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EFFECTIVENESS OF AEROBIC EXERCISE WITH SELF MYOFACIAL RELEASE TECHNIQUE ON HIP AND TRUNK FLEXIBILITY IN PERI-MENOPAUSAL WOMEN

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ABSTRACT:Background: Perimenopause is also called the stage during which the women make the natural transitionto menopause. During this stage there will be series of symptoms, which also includes inmusculoskeletal symptom like reduced hip and trunk flexibility and Reduced range of motion therefore, the purpose of the study was to find out the effectiveness of aerobic exercisewith self-myofascial release in perimenopausal women. The aim of the study was to determine the Effectiveness of Aerobic exercise with self-myofascial release(MFR) technique on hip and trunk flexibility in peri-menopausal women**Methodology** : An Quasi experimental design with preand post in nature ,Fifteen subjects of Peri-menopause women were selected according to Menopausequestionnaire as per the inclusion criteria and their hip and trunk flexibility was assessed as pretest with outcome measure of Modified sit and reach test and undergone the intervention ofAerobic Exercise with Self myofascial Release Technique (SMFR) . Theoutcome measures weretaken before the treatment and after the end of 4weeks oftreatment Result: According to the statistical analysis done by using paired 'T' test($p<0.0001$), hence this studyshows that there is a significant improvement in hip and trunk flexibility in of Peri-menopausewomen.**Conclusion**It is concluded that Aerobic exercise with self-myofascial release can increase the hip and trunk flexibility in peri-menopausal women

Key words:Peri-menopausal women, Aerobic exercise, self-myofascial release Technique, Modified sitand reach test, Hip and trunkflexibility, Menopause questionnaire.

INTRODUCTION

MENOPAUSE is the period during which the menstrual cycle ceases,or the female sex hormones diminish to almost none is called menopause. Throughawomen'sreproductive about 400 of the primordial follicles grow into mature follicles and ovulate, and hundreds of thousands of ovadegenerate.At about40to45years of age,onlya few primordial follicles remain to be stimulated by FSH and LH,and the production of oestrogens by the by the ovaries decreases as the number of primordial follicles approaches to zeroThroughawomen'sreproductive,about400oftheprimordialfollicles grow into mature follicles and ovulate, and hundreds ofthousandsofovadegenerate.Atabout40to45years ofage,onlya few primordial follicles remain to be stimulated by FSH and LH,and the production of oestrogens by the by the ovaries decreases asthenumberofprimordial follicles approachesto zero.

This process happens slowly and is divided into three stages:Stage1 – perimenopause,Stage menopauseStage3–post menopause.

PERIMENOPAUSE:According to the World Health Organization (WHO) "The term perimenopause should include the period immediately before the menopause(whentheendocrinological,biologicalandclinicalfeatures of approaching menopause commence) and the first year after menopause".

Perimenopausebegins about eight to10years before menopause.It usuallystarts in the mid-40s,but it canstart earlier.The hormonal changes you experience during perimenopause are mostly caused by declining oestrogen levels. Your ovaries makeoestrogen, which plays a vital role in maintaining the reproductive system.Onceenter perimenopause,the oestrogenlevelsstarttodecrease. As oestrogen decreases, it throws off the balance withprogesterone, another hormone produced by the ovaries. These twohormones together are responsible for ovulation and menstruation.It'scommon forhormonelevelstofluctuateduringperimenopause.

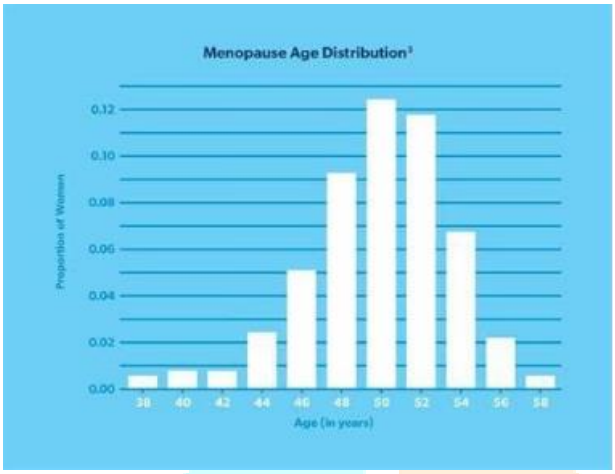
BODYMASS INDEX: Bodymassindex(BMI)isavaluederivedfromthemass(weight)and height of a person. BMI is defined as the body mass divided bythesquareofthebodyheight,andisexpressedinunitsofkg/m2,resultingfrommassin kilogramsand height in meters.

$$BMI = \frac{\text{weight in kg}}{(\text{height in m})^2}$$

- **Underweight:**BMIislessthan18.5
- **Normalweight:**BMIis 18.5to24.9
- **Overweight:**BMIis25to29.9
- **Obese:**BMIis 30ormore

PREVELANCE:

The present study was carried out to determine the mean age ofmenopause and the prevalence of menopause and menopausal symptomsin**SouthIndianwomen**.Atleast**60%**ofladiessufferfrommildsymptomsand20%sufferseveresymptomsand20%fromnosymptoms.



In the United States, approximately 1.3 million women become menopausal each year. It typically begins between the ages of 51 and 52.However, about 5% of women experience early menopause between the ages of 40 and 45. Additionally, 1% of women experience premature menopause before the age of 40 due to permanent ovarianfailurethatmaybeassociatedwithsexchromosomeabnormalities.

COMMONSYMPTOMS:

Hot flashes, Night sweats Vaginal dryness Moodswings PanicdisorderAnxiety ,DepressionIrritabilityUnexplaineddizzinessFatigue, InsomniaWeightgainStressincontinenceOsteoporosisHeadachesandmigrainesBreastPainJointpain ,Gumproblems,DigestiveproblemsDry,itchyskinTinglingextremityMuscletension MUSCULOSKELETAL SYMPTOMSOestrogenreducesthecollagencontentofconnectivetissueStiffnessofligament andtendonInwomen,thesecommonlyaffectthegluteal,hamstring, Achillesand rotatorcuff tendon Reductioninrestingmetabolicrate Physical activityenergyexpenditureLossinmuscle flexibility ReducedrangeofmotionReducedhipandtrunkflexibility.

PHYSIOLOGICALCHANGESDURINGMENOPAUSE:

Menopauseisanormalphysiologicprocessinagingwomeninwhich the number of ovarian primary follicles quickly diminishes,such that there are inadequate amounts to respond to the effectsofFSHIn turn, there is no LH surge, and ovulation does not take place,resulting in the decline of oestrogen production and the cessationofmenstruation.FLEXIBILITY:Flexibilitymaybedefinedasthepropertyandability ofbodytissues to achieve full range of motion (ROM) without any injury tothejoints orwithintheirgroups.

Rangeofmotionisregulatedbyproperextensibilityofallsofttissuesencompassingthejoints.

Thebasicroleofflexibilityistoreducethe riskofinjury.Propermuscleelasticityincreasestheabilitytomovejointswithintheirmaximal possiblerangeof motion.EXERCISE:

AEROBICEXERCISE:

Aerobic exercise is a physical exercise of low to high intensity thatdepends primarily on the aerobicenergy – generating process. Itimprovesmusclestrength,endurance,and flexibility.

Aerobicexercises improvinghipandtrunkflexibilityareStandinglungestretchLyinghip rotation,StandingsidestretchCatandcamelexercise.

SELFMYOFASCIALRELEASETECHNIQUE:

Self-myofascialreleaseisatoolassisted,self-massagethatisusedto release muscle tension, improve flexibility, and boost movementefficiency.Thistechniqueutilizesthepatient'sbodymassandspecial tools such as foam rollers to apply pressure and stretch therestrictedsofttissues.

Foam rolling restores muscles, tendons, ligaments, fascia, and soft-tissueextensibility.

FOAMROLLER:

A foam roller is a lightweight foam cylinder that you use to self-administer deep tissue massage. Foam rolling releases muscle knots,relievesinflammation,andimprovesoverallcomfort.

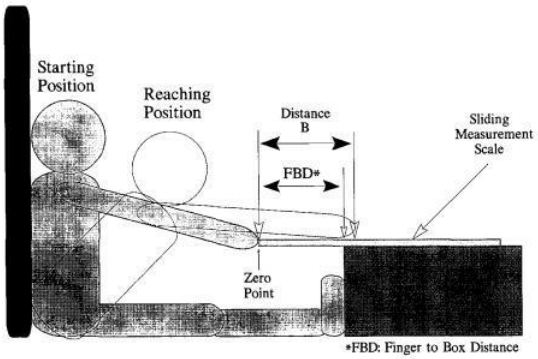
MODIFIEDSITANDREACHTEST:

The modified sit and reachtest area modifiedversion of the traditional sitand reach test. In this test zero mark is adjusted according to eachindividual,based on theirsittingreachlevel.

Important functional measure of hip and trunk region flexibilityincludingthehamstringmuscles.

To determine the modified sit and reach test scores, the participantassumed a sitting position with the head, back, and hips against awall (90 angle at hip joint) and the feet against the sit and reachboxand was instructed to place hand over hand and reach out,level with the measurementscale. Duringthis reach,the head,back, and hip remained in contact with the wall. The distancefrom the fingertip to the box edge was read off from the rulerplaced centrally on the sit and reach box, this

indicated the startingpoint. Then flexed the trunk slowly and reached forward as far aspossible, head and back having moved away from the wall withfingers sliding along the surface of the box. The final position washeld for 2 seconds. The total distance reached was noted from thegraduation on top of the box. The reach score or flexibility was theinitial position subtracted from the final position in centimeters.Measurement wastakento thenearest0.1cm.



MATERIALS AND METHODOLOGY

This is a quasi-experimental study design with pre and post nature, has done atCheran institute of health science, outpatient department-Coimbatore and the study populationwas Perimenopausal women among 40 to 55 years, the duration of the study has conducted was 6 months with the sample size was 15 with as Convenient sample method and undergone 4 weeks of treatment duration as per the inclusion and exclusion criteria and 1 meter scale,Sit and reach box ,White paper ,Pencil ,Inch tape ,Weight machine as material used

INCLUSION CRITERIA

- Age: 40-55 years
- Perimenopausal women by Menopause questionnaire
- BMI = 18.5 to 24.9 (normal range)
- Hip and trunk flexibility.

EXCLUSION CRITERIA

- Age below 40 years and above 55 years
- Any hip surgeries
- Other than normal range BMI
- Chronic low back pain

PROCEDURE

Approval from the Institution of Ethical Committee was obtained for this study. The 15 subjects were selected in accordance with inclusion criteria. For all subjects in the experimental group, the treatment protocol of aerobic exercise and self-myofascial release were explained, and the consent form was obtained.

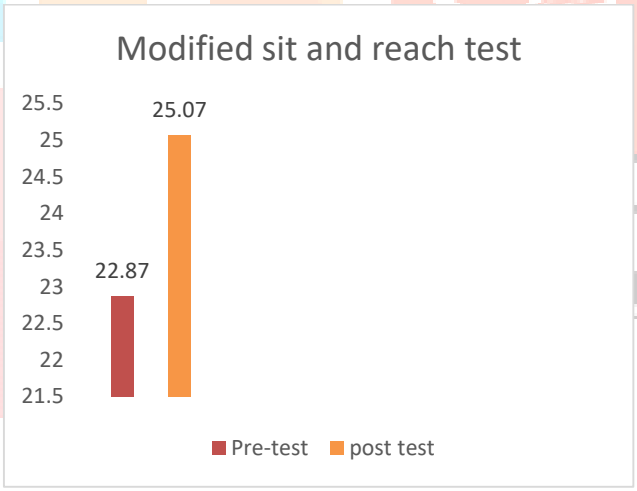
The pre-test was taken by using the modified sit and reach test. Then the treatment was explained to the patient and thought how to do. They were asked to do the exercise for 4 weeks in two sessions at the morning session Aerobic exercise and at the evening session Self-myofascial release for 5 days per week.After the 4th week the post test was assessed using Modified sit and reach test.AEROBIC EXERCISE a,standing lunge stretch b, lying hip rotation c,standing side stretch d, Cat and camel exercise, SELF MYOFASCIAL RELEASE Rolling of the Hamstring,Rolling of the GastrocnemiusRolling of the Gluteus Maximus,Rolling of the Quadriceps

STATISTICAL ANALYSIS: The improvement in the hip and trunk flexibility was calculated by using the pre-test and post-test taken before and after treatment. The data obtained isanalysed using paired t-test.

DATA ANALYSIS Statistical analysis using patient's parameters to calculate t value and the mean difference of modified sit and reach tests values were calculated in the experimental group.

The above table shows that out of 15 samples, pre-test and post-test mean, mean difference, standard deviation, and "t" value.

THE PRE-TEST AND POST-TEST GRAPH FOR MODIFIED SIT AND REACH TEST



RESULT

***OGWUMIKE O.O., 2AROWOJOLU A.O. AND 1 SANYA A.O** In this study, engagement of Nigerian peri menopausal and postmenopausal women in a twelve-week endurance exercise program led to a reduced relative disease risk in terms of a significant reduction in the waist-hip ratio (abdominal adiposity) of the participants. Also, a significant improvement in flexibility resulted in better health-related component of physical fitness of the participants. Based on the result of this study it is recommended that Nigerian women in the perimenopausal and postmenopausal age group should engage regularly in endurance exercise programs. This study also showed that there was a significant increase in the hip and trunk flexibility in the perimenopausal women. The pre-test mean obtained is 22.87 and the post-test mean is 25.07. By using the paired 't' test the t value is 12.717 with p value <0.0001

DISCUSSIONWomen in the perimenopausal age group face a number of changes in the body system which may lead to loss of health-related fitness. The loss of ovarian function induces a reduction in resting metabolic rate, physical activity energy expenditure, fat free mass and an increase in fat mass and abdominal adipose tissue accumulation. At perimenopause due to age related changes, substantial loss in tendon flexibility may occur. This may lead to reduced range of motion, soreness and stiffness at the jointSelf-myofascial release is a form of stretching and is often accomplished by use of a foam roller. Self-myofascial release uses an individual's body weight by incorporating a foam roller to massage restrictions that are in the soft tissue. Correct muscle imbalances, Joint range of motion, Muscle soreness & relieve joint stress, Neuromuscular hyper tonicity, Extensibility of musculotendinous junction, Neuromuscular efficiency and maintain normal functional muscular length **Aerobic** exercise is a physical exercise of low to high intensity that depends primarily on the aerobic energy – generating process. It improves muscle strength, endurance and flexibility.The result of this study by giving aerobic exercise and self-myofascial release showed that, The pre-test mean obtained is 22.87 and the post-test mean is 25.07. By using the paired 't' test the t value is 12.717 with p value <0.0001.

CONCLUSION

In this study, the 15 perimenopausal women according to the inclusion criteria was selected and assessed for hip and trunk flexibility using modified sit and reach test. And was given aerobic exercise and self-myofascial release for weeks.

By the statistical analysis(t=12.717) there was a significant increase in the hip and trunk flexibility in perimenopausal women of giving Aerobic exercise and Self-myofascial release.

Hence it is concluded that the alternate hypothesis was accepted.

LIMITATIONS AND RECOMMENDATIONS

LIMITATION OF THE STUDY:

- The treatment duration of the study is only 4 weeks.
- The study was limited with the specific age group of 40 to 55 years.
- The study was limited for obese women.
- Only the perimenopausal women were selected.
- Only one time the observation is done for this study.
- To make the patient understand the study.

RECOMMENDATIONS:

Similar studies can be done using long duration.

- The study can be done for postmenopausal women and menopausal women.
- The study can be done with different tool.
- Further studies can be conducted by comparing any manual therapy and electrotherapymodalities.

Acknowledgment

We would like to thank all the participants who participated in this study.

Declarations

Conflicts of interest: Nil

Funding sources: Self

Ethical clearance: Verbal consent and written consent were taken from each subject who participatedin the study and Ethical clearance from our Institutional Ethical committee (IEC)

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