Hamstring tightness is common health and social care essay

Health & Medicine

Among the musculus undergoing adaptative shortening, hamstring is the 1 normally traveling for adaptative shortening. The hamstring comprises of three big musculuss viz. semimembranosus, semitendinosus, and bicep femur which arises from the tubercle of ischial bone. They are present over the posterior compartment of the thigh and cross the hip and articulatio genus articulations. Hence they are the extensors of the hip and flexors of the articulatio genus.

Hamstringing stringency is common in normal single because of immobilisation of a tissue in a sawed-off place consequences in adaptative shortening. As the musculus shortens, its snap of the normal tissue was decreased and a alteration in the length tenseness relationship of the musculus, loss of flexibleness besides occurs. Hamstring stringency could do the musculo sinewy unit more susceptible to injury, increase opposition to assorted anatomical constructions, which may take to overdrive syndrome.

Stringency could besides leads to pathological conditions at the articulation on which the musculus Acts of the Apostless, particularly on a musculus like hamstring which passes over the two articulations.

Muscle stringency has a important impact on neuromuscular control. Muscle stringency affects the normal length tenseness relationships. When one musculus in a force twosome becomes tight or hypertonic, it alters the normal arthrokinematics of the involved articulation. This affects the interactive map of the full kinetic concatenation, taking to unnatural emphasis, soft tissue disfunction, nervous via media and vascular/lymphatic stasis.

Muscle stringency besides cause mutual suppression. Increased musculus spindle activity in a specific musculus will do reduced nervous thrust to that musculus 's functional adversary. This alters the normal arthrokinematics of the involved section.

Flexibility has been defined as the ability of a musculus to lengthen and let one articulation (or more than one articulation in a series) to travel through a scope of gesture.

Anderson and Burke defined Flexibility as the `` scope of gesture available in a joint or a group of articulation that is influenced by musculuss, ligaments and castanetss '' .

Loss of flexibleness agencies reduced ability of a musculus to deform. Loss of flexibleness may take to diminish in lumbar hollow-back, decrease of musculus strength and quadriceps disfunction during pace, lumbar pelvic beat was disturbed, anterior pelvic joust was restricted, lumbar gesture was increased. Excessive mobility of lumbar spinal column leads to pulling of lumbar ligaments and accordingly hurting and instability.

Loss of flexibleness can besides do hurting originating from musculus, connective tissue or periosteum.

Withrespectto of import function of hamstring flexibleness Restoration of its normal length is necessary. Muscle tissue length is thought to play an of import function in efficiency and effectivity of human motion.

Benefits of flexibleness is to heighten the scope of gesture, improved organic structure place, possible alleviation of achings and hurting, protection against low back hurting and hurts, decrease of station exercising musculus tenderness, and promotes relaxation.

Hamstringing stringency can be measured utilizing the Active one-sided straight leg rise trial, Passive one-sided straight leg rise trial, Sit and make trial, Active articulatio genus extension trial. Straight leg rise trial are widely used as a neurologic trials, hence they do non give valid steps of hamstring stringency because of pelvic rotary motion that occurs during the trial. Active articulatio genus extension trial is the dependable trial.

Continuous ultrasound therapy additions tendon length by altering their viscousness and malleability (Ziskin et al, 1986) . Skeletal musculuss have a higher rate of soaking up of ultrasound moving ridges when compared to fatty tissue. (Dyson, 1987 ; Low and Reed, 1990) .

Elevation of collagen tissue temperature affects on mechanical and physical features of tissues and facilitates distortion of the collagen. As hurting and uncomfortableness was reduced during stretching and collagen fiber ability to digest greater forces was increased. Ultrasound increases soft tissue extensibility and may be an effectual adjunct in the intervention of articulatio genus contractures secondary to connective tissue shortening .

Inactive stretching allow the musculus spindle to suit, cut down their fire rate ; hence inactive stretch is effectual in increasing the length of musculus. (Gordon and Ghez, 1991) .

Longer keep times during stretching of the hamstring musculus resulted in a greater rate of additions in scope of gesture (Feland et al, 2001) .

Stretch continuance lower than 30 seconds did non increase musculus flexibleness (Beaulien, 1981) . Inactive stretch of 30 seconds is sufficient to increases the hamstring musculus length.

Combination of ultrasound therapy with 30 seconds stretch is more effectual than ultrasound therapy with 15 seconds stretch in increasing hamstring flexibleness (A. Akbari, H. Moodi, A. A. Moein, and R. Nazok 2006) .

Muscle energy techniques (MET) are manually applied stretching techniques that use rules of neurophysiology to loosen up hyperactive musculus and stretch inveterate shortened musculuss.

Muscle energy techniques (MET) have the ability to loosen up hyperactive musculuss or stretch tight musculuss and their associated fascial constituents when connective tissue or viscoelastic alterations have occurred.

When utilizing Muscle energy techniques (MET) , it is of import to relax/inhibit the neuromuscular constituent before trying to stretch the involved muscular structure. Two cardinal neurophysiologic rules account for the neuromuscular suppression. The first rule of Muscle energy techniques (MET) is post contraction suppression / autogenous suppression / station isometric relaxation. The 2nd rule is mutual suppression. Muscle energy technique produced an immediate addition in inactive articulatio genus extension in persons with hamstring stringency (Ballantyne 2003) . Muscle

energy technique is significantly bettering the hamstring flexibleness in collegiate males (Wassim. M et Al 2009) .

Need for the study

Continuous ultrasound therapy, inactive stretching, musculus energy technique (MET) are important in bettering hamstring flexibleness in persons with hamstring stringency. These methods of intervention are good accepted and practised by assorted research workers harmonizing to old literature, but there was no survey to compare the consequence of musculus energy technique (MET) and ultrasound therapy with inactive stretching in bettering the hamstring flexibleness in persons with hamstring stringency.

So the intent of this survey is to analyze the efficaciousness of musculus energy technique and ultrasound therapy with inactive stretching in bettering the hamstring flexibleness in persons with hamstring stringency.

To happen out the consequence of musculus energy technique versus ultrasound therapy with inactive stretching in bettering the hamstring flexibleness in persons with hamstring stringency.

To analyze the consequence of musculus energy technique in bettering the hamstring flexibleness in persons with hamstring stringency. To analyze the consequence of ultrasound therapy with inactive stretching in bettering the hamstring flexibleness in persons with hamstring stringency. To compare the consequence of musculus energy technique and ultrasound therapy with inactive stretching in bettering the hamstring flexibleness in persons with hamstring stringency.

Hamstringing flexibleness, Muscle energy technique, Ultrasound therapy with inactive stretching, Active articulatio genus extension trial.

Hypothesis

There is no important consequence of musculus energy technique in bettering the hamstring flexibleness in persons with hamstring stringency.

There is no important consequence of ultrasound therapy with inactive stretching in bettering the hamstring flexibleness in persons with hamstring stringency.

There is no important difference between the consequence of musculus energy technique and ultrasound therapy with inactive stretching in bettering the hamstring flexibleness in persons with hamstring stringency. There is a important consequence of musculus energy technique in bettering the hamstring flexibleness in persons with hamstring stringency. There is a important consequence of ultrasound therapy with inactive stretching in bettering the hamstring flexibleness in persons with hamstring stringency. There is a important difference between the consequence of musculus energy technique and ultrasound therapy with inactive stretching in bettering the hamstring flexibleness in persons with hamstring stringency.

Worrel et Al (2003)

Stated that hamstring hurts in jocks is chiefly due to the deficiency of hamstring flexibleness.

Kishner and Colby et Al (2002)

Stated that equal mobility of soft tissues and articulations is thought to be an of import factor in bar of hurt (or) reinjury to soft tissues.

Donald E Hartig et Al (1999)

Stated that addition in hamstring flexibleness lessenings overuse hurts in lower appendages.

Sarhmann. S et Al (1997)

Stated that musculus stringency and hypertonicity has a important impact on the neuromuscular control. Muscle stringency affects the normal length tenseness relationship.

Bullock-Saxton. J, Lewit. K et Al (1997, 1984)

Stated that musculus stringency alters the normal arthrokinematics of the involved articulation. This affects the interactive map taking to abnormal joint emphasis, soft tissue disfunction, nervous via media and vascular or lymphatic stasis.

Ronald F, Zernickle et Al (1996)

Stated that pull outing flexibleness alterations related with structural and physiological alterations influence the degree of physical activity.

Zachazewski et Al (1989)

Stated that loss of flexibleness of hamstring may take to diminish in lumbar hollow-back, decrease of musculus strength and quadriceps disfunction during pace.

Cummingss, GS, Crutchfeld, CA, Barnes et Al (1983)

Stated that stringency is referred to mild shortening of a healthy musculo sinewy unit otherwise referred to as a mild transeunt contracture. A musculus that is `` tight '' can be lengthened to all but the outer bounds of its scope. Normal person who do non on a regular basis take part in a flexibleness plan can develop mild myostatic contractures or stringency, peculiarly in two joint musculuss such as hamstrings, rectus femur or gastronemius.

Fox E. L et Al (1979)

Stated that flexibleness enhances motion by bettering organic structure consciousness with greater easiness and sleight.

Lawrence Gold et Al

Stated that the hamstrings are the musculuss that run from buttocks and below the articulatio genuss up to the dorsum of the thigh till the `` sitbones '' . Soft tissue hurts, articulatio genus hurting, lacerate semilunar cartilage, chondromalacia kneecap and hapless position frequently come from tight hamstrings. Tight hamstrings can forestall the person from making full extension or from flexing over wholly.

ULTRASOUND THERAPY WITH STATIC Stretching

Shadmer. A, Astaneh. H. N, et Al (2010)

Conducted a survey to analyze the consequence of two different manners (Continuous versus Pulsed) in diminishing the shortening of hamstrings. Thirty non impaired work forces aged 20 to 30 old ages were included. Ultrasound was applied over short hamstrings. Hamstringing flexibleness was measured by inactive articulatio genus extension trial. Continuous ultrasound of 2W/CmA? , 1MHZ, five proceedingss and Pulsed ultrasound of 200Aμs explosion of 1MHZ, 0. 5W/CmA? , five proceedingss was used. They concluded that the warming effects of uninterrupted ultrasound may be more effectual than not thermic belongingss of pulsed ultrasound for increasing the flexibleness of sawed-off hamstrings.

Meroni, Roberto, Cerri, Cesare Giuseppe, Lanzarini, Carlo, Barindelli, Guido, Morte, Giancesare Della, Gessaga, Viviana, Cesana, Gian Carlo, DeVito, Giovanni et Al (2010)

Stated that the addition in flexibleness was maintained for a period of 4 hebdomads after the surcease of preparation. This betterment was more significantly noticed in active stretching group by utilizing active articulatio genus extension trial than the inactive stretching group.

Buker N. , Aslan E. , Kitis A. , Carluk U et Al (2008)

Stated that the superficial (or) deep heat applications before inactive stretching exercisings shows positive effects to increasing flexibleness of hamstring musculuss.

Nichole Lee Lounsberry et Al (2008)

Stated that the ultrasound intervention produced greater immediate additions in hamstring extensibility than moist heat battalions intervention.

A. Akbari, H. Moodi, A. A. Moein and R. Nazok et Al (2006)

Stated that the additions in scope of inactive articulatio genus extension obtained in uninterrupted curative ultrasound and 30 seconds stretch group were significantly greater than curative ultrasound and 15 seconds stretch group in topics with tight hamstrings.

Denegar C, Saliba E, et Al (2006)

Stated that 3 MHZ ultrasound provides superficial warming, 1MHZ ultrasound heats tissue at deepness of 3-5 centimeter and is considered to be a deep warming agent.

Odunaiya N. A, Hamzat T. K, Ajayi O et Al (2004)

Stated that statically stretching tight hamstrings for any continuance between 15 and 120 seconds on surrogate yearss for six hebdomads would significantly increase its flexibleness. The consequence was besides sustained for upto 7 yearss post intercession.

Trae Sakiyo Tashiro et Al (2003)

Stated that the clinically practical parametric quantities of thermic ultrasound in concurrence with inactive stretching is an effectual manner of increasing hamstring extensibility but ultrasound application location did n't

showed difference in increasing articulatio genus extension scope of gesture in a healthy population.

C. D. Weijer et Al (2003)

Stated that the inactive stretching is one of the safest and most normally performed stretching methods used to mensurate musculus length.

Feland et Al (2001)

Reported that longer keep times during stretching of the hamstring musculuss resulted in a greater rate of addition in scope of gesture.

Prentice WE, McClure M, Becker RO et Al (2001)

Stated that when slow stretch applied to muscle, golgi tendon organ get stimulated and thereby muscle tenseness is reduced. This leads is to an addition in length of musculus.

Robert and Wilson et Al (1999)

Stated that inactive stretching additions muscle length by leting musculus spindle to accommodate overtime and cease fired. It besides elicits golgi sinew response and hence provides an effectual flexibleness preparation stimulation.

William D Bandy et Al (1996)

Stated that a inactive stretch of 30 seconds at a frequence of individual session is sufficient to increase the musculus length.

Bandy WD, Irion JM et Al (1995)

Stated that the continuance of 30 seconds of stretching is an effectual clip of heightening the flexibleness of the hamstring musculuss.

Bandy WD, Irion JM et Al, Lentell G, Hetherington T et Al, Madding SW et Al (1994)

Stated that Inactive stretching is a method of stretching in which the musculuss and connective tissue being stretched are held in a stationary place at their greatest possible length for some period. When utilizing inactive stretching on a clinical footing, stretches should be held a lower limit of 15 to 30 seconds.

Chan et Al (1993)

Stated that sinew ranges greater temperature and heat more rapidly than musculus and the sinew was able to keep vigorous heating for longer period than musculus.

Draper D, Sunderland S, Kirkendall et Al (1993)

Stated that tendon tissue is less vascularized than musculus tissue ; sinews will retain heat for longer periods of clip.

Folconer et Al (1992)

Stated that ultrasound additions soft tissue extensibility and may be an effectual adjunct in the intervention of articulatio genus contractures secondary to connective tissue shortening.

Gordon and Ghez et Al (1991)

Stated that inactive stretching may be effectual in increasing the length of musculus due to the drawn-out stretching which allows the musculus spindle to accommodate over clip and cease fire.

Low and Reed et Al (1990) , Dyson et Al (1987)

Stated that low soaking up of ultrasound moving ridges is seen in tissues that are in H2O content (eg. , fat) , whereas soaking up is higher in tissues rich in protein (e. g. , skeletal musculus) .

Warren C, Lehman J, Koblanski J, Strickler T, Malone T, Masock A, Garrett W et Al (1990)

Stated that ultrasound therapy can be used to aim the collagen rich sinewy unit of the hamstring musculus because of its ability to perforate deeper tissues, and shown that increasing the temperature of collagen to 40A° Celsius will increase the snap of the tissue. This increased extensibility allows for an even distribution of force and reduces the emphasis on localised countries of the tissue.

Gajdosik RL, Godges JJ et Al (1989)

Stated that a low strength maintained stretch that is applied bit by bit is less likely to ease the stretch physiological reaction and increase tenseness in the musculus being lengthened. This is called inactive stretch.

Ziskin et Al (1986)

Stated that an increasing in tendon length following uninterrupted ultrasound therapy is due to alter of their viscousness and malleability.

Beaulien et Al (1981)

Stated that stretch continuance lower than 30 seconds did n't increase musculus flexibleness.

Coakley et Al (1978)

Stated that frequence of 1MHZ ultrasound used for patients with more hypodermic fat who sustained hurts at deeper degree because of its incursion to a deepness of 3 to 5 centimeter.

Lehman et Al (1968)

Emphasized on the thermic effects of uninterrupted ultrasound compared to other heating modes in increasing hamstring flexibleness.

De Vries HA et Al (1962)

Stated that inactive stretching offers advantages of utilizing less overall force, diminishing the danger of transcending the tissue extensibility bounds, lower energy demand, and a lower likeliness of musculus tenderness. Inactive stretching besides has less consequence on the Ia and II spindle sensory nerve fibers than ballistic stretching, which would be given to increase a musculuss ' opposition to stretch and ease Golgis tendon organ, thereby cut downing the contractile elements opposition to distortion.

MUSCLE ENERGY TECHNIQUE:

Ahmad Faheem, Ahmad Shamin, Anjani Agarwal, Begum Shabana, Ram C. S, Waseem Mohd et Al (2010)

Conducted a survey in Indian collegiate males on hamstring flexibleness by comparing the effectivity of musculus energy technique and bizarre preparation. Sum of 20 males with hamstring stringency falling between age group of 18-25 old ages were included in the survey. Hamstring stringency was measured by popliteal angle/active articulatio genus extension trial. One group was treated with musculus energy technique and the other with bizarre preparation. This survey stated that hamstring flexibleness can be improved with musculus energy technique utilizing station isometric relaxation than bizarre preparation.

Wassim M et Al (2009)

Reported that musculus energy technique utilizing station isometric relaxation significantly bettering the hamstring flexibleness (by active articulatio genus extension trial) in normal Indian collegiate males with hamstring stringency.

Azadeh Shadmehr, Mohmmed Reza Hadian, Sedigheh Sadet Naiemi, Shohreh Jalaie et Al (2009)

Concluded that the hamstring stretches in normal immature adult females utilizing either inactive stretch or musculus energy technique had similar effects on reconstructing flexibleness to hamstrings.

Madeline Smith, Gary Fryer et Al (2008)

Stated that the musculus energy technique is effectual in increasing hamstring extensibility, and at that place appeared to be sustained betterment one hebdomad following the initial intervention.

Ross A, Clark et Al (2008)

Stated that musculus energy technique can bring forth creep and fictile alterations in the connective tissue thereby the length of the musculus can be increased.

Lindsey Samilian et Al (2007)

Stated that musculus energy technique is a method used to beef up weak musculuss, lengthen the short musculuss (or) increase a musculus 's scope of gesture. These techniques involve stretch during which a mutual force is imposed on the targeted musculus for short period of clip, doing the musculus to loosen up and stretch farther.

Ballantyne F, Fryer G, MC. Laughlin P et Al (2003)

Conducted a survey to happen the effectivity of musculus energy technique in increasing inactive articulatio genus extension and to research the mechanism behind any ascertained alteration. Forty symptomless topics between age of 18 to 45 old ages were indiscriminately allocated to experimental and command group. Experimental group was given with musculus energy technique and Control group with no intervention. They concluded that musculus energy technique produced an immediate addition

in inactive articulatio genus extension. This ascertained alteration is due to an increased tolerance to stretch.

Chaitlow L, Liebenson C et Al (2001)

The other name for Muscle energy technique is active muscular relaxation technique.

Freyer G et Al (2000) , Richard L, Gajodsik, Melonie A, Rieck and Debra K et Al (1993)

Stated that an addition in flexibleness after musculus energy technique occurred due to biomechanical or neurophysiologic alterations or due to an addition in tolerance to stretching.

Lewit et Al (1999)

Concluded that station isometric relaxation is directed towards relaxation of hypertonic musculus, particularly if this relates to reflex contraction or the engagement of myofascial trigger points.

Lewit, Libenson, Murphy et Al (1999)

Stated that station isometric relaxation is an first-class technique for handling neuromuscular component musculus of a stiff, shortened or tight musculus.

Lewit et Al (1999) , Greenman et Al (1989)

Suggested that in musculus energy technique, the keeping clip of 7-10 seconds is more effectual than 3-5 seconds.

Kuchera et Al (1997)

Stated that addition in scope of gesture of a joint after Muscle energy technique is based on neurological mechanism via repressive golgi sinew physiological reaction. Muscle energy technique activates this physiological reaction during isometric musculus contraction. Muscle energy technique produces a stretch on golgi sinew organ and a automatic relaxation of musculus.

Goodridge and Kuchera et Al (1997)

Suggested that 3 repeats of isometric contractions is optimum in using musculus energy technique.

Lederman et Al (1997)

Stated that a viscoelastic alteration in musculus is responsible for the addition in musculus flexibleness after musculus energy technique.

Chaitlow L et Al (1997)

Stated that the isometric contraction should be held for 10 seconds. This is the clip required to excite the excitatory threshold of the Golgi sinew organ, which has a neurophysiologic inhibitory consequence on the musculus spindle. This provides the chance to take the musculus into a new scope of

gesture. Following the isometric contraction, there is a latency period of about 25 to 30 seconds, during which the musculus can be stretched.

Philip Greenman et Al (1996)

Stated that manual medical specialty intervention process includes Muscle energy technique which involves the contraction of the topic 's musculus by the voluntary attempt in a exactly controlled way, at different degrees of strength, against a counterforce applied by the operator. This process can be used to lengthen a sawed-off, contracted or spastic musculus ; to beef up a physiologically diminished musculus ; to cut down localised hydrops, to mobilise an articulation with restricted mobility.

Ward, Robert C et Al (1990)

Stated that musculus energy technique is an active, direct technique (prosecuting the barrier) that promotes musculus relaxation by triping the Golgi sinew physiological reaction.

Libenson et Al (1989)

Stated that musculus energy technique is effectual in handling the musculus tenseness upset and it efficaciously relaxes stretches, strengthens the musculuss and re-educate unnatural sensory motor tract.

Lewit et Al (1986)

Stated that when a musculus is isometrically contracted its adversary will be inhibited and cut down tone instantly.

Stiles and Greenman et Al (1984)

Suggested that musculuss which requires stretching (agonist) should be the chief beginning of energy for isometric contractions and achieves a more important grades of relaxation and so a more utile ability to later stretch the musculus were the relaxation consequence being achieved through usage of adversary (utilizing mutual suppression) .

C. M. Norris et Al (2005)

Stated that active articulatio genus extension trial when used in concurrence with goniometry, accurate surface devising, and manual monitoring of the trial leg is a dependable step of hamstring musculus length.

M. Mathews et Al (2005)

Stated that active articulatio genus extension represents maximal length of hamstring musculuss.

Denise M. Cameron, Richard W. Bohannon et Al (1985)

Stated that active articulatio genus extension trial is said to be a utile option to the consecutive leg raise trial for supplying an indicant of hamstring musculus length.

Gajdosik R. L et Al (1983)

Stated that active articulatio genus extension trial is a more nonsubjective step of hamstring stringency which produces high dependability co-efficient.

Methodology

Pre trial and station trial experimental group survey design. Study will be conducted at Physiotherapy Out Patient Department, KG College of Physiotherapy, Coimbatore. Entire continuance was one twelvemonth. Individual received the intervention for the continuance of one hebdomad.

30 normal persons with hamstring stringency who fulfilled the preset inclusive and sole standards were selected and divided into two experimental groups by simple random trying method. Each group consists of 15 patients. Groups are named as group A and group B.

Criteria for selection

Age between 18 to 25 old ages

Both males and females

Normal persons with tight hamstrings (inability to accomplish greater than 160A° knee extension with hip at 90A° flexure.)

Low back pain - Acute accent or chronic.

Hamstringing hurt - Acute accent or chronic.

Soft tissue hurts around articulatio genus.

Pregnancy.

Metallic element implants in lower appendage.

Recent break and stiffness in lower appendage.

Independent Variables:

- Muscle energy technique.
- Ultrasound therapy with Inactive stretching.

Dependent Variables: Hamstringing flexibleness.

Parameters: Hamstringing flexibleness

MEASUREMENT TOOLS:

Active articulatio genus extension trial was used for measuring of hamstring stringency. The topic was instructed to lie on their dorsum with hip and articulatio genuss bent 90 grades. Pelvic motion was controlled by the usage of straps. By utilizing the sidelong condyle of thighbone as the goniometric axis, the stationary arm positioned along the thighbone, and the movable arm was positioned parallel to the leg. Keep hip and articulatio genus in 90 grades so instruct the topic to unbend the articulatio genus every bit for as possible boulder clay a esthesis of stretch being felt. Repeat the same for three times and mean were measured as the concluding consequence.

Technique USED: Post isometric relaxation.

INDIVIDUAL 'S Position: Supine prevarication.

Procedure:

Ask the persons to presume supine place. Therapist flexes the affected hip to the full and so extends the flexed articulatio genus with the dorsum of lower leg resting on the shoulder of the healer who stands confronting the caput of the tabular array. Individual is asked to flex i. e. doing downward force per

unit area against the therapist shoulder with the dorsum of lower leg at the same clip therapist defy the persons voluntary attempt so that, slight isometric contraction of hamstrings develops and persons hold this for 10 seconds.

After this attempt, the person is asked to expire and loosen up the musculus wholly. Then the healer takes the musculus to its new limitation barrier without stretch. Get downing from this new barrier, the same process is repeated two or three more times.

FREQUENCY OF TREATMENT: Once in a twenty-four hours.

TREATMENT DURATION: One hebdomad.

INDIVIDUAL 'S Position: Prone lying

Parameters:

Frequency: 1 MHz

Intensity: 2W/cmA?

Manner: Continuous.

AREA OF APPLICATION: Hamstring country

Duration: Five Minutess daily (Two proceedingss for median hamstrings, Two proceedingss for sidelong hamstrings and One min for between the two sinew) .

FREQUENCY OF TREATMENT: Once in a twenty-four hours

TREATMENT DURATION: One hebdomad

Technique USED: Active inactive stretching.

INDIVIDUAL 'S Position: Standing place.

Procedure:

Subjects performed the hamstring stretch by standing erect with the pes planted on the floor and toes pointed frontward. The heel of the pes to be stretched was placed on a pedestal with the toes directed towards the ceiling. The topic so flexed frontward at the hip, keeping the spinal column in impersonal place while making the arm forward.

The topics continued to flex the hip until a soft stretch was felt in the posterior thigh. Then keep this place for 30 seconds and so loosen up for 10 seconds and reiterate the same process for three more times a twenty-four hours.

FREQUENCY OF TREATMENT: Once in a twenty-four hours.

TREATMENT DURATION: One hebdomad

Analysis of results

30 persons with hamstring stringency were divided into two groups. Group A were treated with musculus energy technique. Group B were treated with ultrasound with inactive stretching. Hamstringing flexibleness was measured by active articulatio genus extension trial.

Statistical analysis was done by utilizing Student't ' trial. Paired 't ' trial was used to happen out the betterment within the group. Unpaired 't ' trial was used to happen out the difference between two groups.

Paired't ' trial

Group A - MUSCLE ENERGY TECHNIQUE

Using Paired 't ' trial with 14 grades of freedom and 5 % at degree of significance, the deliberate 't ' value is 30. 03 which is greater than table 't ' value 1. 761. This trial showed that there is a important consequence of musculus energy technique in bettering the hamstring flexibleness in persons with hamstring stringency.

Group B - Ultrasound THERAPY WITH STATIC Stretching

Using Paired 't ' trial with 14 grades of freedom and 5 % at degree of significance, the deliberate 't ' value is 21. 6 which is greater than table 't ' value 1. 761. This trial showed that there is a important consequence of ultrasound therapy with inactive stretching in bettering the hamstring flexibleness in persons with hamstring stringency.

Unpaired't ' trial

Comparing pre trial values of active articulatio genus extension trial between Group A and Group B:

Pre trial values of Group A and Group B is analysed by Unpaired 't ' trial. The deliberate 't ' value is 0. 294 which is lesser than table 't ' value 1. 701 at 5 % degree of significance. This trial showed that there is no important

difference between the consequence of musculus energy technique and ultrasound therapy with inactive stretching in bettering hamstring flexibleness in persons with hamstring stringency.

Comparing station trial values of active articulatio genus extension trial between Group A and Group B:

Post trial values of Group A and Group B is analysed by Unpaired 't ' trial. The deliberate 't ' value is 3. 53 which is greater than table 't ' value 1. 701 at 5 % degree of significance. This trial showed that there is a important difference between the consequence of musculus energy technique and ultrasound therapy with inactive stretching in bettering hamstring flexibleness in persons with hamstring stringency.

Discussion

The intent of this survey was to happen out the consequence of musculus energy technique versus ultrasound therapy with inactive stretching in bettering the hamstring flexibleness in persons with hamstring stringency.

30 topics were selected who fulfilled the preset inclusive and sole standards. The topics were divided into two groups, 15 in each group. Group A underwent musculus energy technique and Group B underwent ultrasound therapy with inactive stretching.

Statistical analysis utilizing Unpaired 't ' trial showed that there was a important difference between Muscle energy technique and ultrasound therapy with inactive stretching in bettering hamstring flexibleness in persons with hamstring stringency. Paired 't ' trial concluded that there was

a important betterment in hamstring flexibleness in both muscle energy technique and ultrasound therapy with inactive stretching, which was supported by surveies as follows.

Overuse hurts in lower limbs are reduced by increasing flexibleness of hamstring musculuss. (Donald E Hartig, 1999)

Extracting flexibleness alterations related with structural and physiological alterations influence the degree of physical activity. (Ronald F, Zernickle 1996)

Loss of flexibleness of hamstring may take to diminish in lumbar hollow-back, decrease of musculus strength and quadriceps disfunction during pace. (Zachazewski, 1989)

Continuous ultrasound therapy additions soft tissue extensibility and may be an effectual adjunct in the intervention of articulatio genus contractures secondary to connective tissue shortening. Ultrasound soaking up is higher in tissues rich in protein like skeletal musculus. Continuous ultrasound therapy additions tendon and musculus length due to alter of their viscousness and malleability. (Folconer 1992, Dyson 1987, Low and Reed1990)

Elevation of collagen tissue temperature affects on the mechanical and physical features of tissues and facilitates distortion of collagen. Therefore hurting and uncomfortableness was reduced during stretching and collagen fiber ability to digest greater force was increased. (Coakley, 1978)

Thermal effects of ultrasound additions collagen temperature which will increase snap of tissue. Increased snap allows for an even distribution of force and reduces the emphasis on localised countries of tissues. It besides increases blood flow within the musculus. (Warren C, Lehmann J, Stricker T, 1970, 1990)

Longer keep times during stretching of hamstring musculuss result in greater additions in scope of gesture. (Feland, 2001)

Inactive stretching additions muscle length by leting musculus spindle to accommodate overtime and cease fired. It besides elicits golgi sinew response and hence provides an effectual flexibleness preparation stimulation. (Robert and Wilson, 1999)

Addition in length of the musculus which occurs after the application of musculus energy technique consequences in effectual venous or lymphatic drainage and addition in scope of gesture. (Ballantyne F et Al 2003)

Stated that musculus energy technique can bring forth creep and fictile alterations in the connective tissue thereby the length of the musculus can be increased. (Ross A, Clark, 2008)

An addition in flexibleness after Muscle energy technique occurred due to biomechanical or neurophysiological alterations or due to an addition in tolerance to stretching. (Freyer G, Richard L, Melonie A, Rieck 1993, 2003)

Addition in scope of gesture of a joint after Muscle energy technique is based on neurological mechanism via repressive golgi sinew physiological reaction.

Muscle energy technique activates this physiological reaction during isometric musculus contraction. Muscle energy technique produces a stretch on golgi sinew organ and a automatic relaxation of musculus. (Kuchera, 1997)

By station isometric relaxation, consequence of sustained contraction on Golgi sinew organ set the sinew and musculus to new musculus length by suppressing it.

Muscle energy technique utilizing station isometric relaxation resulted in maximal betterment when compared to eccentric preparation on hamstring flexibleness. (Ahmad Faheem, Ahmad Shamin, Anjani Agarwal, Begum Shabana, Ram C. S, Waseem Mohd, 2010)

Muscle energy technique utilizing station isometric relaxation significantly bettering the hamstring flexibleness (by active articulatio genus extension trial) in normal Indian collegiate males with hamstring stringency. (Wassim M, 2009)

Muscle energy technique produced an immediate addition in inactive articulatio genus extension. This ascertained alteration is due to an increased tolerance to stretch. (Ballantyne F, Fryer G, MC. Laughlin P, 2003)

Muscle energy technique is an active, direct technique (prosecuting the barrier) that promotes musculus relaxation by triping the Golgi sinew physiological reaction. (Ward, Robert C, 1990)

The warming effects of uninterrupted ultrasound may be more effectual than not thermic belongingss of pulsed ultrasound for increasing the flexibleness of sawed-off hamstrings. (Shadmer. A, Astaneh. H. N, 2010)

Initiation of inactive stretching exercises involves the applications of superficial (or) deep heat agencies which show a positive consequence to increase the hamstring flexibleness. (Buker N. , Aslan E. , Kitis A. , Carluk U, 2008)

The additions in scope of inactive articulatio genus extension obtained in uninterrupted curative ultrasound and 30 seconds inactive stretch group were significantly greater than curative ultrasound and 15 seconds inactive stretch group in topics with tight hamstrings. (A. Akbari, H. Moodi, A. A. Moein and R. Nazok, 2006)

The clinically practical parametric quantities of thermic ultrasound in concurrence with inactive stretching is an effectual manner of increasing hamstring extensibility but ultrasound application location did n't showed difference in increasing articulatio genus extension scope of gesture in a healthy population. (Trae Sakiyo Tashiro, 2003)

The continuance of 30 seconds of stretching is an effectual clip of heightening the flexibleness of the hamstring musculuss. (Bandy WD, Irion JM, 1995)

Inactive stretching is one of the safest and most normally performed stretching methods used to mensurate musculus length. (C. D. Weijer, 2003)

Inactive stretch of 30 seconds at a frequence of individual session is sufficient to increase the musculus length. (William D Bandy, 1996)

Inactive stretching may be effectual in increasing the length of musculus due to the drawn-out stretching which allows the musculus spindle to accommodate over clip and cease fire. (Gordon and Ghez, 1991)

Muscle energy technique activates golgi sinews organ and bring forth a automatic relaxation of musculus. Ultrasound therapy increases the collagen temperature and increases the snap of tissue. Inactive stretching addition musculus length by letting musculus spindle to accommodate overtime and cease fire and besides elicits golgi tendon response.

This survey concluded that musculus energy technique showed greater betterment in hamstring flexibleness than ultrasound therapy with inactive stretching in persons with hamstring stringency.

Summary and conclusion

The purpose of this survey was to happen out the consequence of musculus energy technique versus ultrasound therapy with inactive stretching in bettering the hamstring flexibleness in single with hamstring stringency.

30 topics were selected in the age group between 18-25 old ages after due consideration of inclusion and exclusion standards. The topics were allotted into two groups.

Group A received musculus energy technique and Group B received ultrasound therapy with inactive stretching. Hamstringing flexibleness was

measured by active articulatio genus extension trial. The values of result steps were recorded before the beginning of intervention government Day1 and at the terminal of intervention government Day7.

Statistical analysis was done by utilizing Student 't ' trial. Paired 't ' trial was used to happen out the betterment within the group. Unpaired 't ' trial was used to happen out the difference between two groups.

The consequences showed that there was a important difference between musculus energy technique and ultrasound therapy with inactive stretching in bettering the hamstring flexibleness in persons with hamstring stringency.

This survey concluded that musculus energy technique is more effectual than ultrasound therapy with inactive stretching in bettering the hamstring flexibleness in persons with hamstring stringency.

Limitation and recommendation

This survey is a short term survey, it is hence necessary to make a long term survey to do the consequence more valid.

Hamstringing flexibleness can besides recorded by inactive articulatio genus extension trial.

Sample studied was little and the survey reduces the generalising ability hence survey with a much larger population is recommended.

Surveies aimed to happen out the consequence of musculus energy technique (by utilizing station isometric relaxation) with other electrotherapy modes such as hot battalion, short moving ridge diathermy

and with other techniques like PNF, Irish burgoo 's grip straight leg rise technique, mutual suppression, etc can be conducted for farther research.