injuries to these ligamentous structures may restrict movement of the knee joint. Other traumatic causes of stiff knee include fractures of bone, inflammation of tendons

or bursae, or damage to the cartilage of the kneecap. Injuries may be sudden or may develop slowly over time.

The different forms of arthritis are the most common chronic diseases to affect the knee. Osteoarthritis results from wear and tear on the joint, while rheumatoid arthritis (chronic autoimmune disease characterized by joint inflammation) arises from a dysfunction of the body's immune system. Rarely, tumors and infections of the knee joint and surrounding areas may produce a stiff knee.

A knee injury can require emergency care, and a sprain may be accompanied by more serious injuries to the joint. for serious symptoms, such as paralysis, loss of sensation, absent pulses in the feet, complete inability to move the knee joint, high fever (higher than 101 degree Fahrenheit), severe bleeding, or uncontrollable pain.

There are Different cause of knee stiffness. Enlisted below
1. Stiff knee- can be develop for number of reason. Accompanied by pain and swelling. Causes of knee stiffness are

a. Fluid – due to injury to knee can be excessive fluid can be accumulate inside the capsule, which may lead to the pain and immobility of the joint. which results in stiffness
b. Altered biomechanics –any change in the knee structures may changes their kinetics and kinematics. Which leads to the knee range restriction.
c. Pain – pain can inhibit the movement. In early stages prevention and treatment prevent further damage. But if prolonged damage lead to the stiff knee

Even in some cases having prolonged knee stiffness may lead to various injuries. They are Meniscus injury, Sprain,Fractures, Ligament injury, Tendonitis,After exercise.

In some cases other than injury to knee joint some other factor may plays and important role like medical conditions such as Rheumatoid Arthritis, Osteoarthritis, Bursitis, Gout,

In day to day life stretching is a natural and instinctive activity; it is performed by humans and many animals. It can be accompanied by yawning.

In the treatment scenario, Stretching is a sustained or intermittent external force, end range stretch force applied with the over pressure and by manual contact or mechanical device elongates shortened muscle tendon unit and peri-articular connected tissue by moving a restricted joint just past the available ROM.

One of the important role of Stretching to Increasing flexibility. It is common to stretch before and after exercise in order to reduce injury and increase performance and improve quality of the muscles.

The stretching is very good for Muscles but it can be dangerous when performed incorrectly which may lead to permanent damage to the tendons, ligaments and muscle fibre. Many techniques are can be performed, but depending on which muscle group is being stretched, techniques may vary. The physiological nature of stretching and theories about the effect of various techniques are therefore subject to heavy inquiry.

Stretching exercises have long been considered an essential part of pre exercise/ warm-up procedures a method of improving the efficiency of movement improving muscle performance altering posture and reducing muscle strain and injury theextensibility of soft tissues and by doing so increase the range of motion in the joints. A number of studies have demonstrated that stretching muscle tissue can increase joint range of motion.

Muscle energy techniques (MET)

MET was first described by Fred Mitchell, Sr, D .O. In 1948. It is board class of manual therapy techniques directed at improving musculoskeletal function or joint function and improving pain

The MET are manipulative procedures that have evolved out of osteopathic medicine and are designed to lengthen muscle, fascia, and to mobilize the joints. MET are mainly used to treat somatic dysfunction especially in decrease range of motion, muscular hyper tonicity and pain.

The MET procedures employ voluntary muscle contraction by the patients in precisely controlled direction and intensity against a counterforce applied by the practitioner. Because principles of neuromuscular inhibition are incorporated into this approach, another term is used as to describe these techniques is Post-Isometric Contraction.

MET believed to be particularly helpful in lengthening posture muscle which are prone to shortening. Theoretically, the active contraction performed by the client against the resistance produced by the therapist is an isometric contraction and may therefore be helpful in strengthening muscle. Also, contraction of one muscle group decrease tone opposing the muscle group, and MET may therefore be beneficial in helping to overcome cramping.

MET can be used to stretch muscle especially for postural muscle , helps in muscle strengthening, also help in regain correct muscle function after muscle contraction followed by relaxation and reduced localised oedema

MET can be used to stretch muscle especially for postural muscle , it helps in muscle strengthening, it also help in regain correct muscle function and reduced localisedoedema.

Need For Study

One of the commonest problem faced by population is Knee stiffness and it increasing affecting day to day life. Approximately 70%-90% of our population suffers from knee stiffness. Knee stiffness can inhibit an individual from leading an active life style. This is because the stiffness becomes deconditioned through lack of use, cumulative effects of repetitive minor injuries and natural process of aging.

Stiffness causes sudden amount of pain which is neglected by them and thus leads to discomfort and further complications

All the techniques are surely effective but my study is to find out which one is better and can give early relief to subjects so, that all subjects can be treated with that technique and get recovered as soon as possible.

Stretching had been promoted as a preventive regimen, as a form of rehabilitation, and as performance enhancing program for various joints and musculoskeletal injuries. However there is little scientific evidence to support its use.

So Objectives of the study are to determine the effect of stretching in reducing pain and stiffness in subjects with post-operative knee stiffness and or to determine the effect of muscle energy technique in reducing pain and stiffness in subjects with post-operative knee stiffness. Also find out the most effective technique amongst stretching and muscle energy technique in reducing pain and post-operative knee stiffness.

Methodology

The experimental study was done. In the study 30 male and female those who are diagnosed with post-operative knee stiffness and with the age group of 30-45 years were included in study and the total study duration was five months.

Patients with the comminuted and unstable fracture of femur, tibia, fibula, also with the external fixator, osteoporosis, any systemic illness, spinal pathology and uncooperative were excluded in the study. Pre and post assessment was done using VAS score and universal goniometer

Two groups were made using random sampling techniques.

Group A – for this group three sets of stretching were given for twice a day for next 3 weeks

Group B- 3 -for this group three sets of muscle energy technique were given for twice a day for next three weeks.

Initially patients from both the groups were treated with hot moist pack.

Procedure of group A-

After hot moist pack, patients were made to lie supine on the plinth with respect to hamstring stretching.Each stretch was followed for 3repetations x twice a day.

Patient treated in Supine position, with therapist in walk standing position facing towards the patient.Patient Hip and knee were flexed and knee extension was done followed by ankle dorsiflexion.

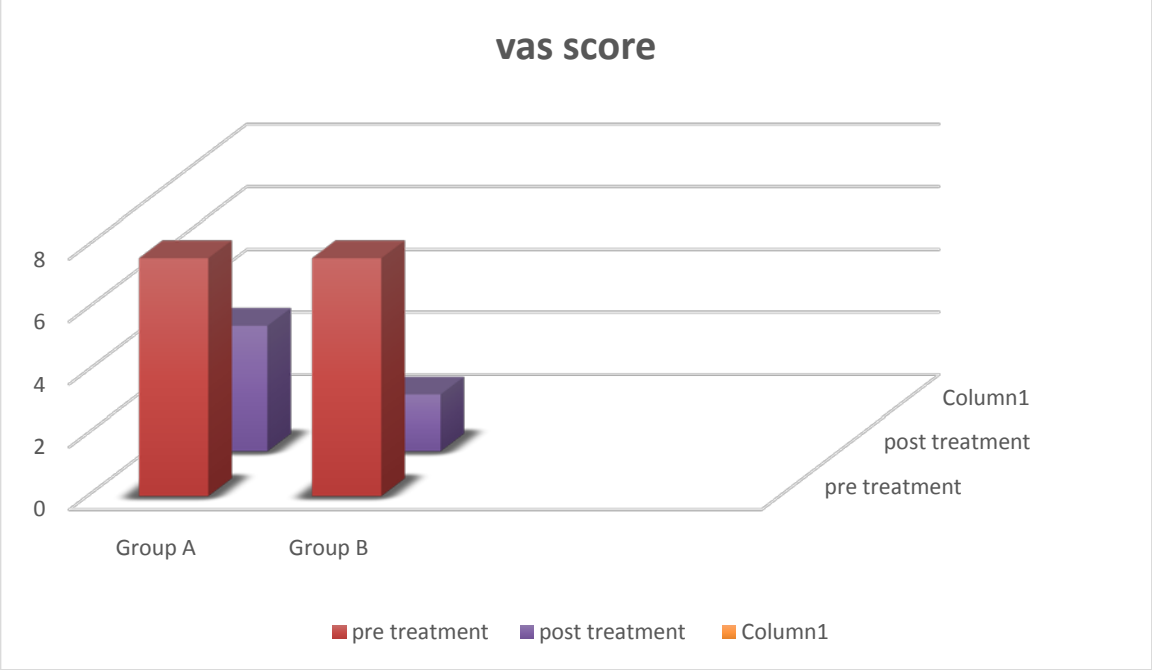
Procedure of group B-

After the hot moist pack, patients were made to lie in prone position on the plinth and therapist in walk standing position with therapist facing patient. MET technique given to hamstrings.Each MET was followed for 3 repetition twice a day. Ask the patient to flex his /her knee. Then therapist should apply resistanceat the lower end of tibia i.e. above ankle joint. Then knee should be flexed at the $30^0$and allowed patient to hold for 10 seconds against the therapist resistance. Then again continue same procedure at 60^0 and 90^0knee flexion. Then ask the patient to relax and slowly extend his/her knee and obtain new range. And same procedure was applied 3 times.

Results

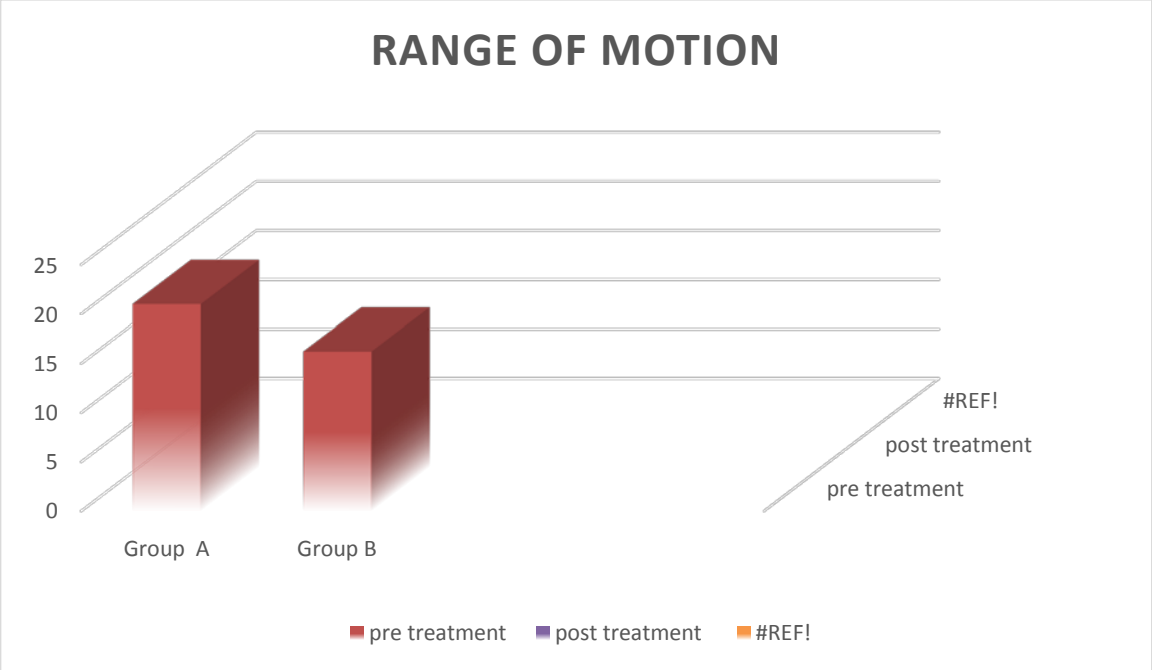
Total 30 patients were analysed in that 14 males and 16 females were included from age group 30-45 yrs. Data analysis was done using paired-t test.

VAS were analysed.



	Pre treatment VASscore (Mean)	Post treatment VASscore (Mean)
GROUP A	7.6	4
GROUP B	7.6	1.8

The P value of group A and group B is <0.0001is extremely significant ROM were analysed.



	ROM Pre treatment (Mean)	ROM Post treatment (Mean)
GROUP A	21	101.66
GROUP B	16.2	129.33

The P value of group A and group B is <0.0001is extremely significant
Statistical analysis showed better pain relief on VAS in group B, as compared with group A.Statics analysis showed better range of motion in group B, as compared with group A.

Discussion

Knee stiffness is considered 3rd highest problem faced by the population worldwide. Since there is change in the lifestyle due to competing professions people tend to ignore their knee health. Lack of self- care and awareness of the exercises has given a rise to this population. Thus intervention in an order to relieve pain was made as well as strengthening of the muscles are also done with the exercise.
Pre and post -treatment outcome measures for pain intensity with VAS score and range of motion by universal goniometer.
Uses of hot moist packs followed with stretching and MET were done in the study. This showed relief of knee stiffness.
The benefits of stretching technique for people with knee stiffness include:-
Simple and versatile way to start moving again after a knee pain episode.
Improved muscle strength.
Greater flexibility and range of motion of the knee
Enhanced balance and coordination of the muscle groups used to stabilize the knee and control proper posture while using the stretching technique, which in turn reduces the knee stiffness.
Increased tendency to maintain a neutral knee position during stretching.
In particular, stretching technique are designed to bring flexibility to the knee in a controlled manner to help keep the muscles nourished.
The benefits of muscle energy technique for people with knee stiffness include:-
Muscle energy technique can be done in resting position.
People with age groups between 45-50 can easily follow these technique.
It helps to control functional activities.
It helps in dynamic stabilization of joints.
Its moreover improves the endurance of the muscle.
It activates muscle to begin to re-establish neuromuscular control.
It reduces spasm and muscle pain.
Age groups with 20-40 are more affected as compared to 41-50 due to changing lifestyle.
Thus from the above study it concluded that patients in the group B showed faster and significant improvement as compared to group A.

ISSN No- 2581-9879 (Online), 0076-2571 (Print)
www.mahratta.org, editor@mahratta.org

Conclusion

From this study we concluded that stretching and muscle energy technique both are effective and reducing pain on visual analogue scale and improving the range of motion amongst which we found that muscle energy technique is more effective as compare to the stretching on post of knee stiffness.

Reference

1. Michael A.Clerk, Alan M.Rusell. Article OnLbp; A Functional Perspective 2005, May Acess On 2006, Jan 20.
2. Michael A.Clark,AlanM.Rusell.Strong To The Core Article Available On Your Knee Stiffness,2006july Issue Espanal.
3. J Maheshwari. Text Book Of Orthopaedics. 4th Ed.
4. Everette Hills. April8, 2005[Medline]
5. Venu A KuthotaAnd Scott F Nadler. Strengthening Arch Phys Med Rehab 2004: Marh, Vol85,Suppl. Access On 2006, Jan15
6. Larry G MerritteAndCelpine M Merritte. The Stretching Exercise For Knee Pain Patient.
7. Nicola Vader Roer, Minimal Clinically Important Change For Pain Intensity, Functional Status, 2006 Vol.31, No.5, Pp578-582
8. W.CarolPt, Msc. Nicola W. MokPt, Phd, Ella W. Yeung Pt, Phd
9. Aerobic Exercise Training In Addition To Conventional Stretching On Knee Stiffness: A Randomized Trial.
10. Kumar, Suraj: Sharma ,Vijai P, Mahendra P S Efficacy Of Dynamic Muscular Stabilization Techniques In Rehabilitation Of Knee Pain. Dec2009, Vol.23.
11. Physioadvisor.Com
12. Carolyn Kisner, Lynn Allen Colby.Therapeutic Exercise5th Ed
13. Sullivan Sb, Schmitz Tj. Physical Rehabilitation And Treatment 4th Edpiiladelphia;2001
14. Therapeutic Modalities, Rose L.SmithPt,Dpt,Scs 4th Edition