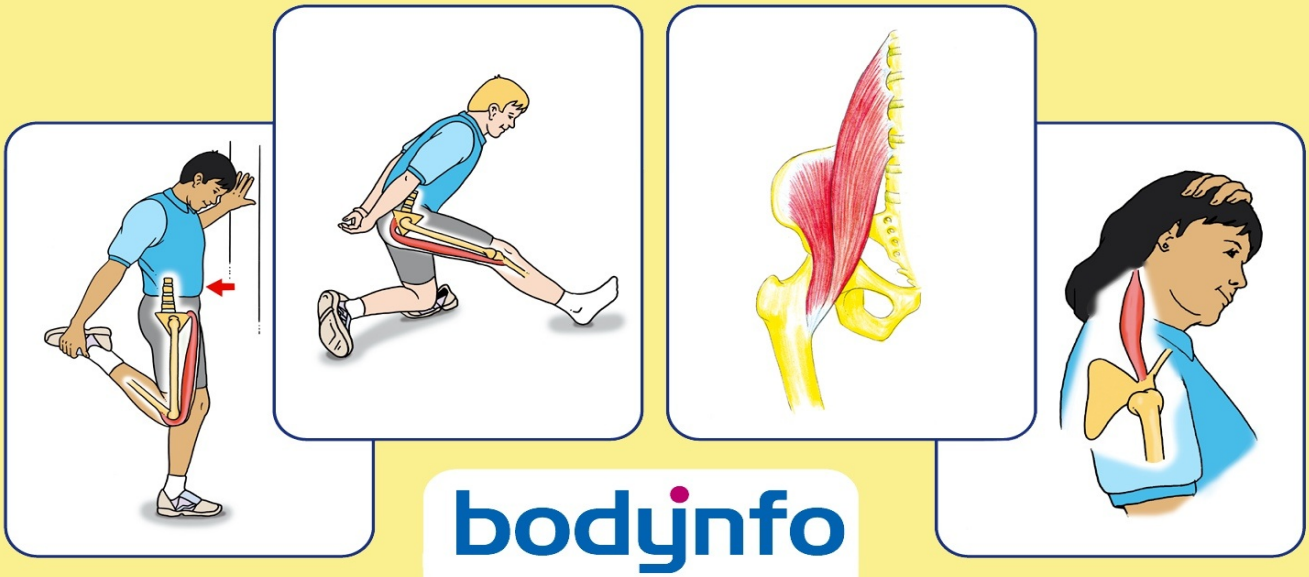
STRETCHING with Quality

41 different stretches

Effective stretches, yet gentle for back and joints



bodyinfo
SWEDEN

Flexibility Training

Factors that define the limits of physical performance include aerobic capacity, strength, technique, flexibility and psychological characteristics. The most common cause of reduced flexibility among healthy individuals is shortened musculature.

Flexibility training is designed to maintain and improve upon flexibility that is limited by shortened musculature. The type of flexibility training that is aimed at lengthening a muscle or muscle group is commonly known as stretching.

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Contents

Stretch the muscles - spare the joints!

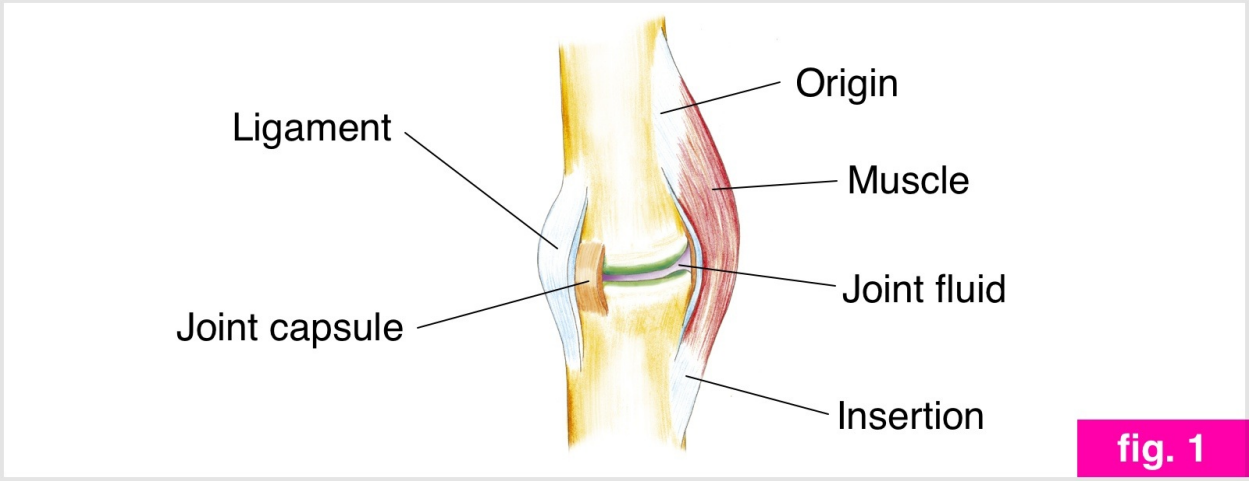

fig. 1

The purpose of stretching exercises is to improve the flexibility of a MUSCLE or MUSCLE GROUP. In contrast, most joints (see fig. 1) rely upon the stability provided by the surrounding joint capsule and ligaments. Because of this, stretching exercises should never be performed so as to load a joint at the end range, which could lead to troublesome laxity of the ligaments and/or joint capsule.

Excessive laxity of these structures can lead to reduced load tolerance and increased risk of injury, such as in the case of a previously sprained ankle.

This principle is very important to keep in mind when stretching the lower back. Many stretching exercises can, through end-range loading at the joints, expose the lower back to potentially damaging loads in the case of incorrect technique. Poor technique also greatly reduces the amount of stretch applied to the muscle (see fig. 2).

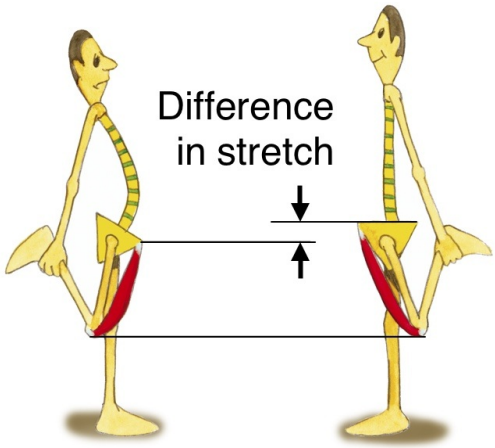

fig. 2

Individuals who are already by nature more flexible than normal should of course not spend too much time doing flexibility exercises. Intensive muscle stretching can actually result in reduced performance in such individuals, as well as potentially increasing their risk of injury rather than decreasing it. If these "over-flexible" individuals spend any time performing stretching exercises it should be limited and aimed at specific muscle groups for a specific purpose. Perhaps most importantly, the exercises must be performed with correct technique and with quality.

A muscle consists of a large number of muscle fibres, each of which is surrounded by a thin sheath of connective tissue. Bundles of muscle fibres are held together by bands of connective tissue. These bundles build a muscle belly, which is also surrounded by connective tissue. This means that when we stretch a muscle we are also stretching connective tissue. If the stretching is too powerful it can lead to microscopic tears in the muscle fibres and connective tissue. The resulting scar tissue can cause the muscles to become less elastic, which can lead to stiff and achy muscles.

This makes it important not to stretch TOO hard. Have patience and understand that improving muscle flexibility can take a long time - weeks or even months.

***

Quality is key

Muscle stretching is considered to reduce the risk of injury, improve flexibility, and hasten recovery after training and competition. Stretching can also be effective treatment for certain painful conditions. Experience has shown that achieving the desired results from stretching is, like with all other types of training, dependent upon quality and proper technique.

The muscles to be stretched and the degree of flexibility necessary are dependent upon the flexibility required by the sport or activity in question. It is also important to analyze muscle demands during training and competition in order to be able to tailor the programme of stretching exercises accordingly.

To facilitate this analysis we have included a description of the function of each muscle in the exercise library. A muscle's function can be described as the action (or actions) that occur when the muscle contracts.

Instructional Exercise Library

In consideration of the previously described need for quality while practising the muscle stretching exercises we have been very careful in the exercise library to give complete instructions including both illustrations and descriptions of **how** the movements are to be done. To make it easier to achieve the correct technique we have even described common errors in the text and occasionally also with an illustration as shown in the example above.

Our experience from working with patients and teaching courses in sports medicine is that there are significant technical deficiencies in the way many people perform these types of flexibility training. Improper technique can not only create instability in certain joints, it can also prevent improvements in muscle flexibility, which must be seen as a waste of training time.

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The common principles for all flexibility training

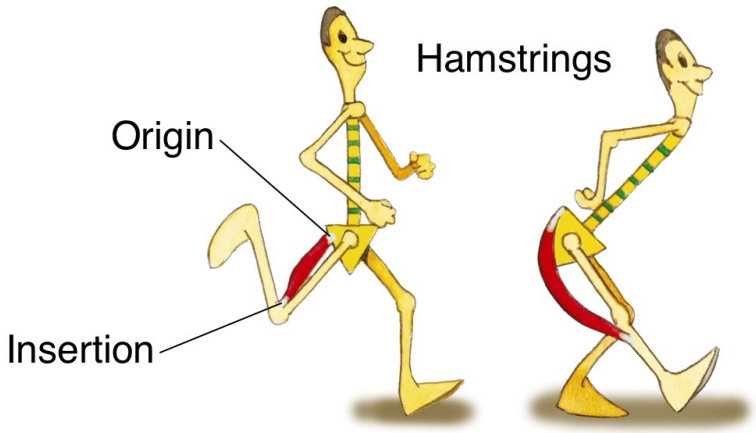

fig. 3

The muscle works by contracting, becoming shorter, and is stretched by being lengthened as much as possible.

- The muscle's origin and insertion (see fig. 3) must be moved as far apart from each other as possible. This is accomplished by moving in a direction (or combination of directions) that are opposite to those which occur when the muscle contracts.
- The muscle must be as relaxed as possible.
- Stretch one muscle at a time.
- The starting position must be stable and relaxed.
- Joints must not be loaded at end-range, especially the lower spine (see fig. 4).

Some muscles (for example, the hamstrings on the back side of the thigh) cross over two joints (see fig 3).

This makes it important to have control over both joints simultaneously. The action of the hamstrings is to flex the knee and extend the hip. In order to stretch the muscle the opposite motion must be performed in both of these joints, which results in an extension (straightening) of the knee and flexion of the hip. Alongside the anatomy illustration that is included with each exercise there is an indication of whether the muscle to be stretched crosses one, two or more joints.

***

Avoid these!

fig. 4

Certain stretching exercises create very unhealthy loading of the spine and joints. These exercises should be avoided completely because they have no greater positive effect on the muscles than other considerably less dangerous exercises (see fig. 4).

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Which muscles become shortened?

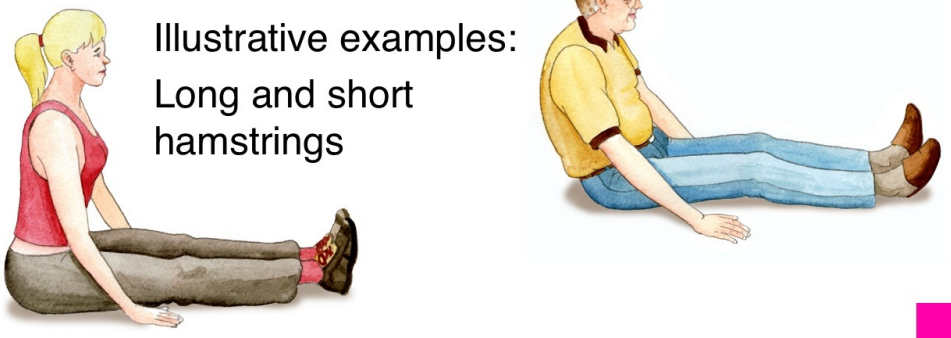


fig. 5

Muscles that frequently do a lot of work

- Muscle work that consists of holding a joint in a certain position or performing repetitive motions of a joint.
- Muscles that are always active to maintain standing or seated posture.
- Muscles that are used vigorously during training/competition or in daily work.

Muscles that are inactive for long periods of time

- Due to overall inactivity
- Due to inactivity as a result of injury, such as with the calf muscles after an ankle injury.

There are large individual variations as well as general differences based upon gender and age. Women are generally more flexible than men, and young people more flexible than the elderly (see fig. 5).

***

Training children

When training children one must be aware that their musculature has a much lower propensity to be shortened than that of an adult. Many of the stretching exercises require considerable amounts of concentration and co-ordination in order to achieve the desired effect without creating unhealthy loading of the joints (especially the lumbar spine).

When training children we therefore recommend that the exercises be kept simple and that they be primarily thought of as basic instruction in this form of training.

Suitable muscles to be stretched, for example in a instructional situation, include the calf muscles and the backside of the thigh.

If a child in a training group does turn out to have extreme foreshortening of a muscle, instruct that child individually and make certain that the exercise is performed correctly. If you are unsure about anything, seek assistance from a physical therapist or other professional with expertise in this area.

***

When - where - how?

Under the following situations muscle stretching should be avoided

- When you are not properly warmed up. There is an increased risk of injury when the musculature is less flexible due to lower temperatures.
- In the case of an acute muscle injury, such as a muscle strain or tear. (Start very care ful stretching first after the injury has healed as long as stretching does not cause intense pain in the area of the injury.)
- If the starting position is not steady. This results in increased tension in all muscles, which minimizes the effectiveness of the stretch. (See figure).
- Immediately prior to athletic performance requiring maximal explosive power, such as high jump. A number of researchers have shown that muscles have reduced levels of explosive power following stretching.

Which muscles should be stretched?

- Muscles that are trained or use asymmetrically in your work. It is therefore important to analyze the muscle actions involved in your sport or work so that you can stretch the muscles that you use the most.
- Muscles that hinder the motions that you need in order to move optimally in your sport.
- Muscles that are shortened as a result of old injuries or those that have fore shortened causing pain.
- Muscles that are shorter on one side than on the other.

The reasons above make it clear why stretching programs need to be individualized.

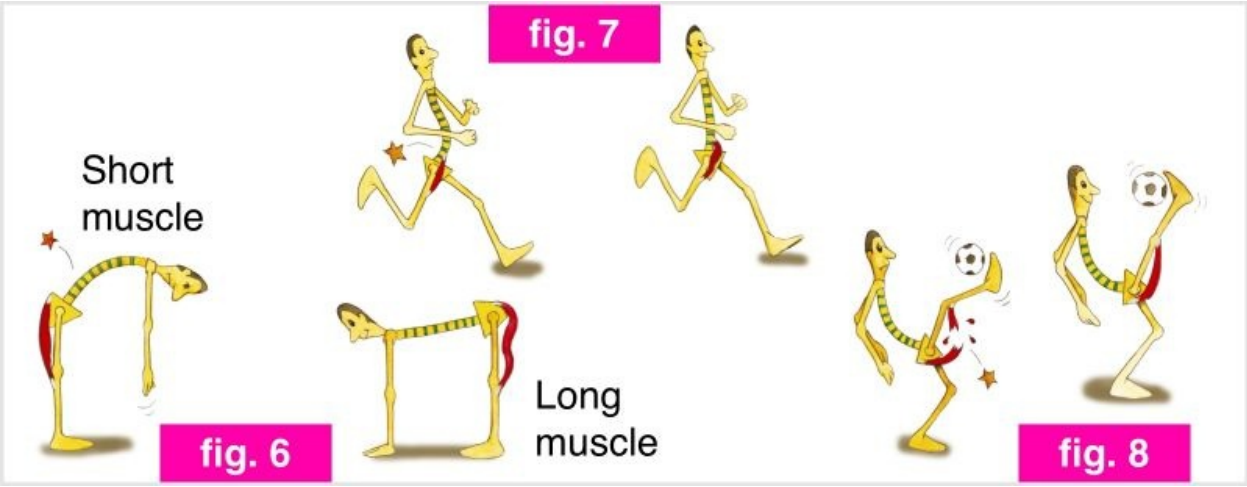
When should muscles be stretched?

- At the end of the warm-up prior to training or competition, with the purpose of preventing injuries and improving performance.
- Following training or competition, so that muscles that have been working can return to their normal length.

- This is also subject to individual variation according to needs as a result of previous injury or propensity to shortened musculature.

***

Result of stretching



Increases length of previously shortened musculature (see fig. 6). Reduces the risk of back pain (as a result of short hip flexors) when running or cross-country skiing (see fig. 7). Prevents muscle foreshortening, therefore reducing the risk of muscle tears (see fig. 8).

Additionally

- Maintains normal flexibility despite heavy and/or one-sided muscle work.
- Minimizes the risk of tendonitis.
- Improves the circulation within the muscle which enables quicker recovery and prevents soreness due to training.
- Improves posture.

***

Description of Flexibility Training

General flexibility exercises

Take the movement slowly out as far as you can go. Soft, “pulling” movements where you do not have to stay for any long length of time in the most extreme position.

Purpose: General flexibility training

- Activate the tissues surrounding the joint and cartilage.
- Engage the large muscle groups, raise body temperature.

These are appropriate to do during warm-up to improve overall flexibility of the entire body. Muscles to be concentrated upon should be trained more specifically according to the instructions below.

Stretching - specific muscle stretching

The joint or joints that the muscle crosses should be placed in such a position that the muscle will be maximally stretched. This stretching must be done in a slow, progressive manner, increasing as the muscle becomes more flexible.

Purpose: When the purpose is the recovery from the foreshortening that results from heavy and/or long-term muscle work we recommend that each stretch be held for about 15 seconds and that the stretch be repeated 3 times. This type of stretching also results in improved circulation in the muscle and speeds recovery following intense muscle work. When the purpose is to lengthen a previously shortened muscle it is our feeling that the stretching should be done for several minutes at a time and repeated often, at the very least once a day for many weeks.

Stretching is the method used for specific flexibility training aimed at the musculature. The choice of muscles to be stretched should be based upon an analysis of the specific demands of the activity in question or an individual evaluation by a qualified medical or training professional.

***

Other methods of stretching

There are many different methods of performing stretching exercises. We have in our examples chosen to recommend the simplest method, where one does not employ a contraction of the muscle prior to the stretching phase.

We have chosen this because our experience as exercise instructors, coaches, physical education instructors and physical therapists has shown us that muscle stretching should be as simple as possible to perform. Added complication makes it more difficult to perform the exercises correctly and frequently.

Repeated scientific examination of the different methods has yet to reveal a consistent pattern indicating that any of the methods are clearly better than the others.

Contracting a muscle prior to relaxation and stretching involves activating the muscle(s) to be stretched. This results in a movement that is opposite to that which is done to stretch the muscle. An example: Activation of the gastrocnemius occurs in standing when one pushes down with the forefoot so that the heel lifts a bit from the floor (see fig. 9). The time involved in this phase should be between 5 and 12 seconds.

Certain authorities believe that passive stretching of a muscle should be followed by active stretching of the same muscle to provide maximum effect. An example: Following the completion of passive stretching of the gastrocnemius muscle the same motion is repeated by actively lifting the forefoot upwards for a period of 5 seconds (see fig. 10).

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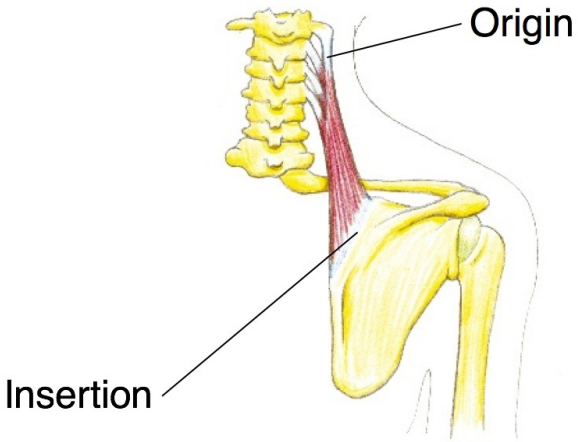
Exercises

Levator Scapulae

m. levator scapulae

LEVATOR SCAPULAE | EXERCISE 1(2) | EXERCISE 2(2)



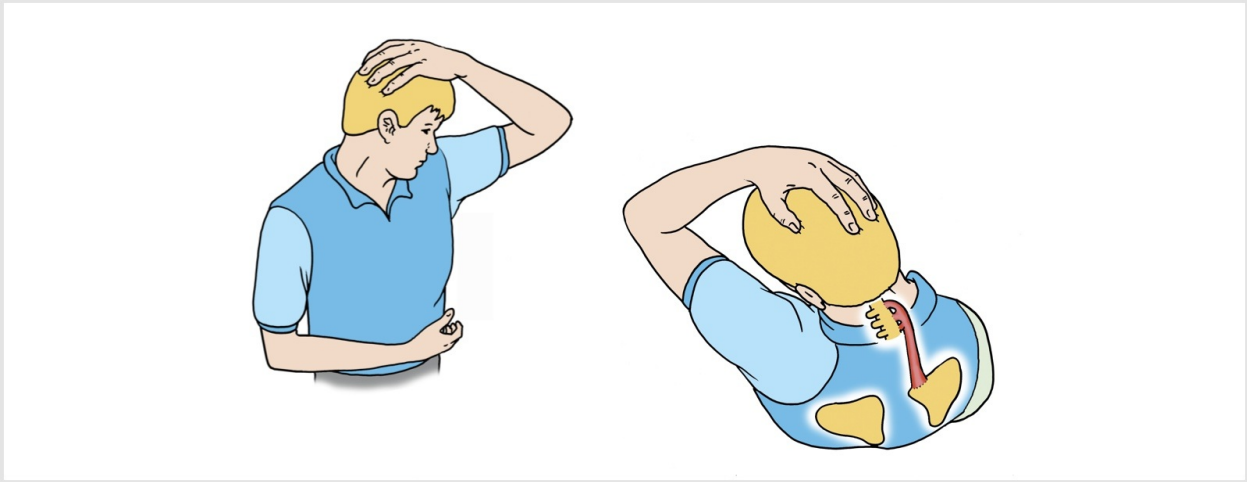
ORIGIN: Transverse processes of the four upper cervical vertebrae.

INSERTION: Upper medial corner of the scapula.

PRIMARY FUNCTION: Lifts the shoulder blade and pulls it slightly towards the midline. If the shoulder blade is fixed it bends the neck to the same side and backward.

Levator Scapulae - Exercise 1(2)

m. levator scapulae



STRETCHING: The shoulder blade (especially the upper medial corner) should be held as low as possible while rotating and side-bending the forward flexed head to the opposite side.

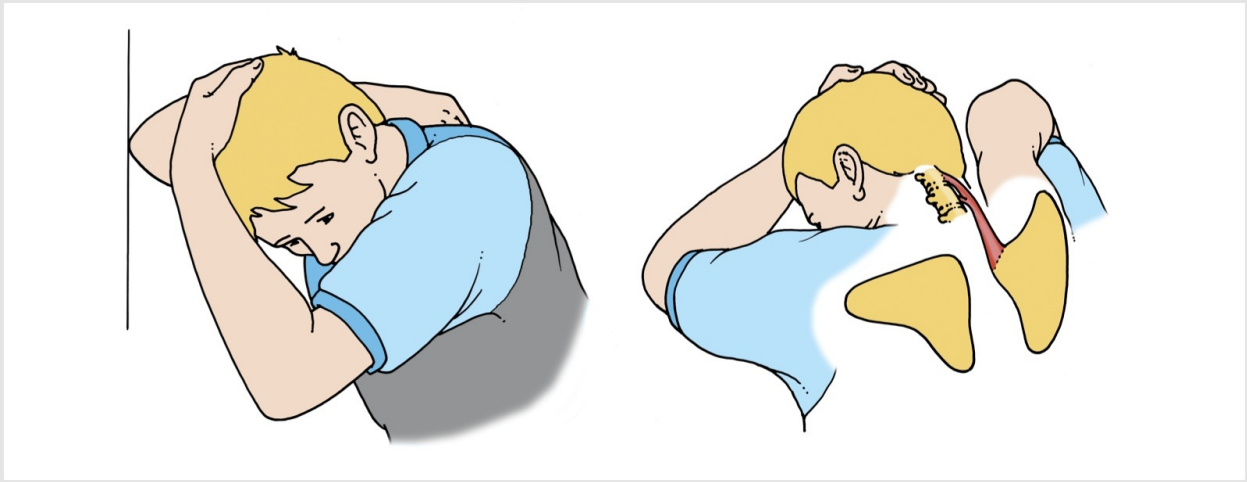
STARTING POSITION: Place hand diagonally over the head gripping the base of the skull. Chin tucked in, head rotated and side-bent to the opposite side. Stretch-side arm stretched down and back with bent elbow.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Hold the head side-bent and somewhat rotated, chin tucked in. Lower the shoulder by reaching backwards and down with the stretch-side arm. The stretch should be felt from the neck and down towards the inner aspect of the upper edge of the shoulder blade.

COMMON ERRORS: Chin not tucked in. Head not side-bent and rotated as shown. Shoulder not dropped enough.

Levator Scapulae - Exercise 2(2)

m. levator scapulae



STRETCHING: The shoulder blade (especially the upper medial corner) should be held as low as possible while rotating and side-bending the forward flexed head to the opposite side.

STARTING POSITION: Stand approx. 50 cm. (20 in.) in front of a wall, shoulders parallel with wall. Place elbow against wall at shoulder height, keeping the upper arm next to the ear. Flex head forwards and towards opposite side. Hold head on stretched side with opposite hand.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: With holding hand pull head forwards and towards opposite side. Relax the shoulder and allow upper body to fall forwards. Tension should be felt from the neck and down towards the top of the shoulder blade.

COMMON ERRORS: Upper arm points away from body instead of towards it. Shoulder blade not lowered - only the head is flexed forwards.

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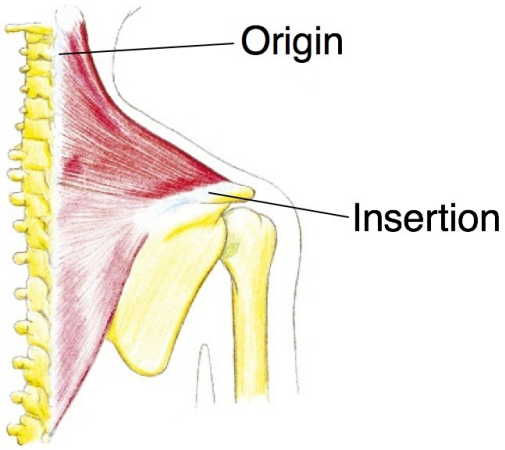
Upper Trapezius

m. trapezius descendens

UPPER TRAPEZIUS | EXERCISE



ORIGIN: Occipital bone and cervical spinous processes.

INSERTION: Posterior surface of the outer portion of the clavicle.

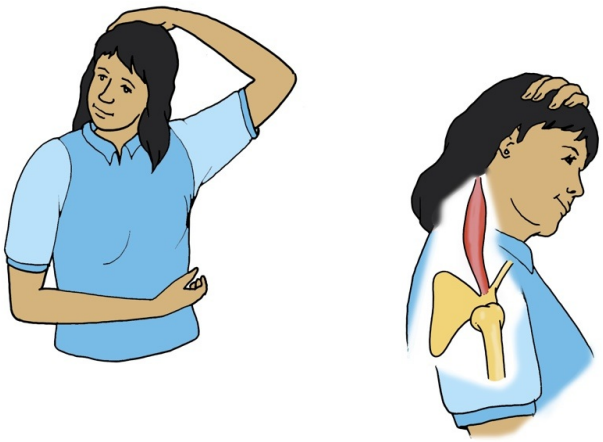
PRIMARY FUNCTION: Raises the shoulder. If the shoulder is fixed it extends the head and neck and side-bends them to the same side while rotating them to the opposite side.

SECONDARY FUNCTION: Pulls the shoulder blade medially. In conjunction with the lower trapezius, outwardly rotates the lower part of the shoulder blade.

Upper Trapezius - Exercise

m. trapezius descendens

UPPER TRAPEZIUS | **EXERCISE**



STRETCHING: Lower the shoulder with the chin tucked in, and the head bent sideways to the opposite side and rotated to face the stretch side.

STARTING POSITION: Place hand diagonally over the head gripping the base of the skull. Chin tucked in, head rotated and side-bent to the opposite side. Stretch-side arm reaching down and back with bent elbow.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Reach downward with the stretch-side shoulder while simultaneously holding the head as described above with the opposite hand. Avoid over-exerting yourself! Hold your chin tucked in. The stretch should be felt from the neck out towards the shoulder.

COMMON ERRORS: ”Bending” your head to the side instead of lowering your shoulder can injure your neck! Do not tip your head to the side. Chin not tucked in.

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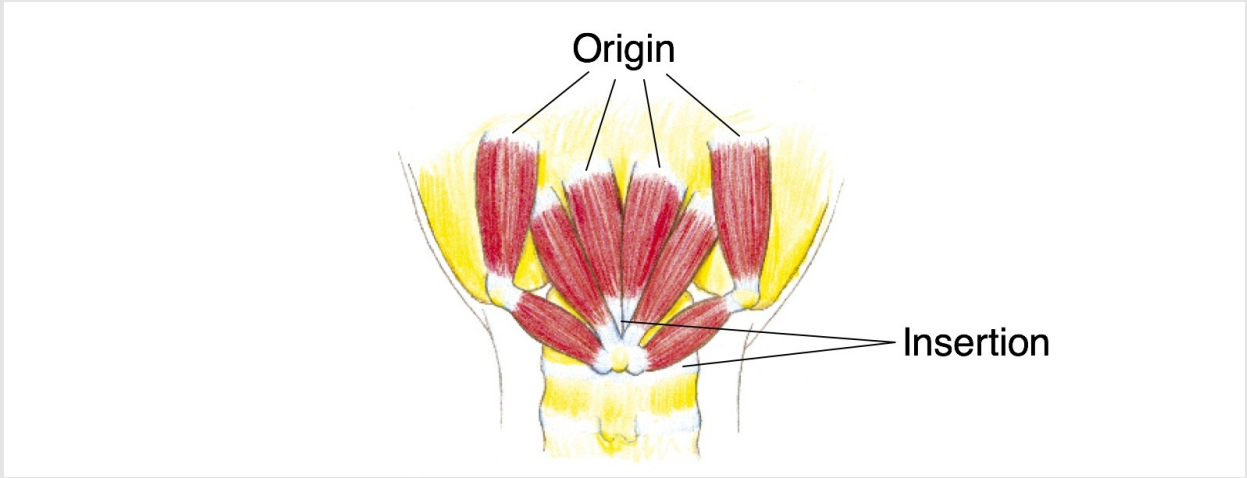
Upper Cervical Extenders

m. rectus capitis posterior minor and major, m. obliquus capitis superior and inferior, m. rectus capitis lateralis



ORIGIN: The width of the inferior nuchal line and the posterior parts of the first cervical vertebra as well as the lateral processes on each respective side.

INSERTION: Central and posterior parts of first and second cervical vertebrae and the outer parts of the first cervical vertebra.

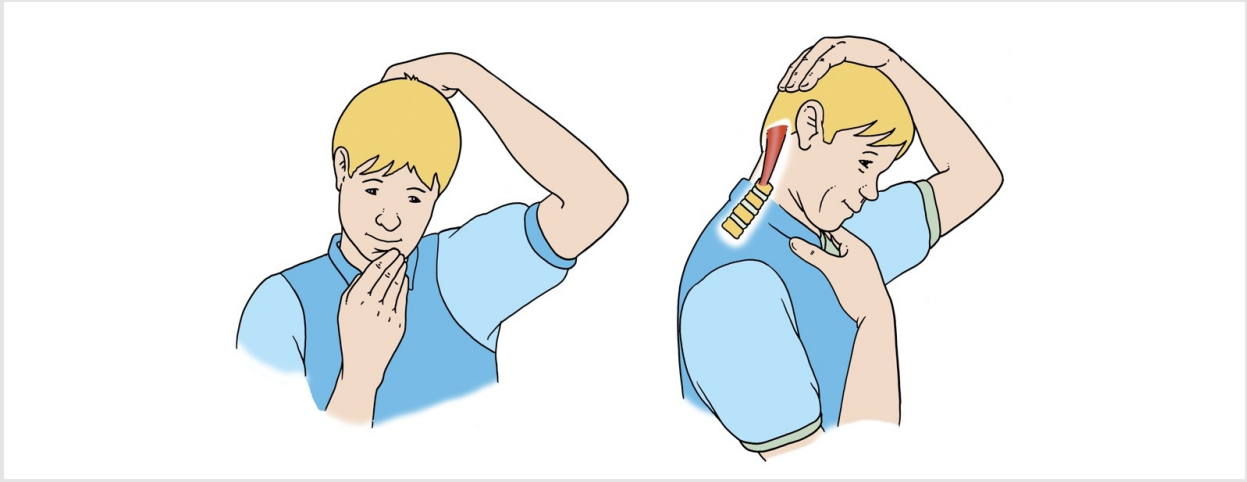
PRIMARY FUNCTION: Simultaneous action extends the head and neck. One-sided action bends the head to the same side.

SECONDARY FUNCTION: M. rectus capitis posterior major and m. obliquus capitis inferior rotate the head to the same side.

Upper Cervical Extenders - Exercise

m. rectus capitis posterior minor and major, m. obliquus capitis superior and inferior, m. rectus capitis lateralis

UPPER CERVICAL EXTENDERS | **EXERCISE**



STRETCHING: Forward bending of the head in relation to the first two cervical vertebrae and side-bending to the opposite side.

STARTING POSITION: Sit upright with straight back and neck, with the stretch-side hand on opposite side of chin and the other hand holding the back of the head (on the stretch side).

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Pull the chin inwards and towards the stretch side using the stretch-side hand. “Lift” the back of the head with the other hand. The stretch should be felt on the stretch side far up the back of the neck.

COMMON ERRORS: Chin not tipped to the side - head flexed directly forwards, insufficient “lifting” at the back of the head.

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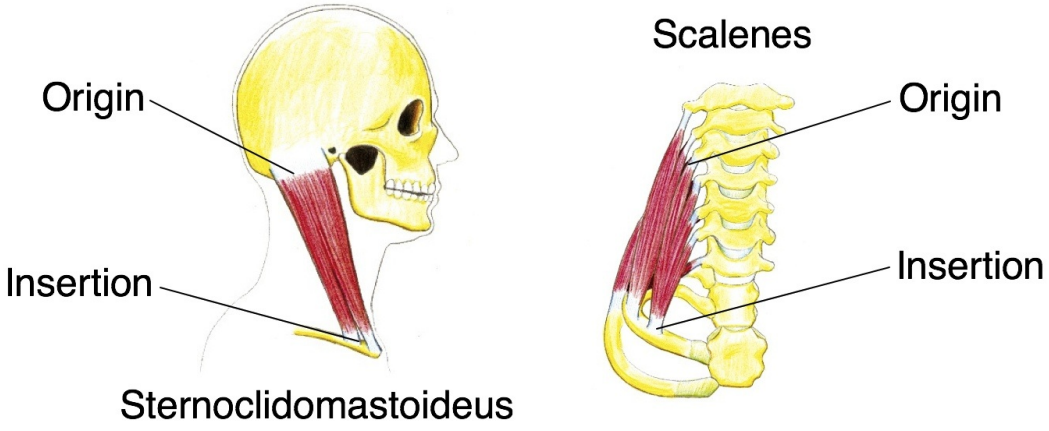
Sternocleidomastoid and Scalenes

m. sternocleidomastoideus, m. scalenius anterior and medius

STERNOCLEIDOMASTOID AND SCALENES | EXERCISE



ORIGIN: Sternocleidomastoid - Mastoid process of the cranium and anterior third of the superior nuchal line. Scalenes - Anterior tubercles of transverse processes of C3-6. Posterior tubercles of transverse processes of C2-7.

INSERTION: Sternocleidomastoid - Anterior superior aspect of the manubrium (top of the sternum) and medial third of the clavicle. Scalenes - Scalene tubercle on superior aspect of first rib. Superior aspect of neck of first rib.

PRIMARY FUNCTION: Side-bends the cervical spine to the same side and lifts the first rib.

SECONDARY FUNCTION: Flexes the neck forward and slightly rotates it towards the opposite side.

Sternocleidomastoid and Scalenes - Exercise

m. sternocleidomastoideus, m. scalenius anterior and medius

STRETCHING: Extend the head and neck and side-bend to the opposite side while simultaneously lowering the first rib.

STARTING POSITION: Bend the head slightly backwards, resting it against a wall. Rotate the head towards the stretch side and side-bend it to the opposite side. The shoulders should not touch the wall. The opposite side index finger should be placed just under the collarbone.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Exhale and reach downwards with the shoulder, assisting with the index finger/hand as shown. The stretch should be felt above where the hand is placed.

COMMON ERRORS: All components of the motion (extension of the head, rotation towards the stretch side and side-bending to the opposite side) must be involved for the stretch to be effective.

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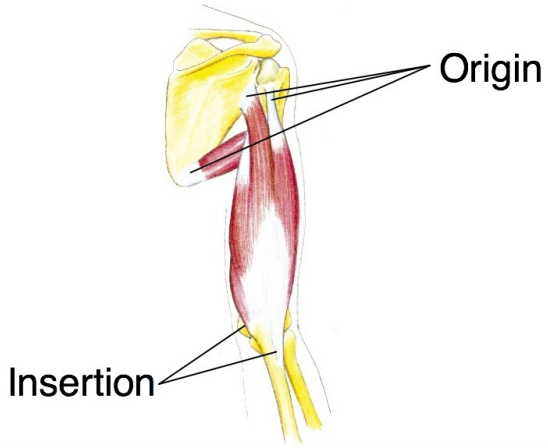
Triceps and Teres Major

m. triceps and m. teres major

TRICEPS AND TERES MAJOR | EXERCISE



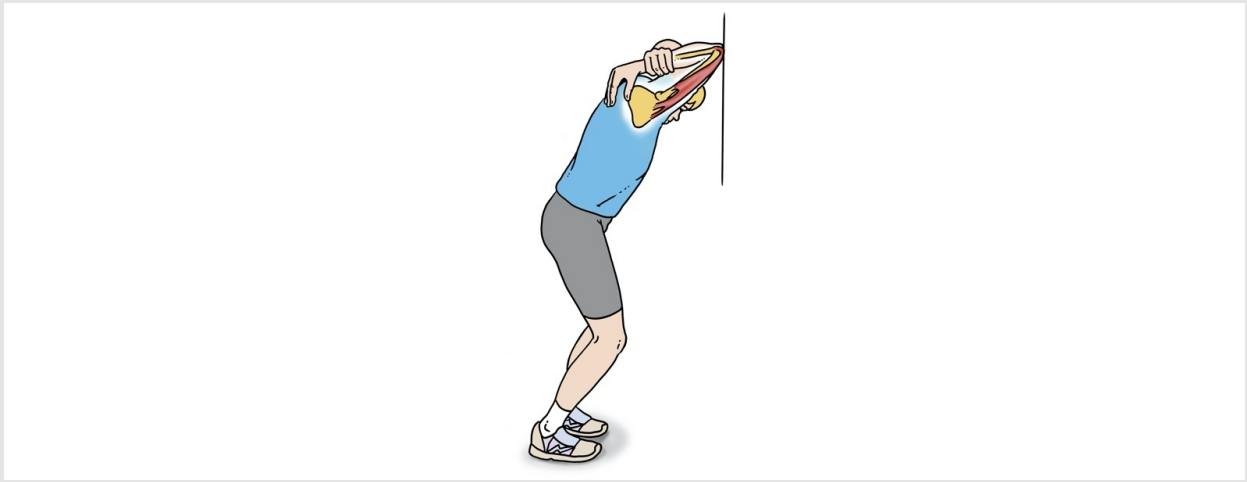
ORIGIN: Triceps - one head originates from the shoulder blade and the other two from the posterior part of the humerus. Teres major - Inferior, posterior part of the shoulder blade.

INSERTION: Triceps - Olecranon process. Teres major - Medial lip of bi-cipital groove of the humerus.

PRIMARY FUNCTION: Triceps - Extends the elbow and the shoulder. Teres Major - Adducts (pulls inward) and internally rotates the arm.

Triceps and Teres Major - Exercise

m. triceps and m. teres major



STRETCHING: Bend the elbow and flex the shoulder upwards by bending the knees and hips while the elbow is supported against a wall.

STARTING POSITION: Flex elbow and lift upper arm as far as possible, keeping it close to the head. Stand and bend forward slightly, outer part of elbow against wall. Grasp lower arm with opposite hand as illustrated.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Bend the knees slightly, lowering the body and increasing flexion in the shoulder. Flex the elbow as much as possible. Tension should be felt along back side of upper arm and towards shoulder blade.

COMMON ERRORS: Not putting support on outer part of elbow, which decreases arm flexion. Failing to flex the knees, which decreases shoulder flexion.

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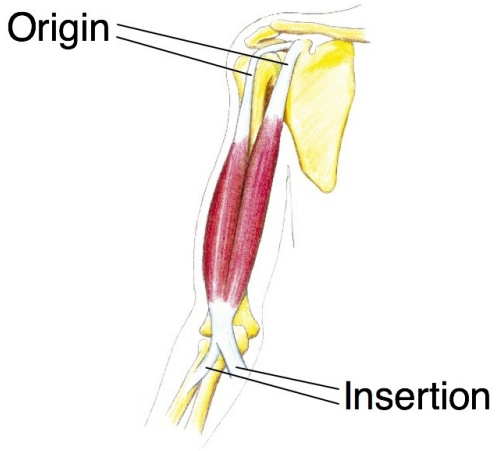
Biceps

m. biceps brachii

BICEPS | EXERCISE



ORIGIN: Long head - supraglenoid tubercle of scapula. Short head - Coracoid process of scapula.

INSERTION: Posterior border of bicipital tuberosity of radius (over bursa) and bicipital aponeurosis to deep fasciae and subcutaneous ulna.

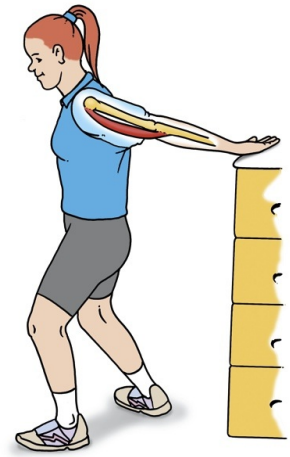
PRIMARY FUNCTION: Flexes and supinates the elbow.

SECONDARY FUNCTION: Long head - Abducts the shoulder. Short head - Flexes the shoulder.

Biceps - Exercise

m. biceps brachii

BICEPS | **EXERCISE**



STRETCHING: With the hand supported on an object behind, arm maximally internally rotated and shoulder pointing forward, stretch the arm even more into extension by bending the knees and hips.

STARTING POSITION: Start with the arm maximally internally rotated,lifted rearward and up, held close to the body as shown. The hand should be resting on a table at waist height.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Stretch the arm farther back and up by bending at the knees and hips. The shoulders should be facing directly forward. The stretch should be felt on the front of the shoulder and upper arm.

COMMON ERRORS: Arm pointed to the side instead of rearward. Insufficient internal rotation of the arm.

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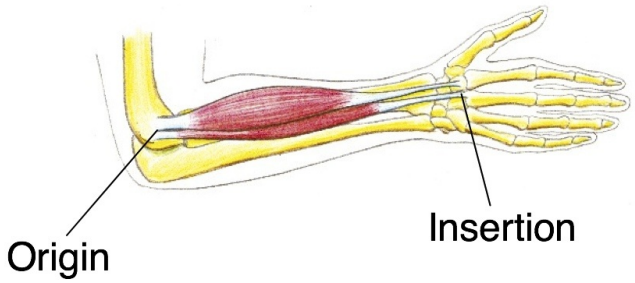
Wrist Extensors

m. extensor carpi radialis brevis and longus

WRIST EXTENSORS | EXERCISE 1(2) | EXERCISE 2(2)



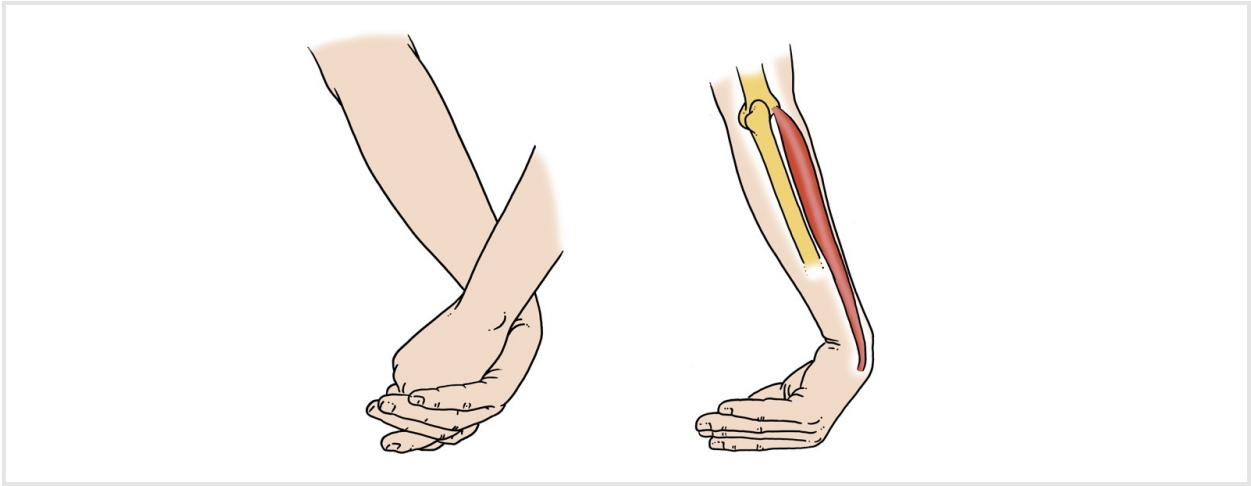
ORIGIN: Lateral epicondyle of the humerus.

INSERTION: Base of the 2nd and 3rd metacarpals.

PRIMARY FUNCTION: Extends and abducts the hand at the wrist.

Wrist Extensors - Exercise 1(2)

m. extensor carpi radialis brevis and longus



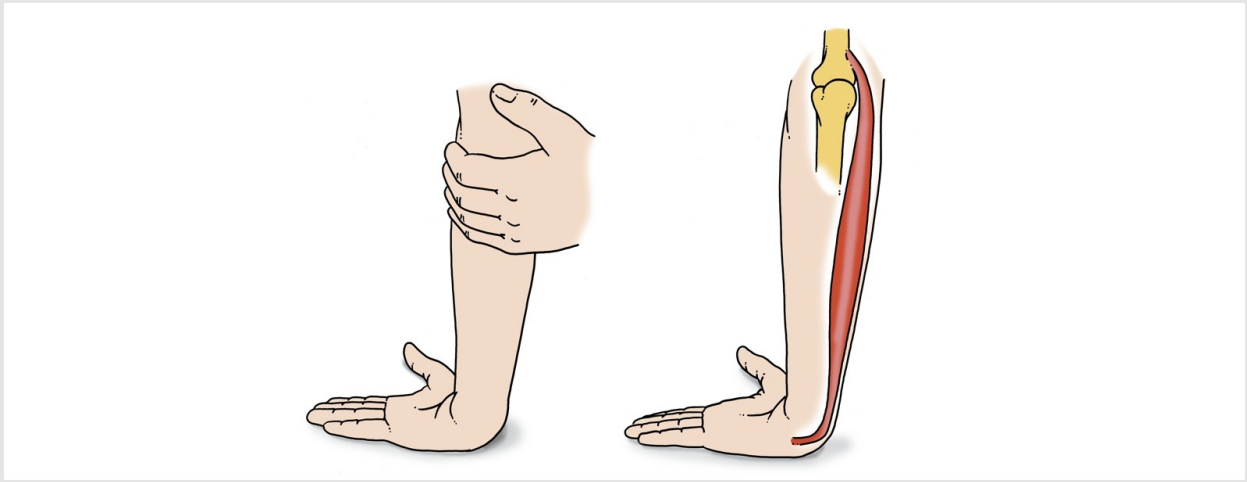
STARTING POSITION: Start with the elbow and wrist of the arm to be stretched slightly flexed. Grasp with the fingers of the other hand from the palm side at knuckle-level.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Hold the elbow slightly bent while bending the palm as far as possible inwards and towards side of the little finger. At that point, extend the elbow maximally. The stretch should be felt on the outer side of the elbow.

COMMON ERRORS: Not using both wrist motions. Insufficient extension of the elbow.

Wrist Extensors - Exercise 2(2)

m. extensor carpi radialis brevis and longus



STARTING POSITION: Start with a slightly flexed elbow and full internal rotation of the arm (support the index finger knuckle on a table as shown). You should be able to see your palm and your fingers should point away from you. Grasp just below the elbow with the other hand.

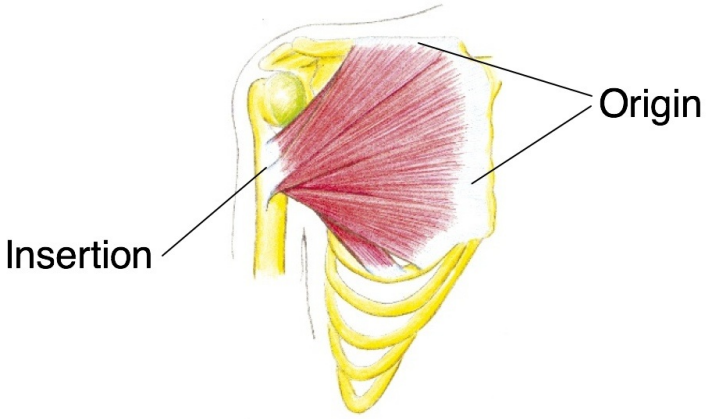
STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Take up the slack in the wrist by simultaneously leaning the body forward over the hand and extending the elbow. Pull the forearm toward the body using the other hand. The knuckle of the index finger should remain in place on the table. The stretch should be felt on the outer side of the elbow.

COMMON ERRORS: Not taking up the slack from the palm to the forearm and/or side-bending toward the little finger. Insufficient extension of the elbow.

***

Chest muscles (Pectoralis)

m. pectoralis major



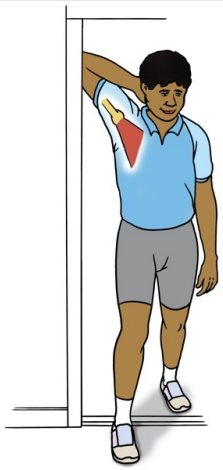
ORIGIN: Lower aspect of the central portion of the clavicle, lateral border of the Sternum and costal cartilages of the 2nd through 6th ribs.

INSERTION: Lateral lip of bicipital groove of the humerus and anterior lip of deltoid tuberosity.

FUNCTION: With stabilized shoulder blade - flexes upper arm forwards and towards the body. Internal rotation of the shoulder. Anterior/inferior glide of the scapula.

Chest muscles (Pectoralis) - Exercise

m. pectoralis major



STRETCHING: Lift the arm up, out and backwards while externally rotating the shoulder.

STARTING POSITION: Stand with the stretch-side leg forward and with a doorway, tree or similar object at your side. Place your elbow as shown, at approximately a 45 degree angle from the horizontal plane.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Bend the stretch-side knee and lean your body forwards. Turn your head and body away from the stretch side. The stretch should be felt from the shoulder forward to the sternum (breastbone).

COMMON ERRORS: Placing the elbow too low affects only a limited portion of the muscle. Placing the elbow at different levels stretches different parts of the muscle, but the recommended placement stretches the entire muscle.

Note! This stretch is contra-indicated if your shoulders have a tendency to ”pop out of joint”.

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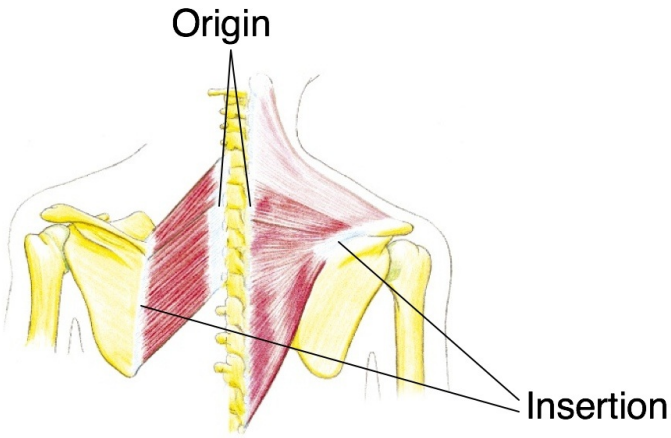
Lower Trapezius and Rhomboids

m. trapezius transversa and ascendens, m. rhomboideus major and minor

LOWER TRAPEZIUS AND RHOMBOIDS | EXERCISE



ORIGIN: Spinous processes of T1-T10.

INSERTION: Medial border and spine of the scapula.

PRIMARY FUNCTION: Medial glide of the scapula.

SECONDARY FUNCTION: The lower trapezius can pull the scapula downwards.

Lower Trapezius and Rhomboids - Exercise

m. trapezius transversa and ascendens, m. rhomboideus major and minor

STRETCHING: Flex the head and upper back forwards while simultaneously reaching the arms in front of you.

STARTING POSITION: Sit with arms reaching forwards as shown.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Flex the head and chest down and forwards while reaching forwards with the arms. The more the arms are lifted; the lower down along the spine the stretch is felt. The stretch should be felt between the shoulder blades and the spine.

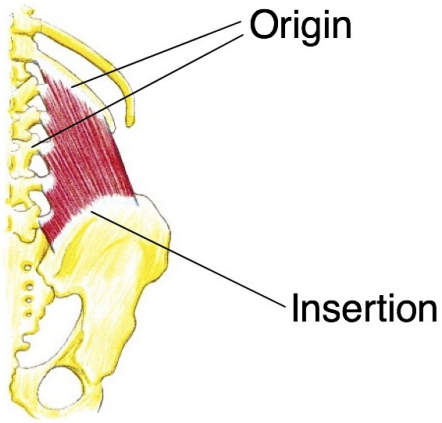
COMMON ERRORS: Thoracic spine not sufficiently rounded.

***

Quadratus Lumborum

m. quadratus lumborum

QUADRATUS LUMBORUM | EXERCISE



ORIGIN: 12th rib and transverse processes of L1-L4.

INSERTION: Iliac crest and ilio-lumbar ligament.

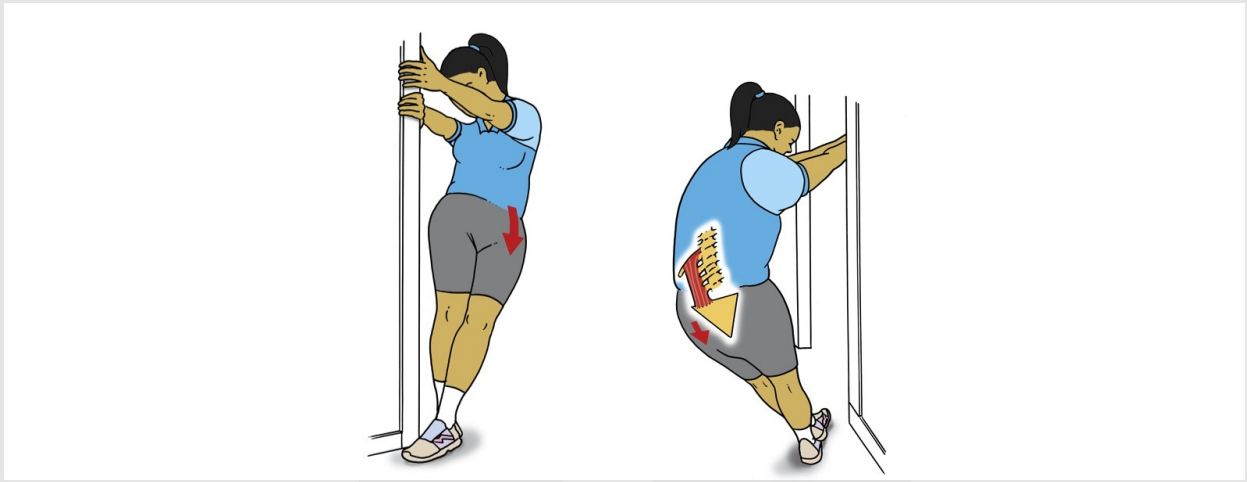
PRIMARY FUNCTION: Side-bends the spine to the same side, depression of the 12th rib.

SECONDARY FUNCTION: Extends the spine from a forward flexed position.

Quadratus Lumborum - Exercise

m. quadratus lumborum

QUADRATUS LUMBORUM | **EXERCISE**



STRETCHING: With a rounded lumbar spine, lower the pelvis on the same side and side-bend the upper body to the opposite side.

STARTING POSITION: Grab a doorjamb with the stretch-side hand at head height, and the other hand just underneath. Support comes from the opposite side leg with the stretch-side leg crossed as shown.

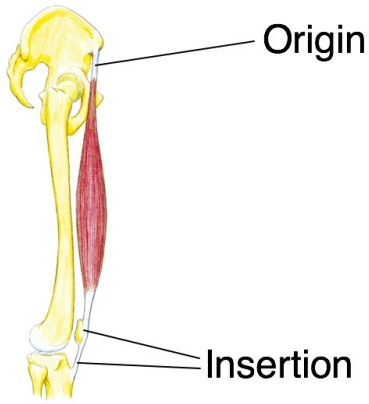
STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Hang out away from the doorjamb. Round the lower spine by sucking in the stomach and pinching with the buttocks while simultaneously stretching downwards with the stretch-side hip, leg and foot. The stretch should be felt on the stretch side of the lumbar spine.

COMMON ERRORS: Lumbar spine not rounded. Stretch-side hip not lowered.

***

Front of the thigh

m. rectus femoris



ORIGIN: Anterior superior Iliac Spine (Forwardmost point of the hip-bone).

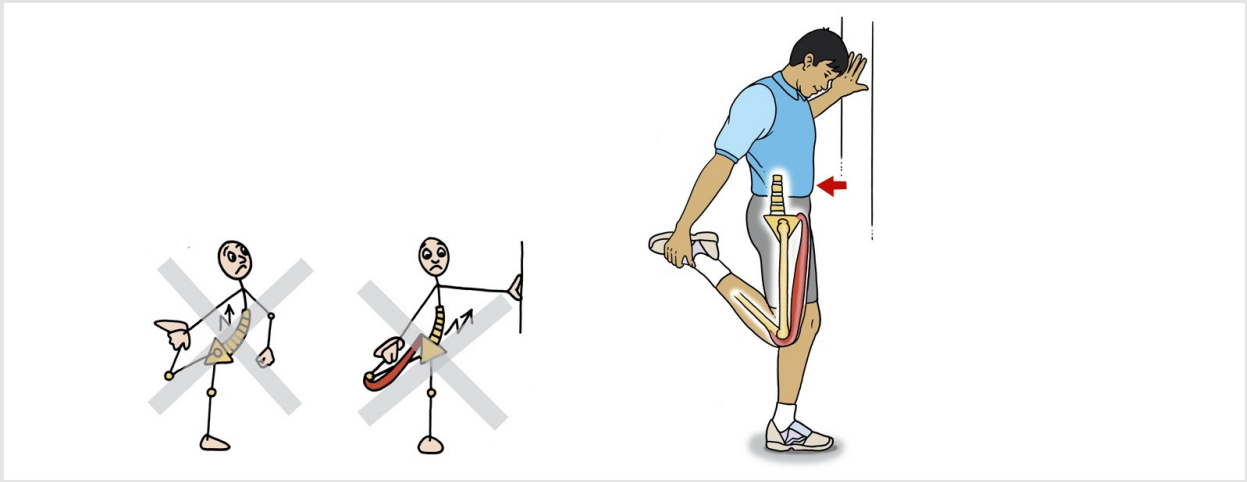
INSERTION: Tibial tuberosity via the quadriceps tendon, patella and patellar tendon.

PRIMARY FUNCTION: Extends the knee.

SECONDARY FUNCTION: Flexes the hip.

Front of the thigh - Exercise 1(4)

m. rectus femoris



STRETCHING: Flex (bend) the knee while maintaining hip extension without inducing forward tilting of the pelvis.

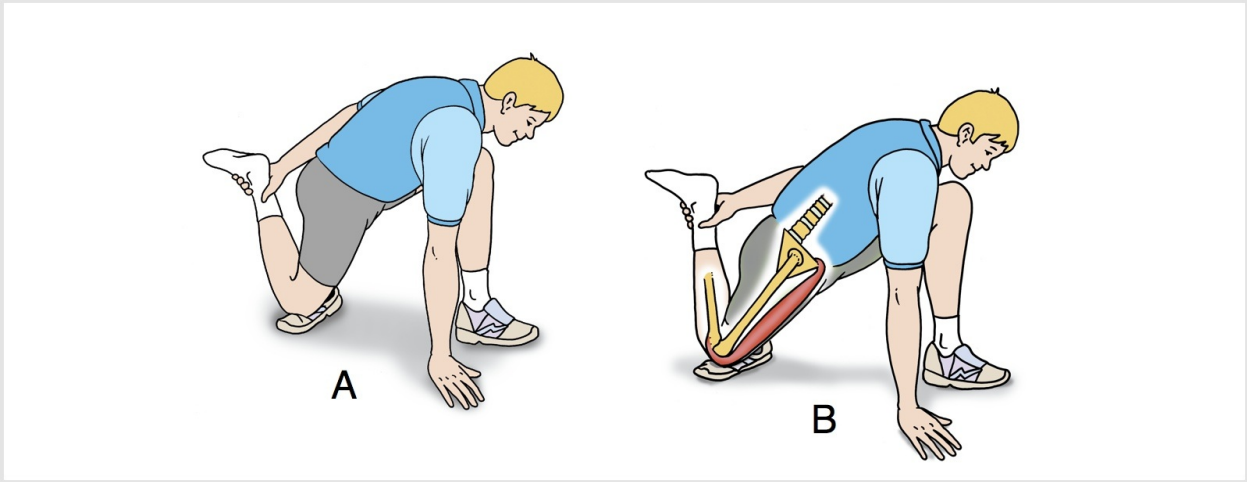
STARTING POSITION: Hand around the lower part of the lower leg, thigh parallel with the opposite leg. Slight flexion at the hip and knee of the supporting leg. Hold the tummy in to prevent arching of the lumbar spine.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Maintain a neutral position of the lumbar spine by tensing the buttocks and abdominal muscles. Carefully pull the heel towards the buttock. The thigh should also move backwards due to extension of the hip. The stretch should be felt on the front of the thigh.

COMMON ERRORS: Arching of the lumbar spine, thigh winging out to the side. Knee too far forwards due to hip flexion.

Front of the thigh - Exercise 2(4)

m. rectus femoris



STRETCHING: Flex (bend) the knee while maintaining hip extension without inducing forward tilting of the pelvis.

STARTING POSITION: Kneeling. Leg being stretched has flexed knee and athletic shoe underneath for cushioning. Hip on side being stretched remains flexed. Hand on same side is flat on floor. Other hand grasps lower leg on ”stretching” side (A).

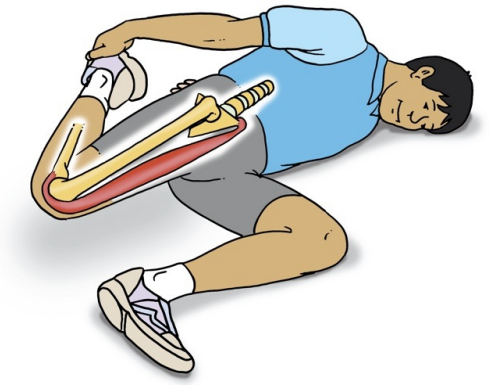
STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Straighten hip by pressing it down towards floor. Increase knee flexion, if possible (B). Tension should be felt along front of thigh.

COMMON ERRORS: If starting the exercise with a straight hip, gripping the lower leg becomes impossible! Not positioning the opposite foot far enough forward. Failing to press hip towards floor during stretching.

Difficult exercise if muscle is very contracted. Arm on stretched side may also be used to grasp lower leg.

Front of the thigh - Exercise 3(4)

m. rectus femoris



STRETCHING: Flex (bend) the knee while maintaining hip extension without inducing forward tilting of the pelvis.

STARTING POSITION: Lie down on your side with both knees pulled up towards the chest. Grasp around the shinbone of the upper leg, and extend it backwards until you feel the stretch.

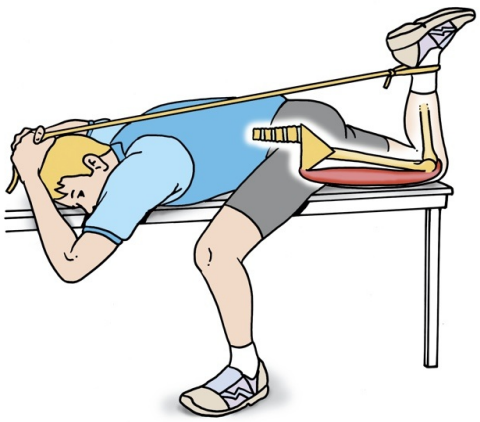
STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Hold the lower leg still while stretching the upper leg backwards (extending the hip). Bend the knee by pulling the heel towards the buttock while keeping the upper leg horizontal. The stretch should be felt on the front of the thigh.

COMMON ERRORS: Insufficient bend at the knee, lifting/twisting the upper leg.

For a more stable starting position, support the foot of the floor leg against an immovable object, e.g. a wall.

Front of the thigh - Exercise 4(4)

m. rectus femoris



STRETCHING: Flex (bend) the knee while maintaining hip extension without inducing forward tilting of the pelvis.

STARTING POSITION: Lying face down on a bench or table. Position the ”floor foot” as far forward as possible to reduce sway-back. Place a rope or strap around the lower leg and hold as illustrated.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Bend the knee as much as possible by pulling on rope. Tension should be felt along front of thigh.

COMMON ERRORS: ”Floor foot” not far enough forward - can cause low back pain! Thigh not in alignment with the body. Lifting hip from table surface.

This exercise is well-suited for extremly contracted muscles.

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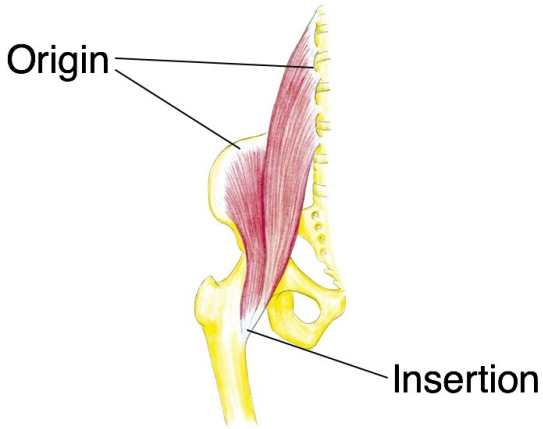
Iliopsoas

m. iliopsoas



ORIGIN: Lateral surface of the vertibral bodies of T12, L1-L5 as well as the inner surface of the hip-bone.

INSERTION: Upper part of the inside of the femur (lesser trochanter).

PRIMARY FUNCTION: Flexes the hip.

SECONDARY FUNCTION: Externally rotates the hip. Forward flexes and rotates the lumbar spine to the same side.

Iliopsoas - Exercise 1(4)

m. iliopsoas

STRETCHING: Extend the hip without arching the lumbar spine.

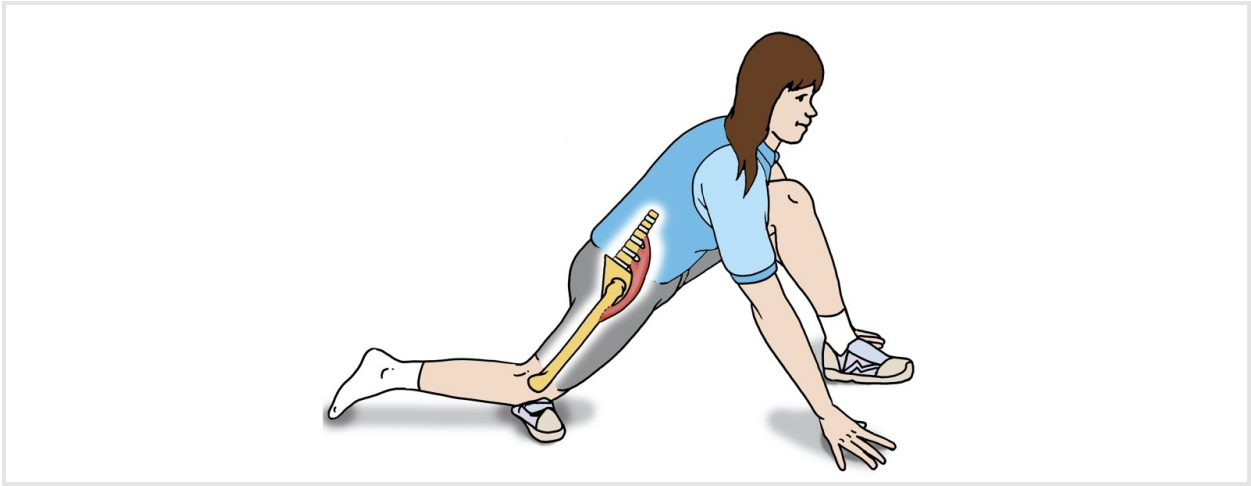
STARTING POSITION: Kneeling on a gym shoe as shown, tighten the abdominal muscles to maintain a neutral spine position.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: While maintaining a neutral spine position, move the hip forward. This will stretch the thigh rearward and extend the hip. For even greater effect lean the torso away from the stretch side. The stretch should be felt in the anterior groin muscles.

COMMON ERRORS: The movement occurs in the lumbar spine due to arching of the back rather than extension of the hip. This exercise requires very good awareness and control of body position.

Iliopsoas - Exercise 2(4)

m. iliopsoas



STRETCHING: Extend the hip without arching the lumbar spine.

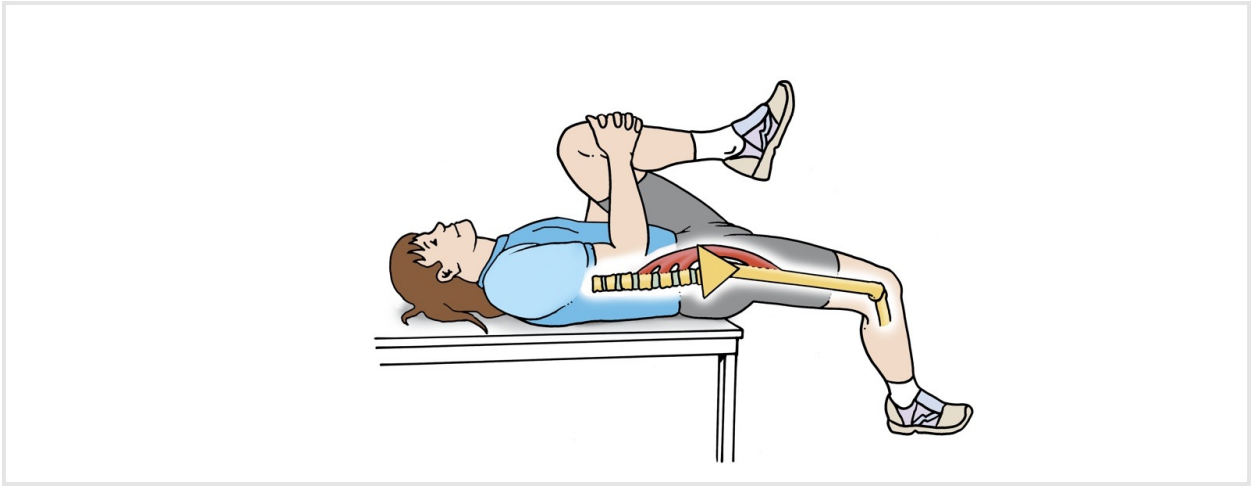
STARTING POSITION: Place the stretch-side knee on the floor on a gym shoe (or other form of padding), the opposite foot WELL forward on the floor and both hands on the floor for support.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Look up while pressing the hip forwards. The stretch should be felt in the anterior groin muscles.

COMMON ERRORS: The opposite foot is not far enough in front of the knee. The hip is not pushed far enough forwards.

Iliopsoas - Exercise 3(4)

m. iliopsoas



STRETCHING: Extend the hip without arching the lumbar spine.

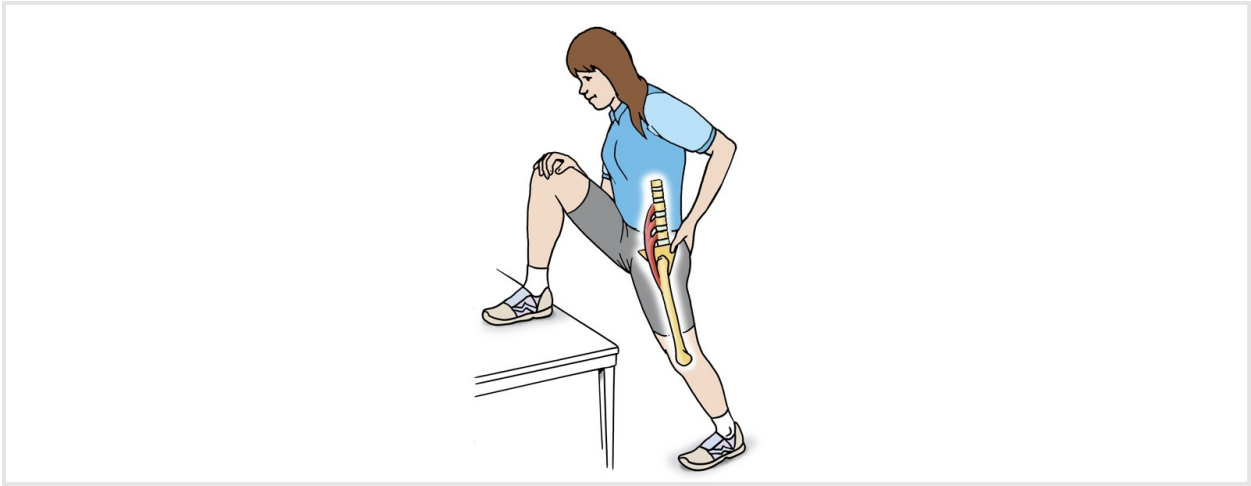
STARTING POSITION: Lying on back on table or bench, leg to be stretched hanging, as illustrated. Opposite leg flexed towards chest and held with both hands.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Holding opposite leg firmly against chest, press ”stretching” leg downwards. Tension should be felt at top/front of thigh.

COMMON ERRORS: Too much flexion in knee of ”stretching” leg - will stretch lower part of thigh instead. Not holding opposite knee firmly against chest.

Iliopsoas - Exercise 4(4)

m. iliopsoas



STRETCHING: Extend the hip without arching the lumbar spine.

STARTING POSITION: Opposite-side foot placed on a table, barstool or other stable, high object. The stretch-side foot is placed far behind with the toes pointing somewhat inward.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Bring the stretch-side hip forward as far as possible. The stretch should be felt at the front of the hip and groin.

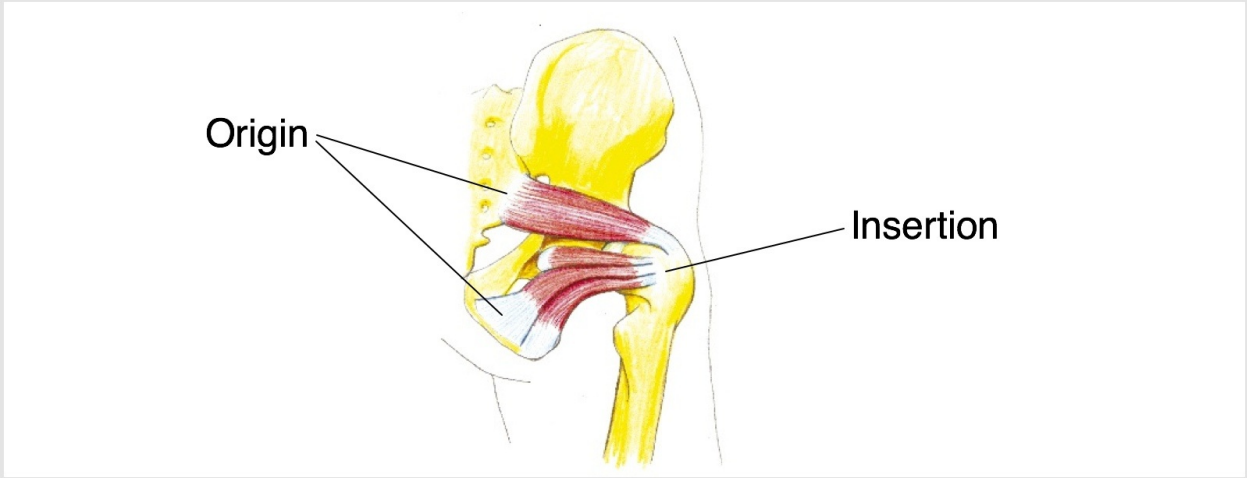
COMMON ERRORS: Failure to bring the hip far enough forward.

***

Small external rotators of the hip

m. quadriceps coxae: m. piriformis, m. obturatorius internus, m. gemellus superior and inferior

SMALL EXTERNAL ROTATORS OF THE HIP | EXERCISE 1(3) | EXERCISE 2(3) | EXERCISE 3(3)



ORIGIN: Inner surfaces of the sacrum, ischium and pubis.

INSERTION: Greater trochanter of the femur.

PRIMARY FUNCTION: Externally rotates the hip (at less than 60 degrees of hip flexion for Piriformis and under 100 degrees for the others). At hip flexion over 100 degrees these muscles become internal rotators.

SECONDARY FUNCTION: Abducts (outward motion) and extends the hip.

Small external rotators of the hip - Exercise 1(3)

m. quadriceps coxae: m. piriformis, m. obturatorius internus, m. gemellus superior and inferior

STRETCHING: Maximally stretch by combining hip flexion/external rotation/adduction.

STARTING POSITION: Sitting, back straight. Leg to be stretched crossed and held as illustrated.

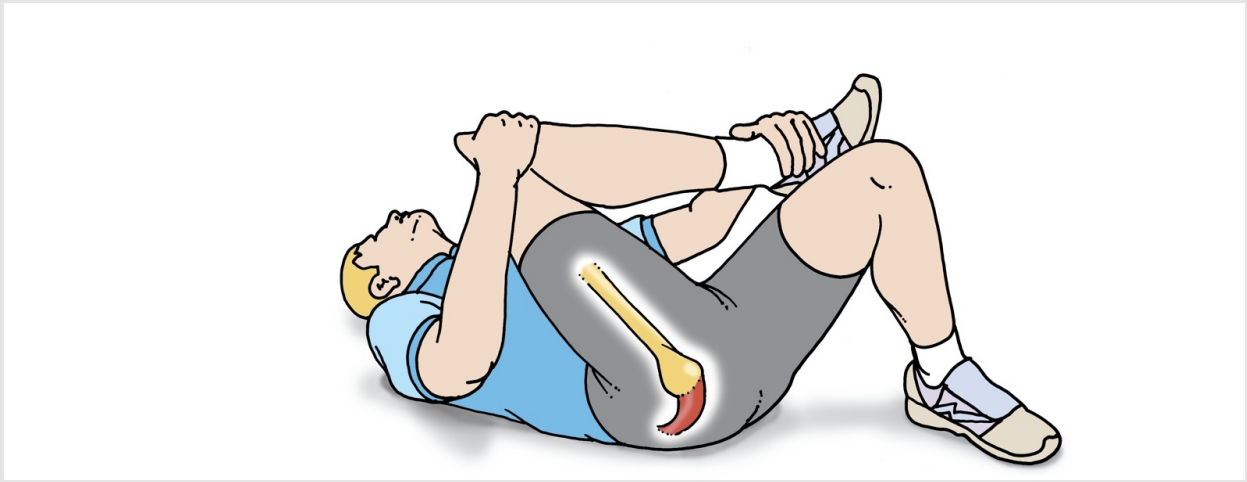
STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Pull knee towards opposite shoulder without lifting buttocks. Rotating head to ”stretching” side will optimize effect. Tension should be felt on back side of buttock.

COMMON ERRORS: Pressing the knee out to the side, restraining the stretch with the hands.

Small external rotators of the hip - Exercise 2(3)

m. quadriceps coxae: m. piriformis, m. obturatorius internus, m. gemellus superior and inferior

SMALL EXTERNAL ROTATORS OF THE HIP | EXERCISE 1(3) | **EXERCISE 2(3)** | EXERCISE 3(3)



STRETCHING: Maximally stretch by combining hip flexion/external rotation/adduction.

STARTING POSITION: Lying on back, leg to be stretched crossed and held as illustrated. Opposite knee is flexed and pointed inwards, foot placed slightly to the side.

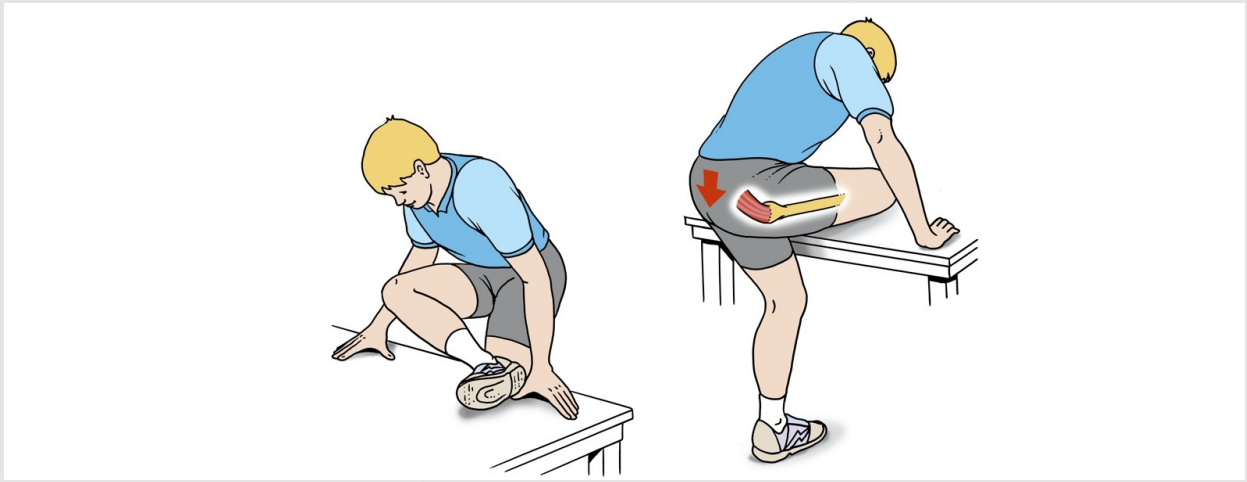
STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Pull foot towards you while bringing knee towards opposite shoulder. Buttocks should not be lifted. Tension should be felt on back side of buttock.

COMMON ERRORS: Supporting foot not placed far enough out from body. Lifting buttocks from supporting surface.

Small external rotators of the hip - Exercise 3(3)

m. quadriceps coxae: m. piriformis, m. obturatorius internus, m. gemellus superior and inferior

SMALL EXTERNAL ROTATORS OF THE HIP | EXERCISE 1(3) | EXERCISE 2(3) | **EXERCISE 3(3)**



STRETCHING: Maximally stretch by combining hip flexion/external rotation/adduction.

STARTING POSITION: Stand with one leg on a bench (or similar) as shown.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Lean the upper body forward and bend the knee of the supporting leg. At the same time, twist the upper body as far as possible towards the stretch side so that the chin is to the outside of the thigh.

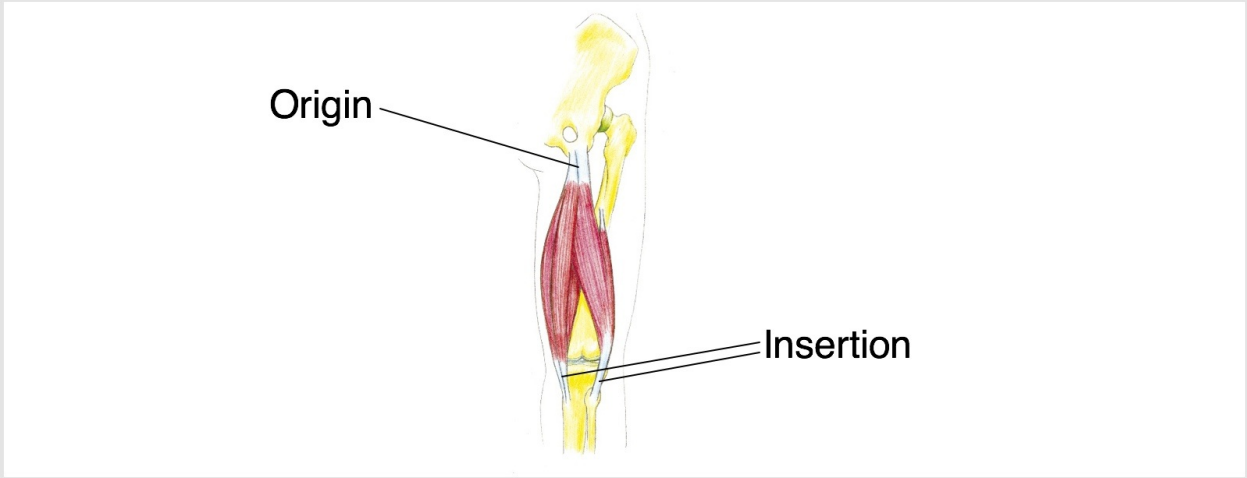
COMMON ERRORS: Upper body leans forward but with the chin over the lower leg/foot. No bend in the knee of the supporting leg.

***

Hamstrings

m. biceps femoris, m. semitendinosus, m. semimembranosus

HAMSTRINGS | EXERCISE 1(5) | EXERCISE 2(5) | EXERCISE 3(5) | EXERCISE 4(5) | EXERCISE 5(5)



ORIGIN: Ischial tuberosity (sit bone).

INSERTION: Posterior tibia and fibula immediately below the knee joint.

PRIMARY FUNCTION: FLEXES THE KNEE AND EXTENDS THE HIP.

SECONDARY FUNCTION: Semitendinosus and Semimembranosus internally rotate the lower leg, while Biceps Femoris externally rotates the lower leg.

Hamstrings - Exercise 1(5)

m. biceps femoris, m. semitendinosus, m. semimembranosus

STRETCHING: Flex the hip joint while extending the knee joint.

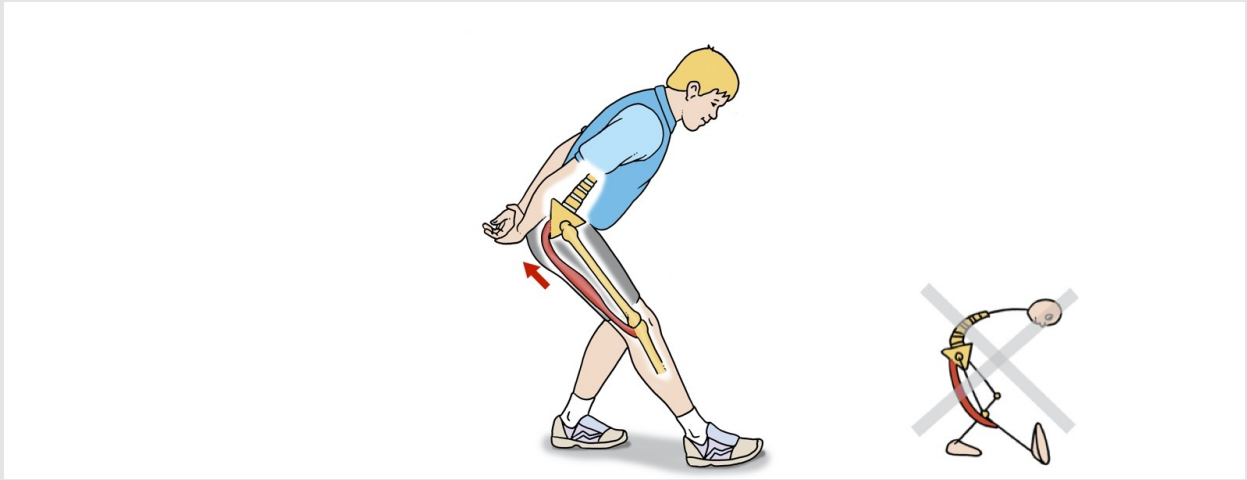
STARTING POSITION: Kneeling. Nose pointing out over the extended leg that will be stretched, knee flexed slightly, back held straight.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Bend forwards at the hip, keeping back straight. Movement occurs in hip joint, pelvis tips forward. Tension should be felt on back side of the thigh.

COMMON ERRORS: Bending the back instead of pressing forwards at the hip with back straight. Flexing the ankle (Stretches the calf muscle). Hyper-extending the knee.

Hamstrings - Exercise 2(5)

m. biceps femoris, m. semitendinosus, m. semimembranosus



STRETCHING: Flex the hip joint while extending the knee joint.

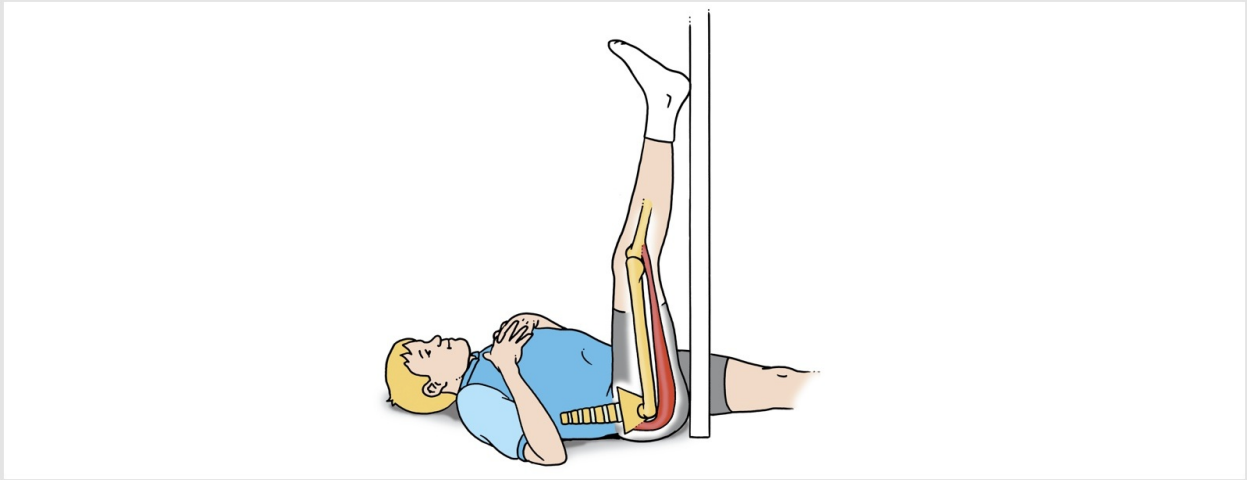
STARTING POSITION: Standing. Nose pointing out over the extended leg that will be stretched, knee flexed slightly, back held straight.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Bend forwards at the hip, keeping back straight. Movement occurs in hip joint, pelvis tips forward.Tension should be felt on back side of the thigh.

COMMON ERRORS: Bending the back instead of pressing forwards at the hip with back straight. Flexing the ankle (Stretches the calf muscle). Hyper-extending the knee.

Hamstrings - Exercise 3(5)

m. biceps femoris, m. semitendinosus, m. semimembranosus



STRETCHING: Flex the hip joint while extending the knee joint.

STARTING POSITION: Lying on floor in a doorway, the stretch-side leg extended against the door frame. Buttock touching door frame.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Strive upwards as much as possible with heel. Other leg remains on floor with knee straight. Tension should be felt on back side of the thigh.

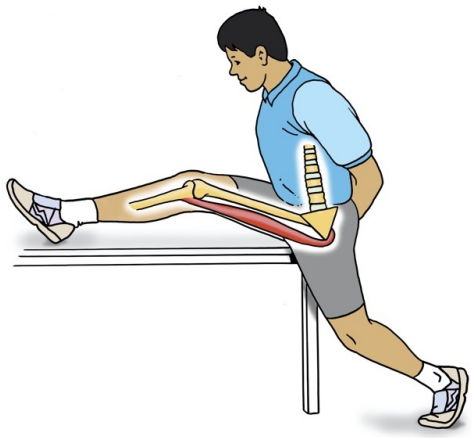
COMMON ERRORS: Buttock not up against door frame, knee on floor is flexed. Hip on side being stretched is lifted from the floor.

This exercise is well-suited for extremely contracted muscles.

Hamstrings - Exercise 4(5)

m. biceps femoris, m. semitendinosus, m. semimembranosus

HAMSTRINGS | EXERCISE 1(5) | EXERCISE 2(5) | EXERCISE 3(5) | **EXERCISE 4(5)** | EXERCISE 5(5)



STRETCHING: Flex the hip joint while extending the knee joint.

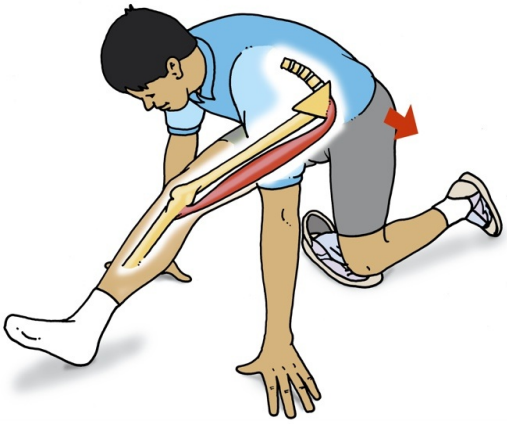
STARTING POSITION: Sitting on table as illustrated, knee slightly flexed, heel on table surface. Other foot on floor, as far back as possible. Back straight.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Bend forwards at the hip, keeping the back straight. Movement occurs in hip joint, pelvis tips forward. Tension should be felt on back side of the thigh.

COMMON ERRORS: ”Standing” leg not far enough back. Back not straight.

Hamstrings - Exercise 5(5)

m. biceps femoris, m. semitendinosus, m. semimembranosus



STRETCHING: Flex the hip joint while extending the knee joint.

STARTING POSITION: Kneeling, supporting with the hands, with the stretch- side leg forward as shown.

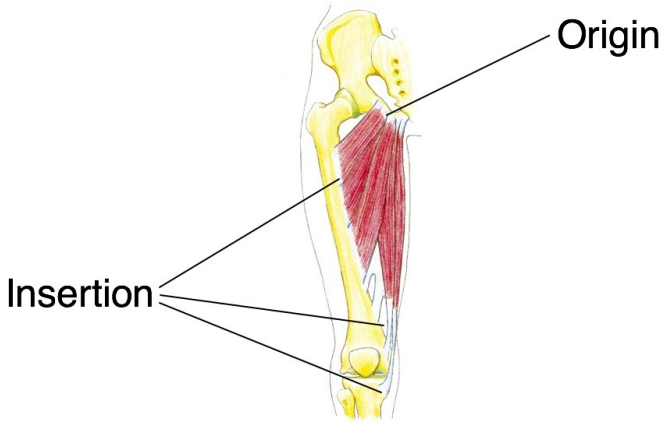
STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Straighten out the stretch-side leg by bringing the hips rearward while at the same time bending forward at the waist. The stretch should be felt on back side of the thigh.

COMMON ERRORS: This exercise can be difficult for those with impaired hamstring flexibility.

***

Hip adductors

m. pectinus, m. adductor longus, m. adductor brevis, m. adductor magnus, m. obturatorius externus etc.



ORIGIN: Lower, inner part of the pelvis (pubis bone).

INSERTION: Inner aspect of the femur, from the upper part and down to the knee, as well as the upper medial aspect of the tibia.

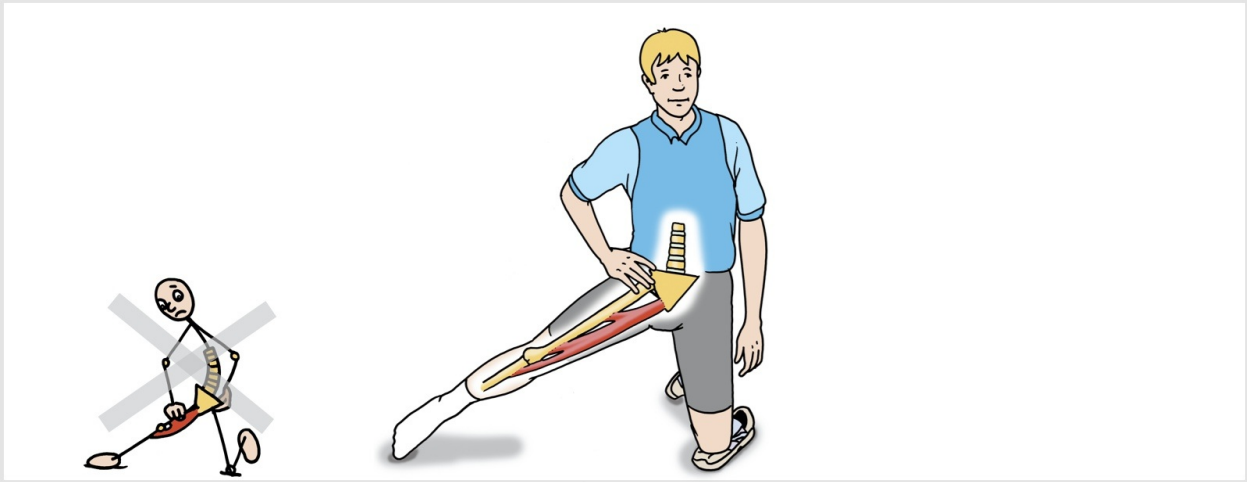
PRIMARY FUNCTION: Adducts the femur.

SECONDARY FUNCTION: Many of the adductors also cause external rotation of the femur. Some contribute to hip flexion, extension and internal rotation. Those that have insertions on the Tibia flex and internally rotate the lower leg.

Hip adductors - Exercise 1(3)

m. pectinus, m. adductor longus, m. adductor brevis, m. adductor magnus, m. obturatorius externus etc.

HIP ADDUCTORS | **EXERCISE 1(3)** | EXERCISE 2(3) | EXERCISE 3(3)



STRETCHING: Abduct the hip (move the thigh outwards) with the foot pointing straight to the front. Different parts of the hip's internal rotators can be stretched depending upon the degree of internal or external rotation of the leg as well as flexion and extension of the hip. The knee must be straight in order to stretch muscles that insert below the knee.

STARTING POSITION: Kneeling, leg to be stretched extended out to the side, foot pointing straight forward. Place an athletic shoe under the opposite knee.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Push the hip downwards with hand. Back straight, move-ment should be in hip joint only. Tension should be felt on inner side of thigh.

COMMON ERRORS: Bending sideways at the waist instead of allowing move-ment to occur in the hip joint. Hand placed on thigh instead of on hip. Different muscles will be stretched depending on the degree of flexion in the hip and the position of the foot (pointing inwards or outwards).

Hip adductors - Exercise 2(3)

m. pectinus, m. adductor longus, m. adductor brevis, m. adductor magnus, m. obturatorius externus etc.

HIP ADDUCTORS | EXERCISE 1(3) | **EXERCISE 2(3)** | EXERCISE 3(3)

STRETCHING: Abduct the hip (move the thigh outwards) with the foot pointing straight to the front. Different parts of the hip's internal rotators can be stretched depending upon the degree of internal or external rotation of the leg as well as flexion and extension of the hip. The knee must be straight in order to stretch muscles that insert below the knee.

STARTING POSITION: Standing with the stretch-side leg out to the side and slightly back as in the diagramme.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: With your hand, push the hip towards the opposite side and slightly forward. Back straight, movement should be in hip joint only. Tension should be felt on inner side of thigh.

COMMON ERRORS: Bending sideways at the waist instead of allowing movement to occur in the hip joint. Hand placed on thigh instead of on hip.

Different muscles will be stretched depending on the degree of flexion in the hip and the position of the foot (pointing inwards or outwards).

Hip adductors - Exercise 3(3)

m. pectinus, m. adductor longus, m. adductor brevis, m. adductor magnus, m. obturatorius externus etc.

STRETCHING: Abduct the hip (move the thigh outwards) with the foot pointing straight to the front. Different parts of the hip's internal rotators can be stretched depending upon the degree of internal or external rotation of the leg as well as flexion and extension of the hip. The knee must be straight in order to stretch muscles that insert below the knee.

STARTING POSITION: Sitting Indian-style with soles of feet together. Back straight, elbows against knees. Hands are held around ankles.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Keeping back straight, press knees outwards with the elbows. Tension should be felt on inner side of thighs.

COMMON ERRORS: Failing to keep back straight.

Note! This stretch does not influence m. gracilis which inserts into the lower leg.

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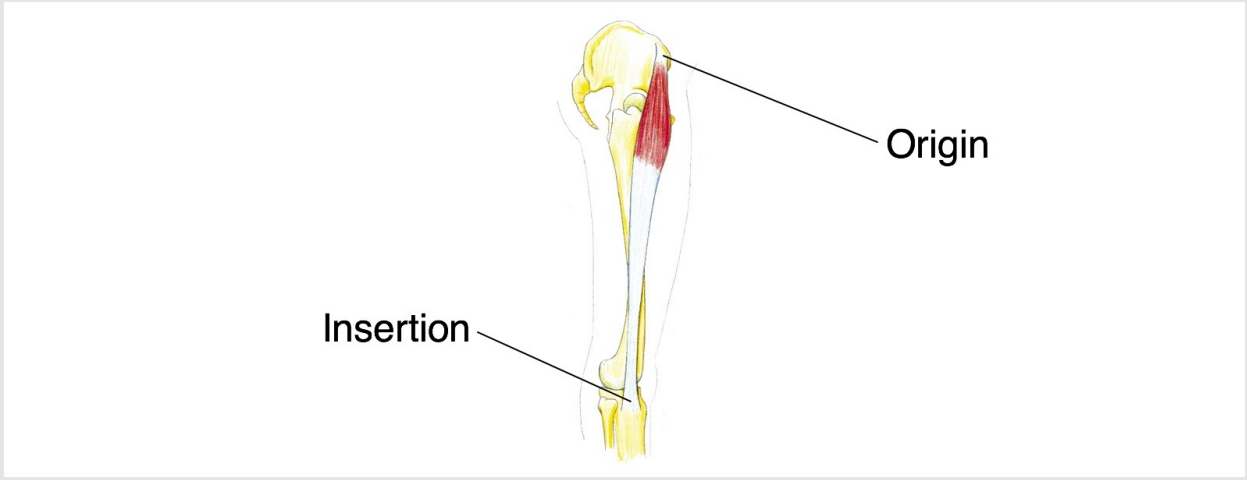
Tensor fasciae latae

m. tensor fasciae latae

TENSOR FASCIAE LATAE | EXERCISE 1(2) | EXERCISE 2(2)



ORIGIN: Outer part of the anterior superior iliac spine.

INSERTION: Outer aspect of the anterior tibia immediately under the knee joint.

PRIMARY FUNCTION: Abducts the femur, flexes and internally rotates the hip and extends the knee.

Tensor fasciae latae - Exercise 1(2)

m. tensor fasciae latae

STRETCHING: Extend the hip, with the stretched leg brought across the midline of the body behind the supporting leg and the hip internally rotated. Best done with slightly bent knee.

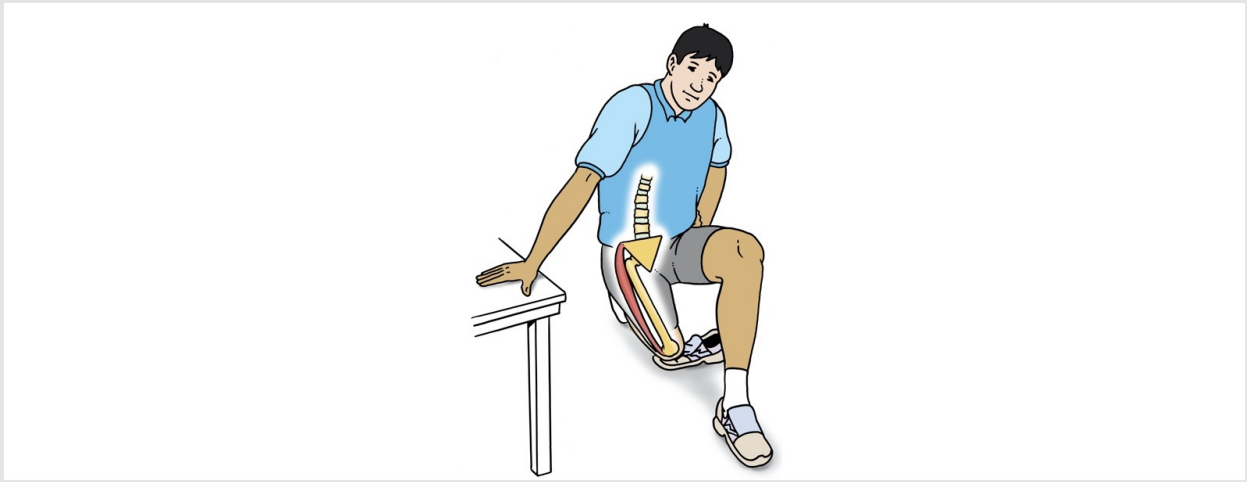
STARTING POSITION: Standing using a hand on stretching side on table for support. Stretching leg crossed behind supporting leg. Foot pointing in direction of little toe, as illustrated.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Press hip forwards/outwards, using supporting hand for leverage. Increase effect by sinking hip on opposite side with hand. Tension should be felt on outer side of hip and thigh.

COMMON ERRORS: Stretching back instead of hip. Stretching leg not far enough behind supporting leg. Not lowering opposite hip sufficiently.

Tensor fasciae latae - Exercise 2(2)

m. tensor fasciae latae



STRETCHING: Extend the hip, with the stretched leg brought across the midline of the body behind the supporting leg and the hip internally rotated. Best done with slightly bent knee.

STARTING POSITION: Kneeling as illustrated. Back leg is crossed behind supporting leg. Athletic shoe under knee for cushioning. Table or chair for hand support on stretching side.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Press hip forwards/sideways towards table/chair while sinking hip where opposite hand is held. Tension should be felt on outer side of hip and thigh.

COMMON ERRORS: Failing to press hip both forwards and sideways simultaneously.

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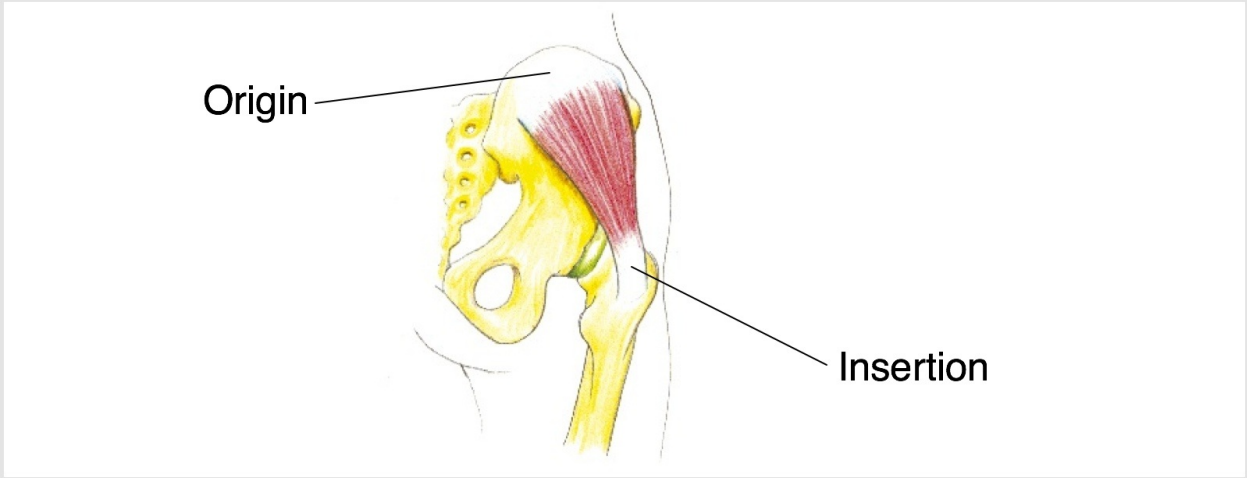
Deep buttock muscle

m. gluteus medius

DEEP BUTTOCK MUSCLE | EXERCISE



ORIGIN: Posterior part of the pelvis just below the iliac crest.

INSERTION: Lateral and superior aspects of the greater trochanter of the femur.

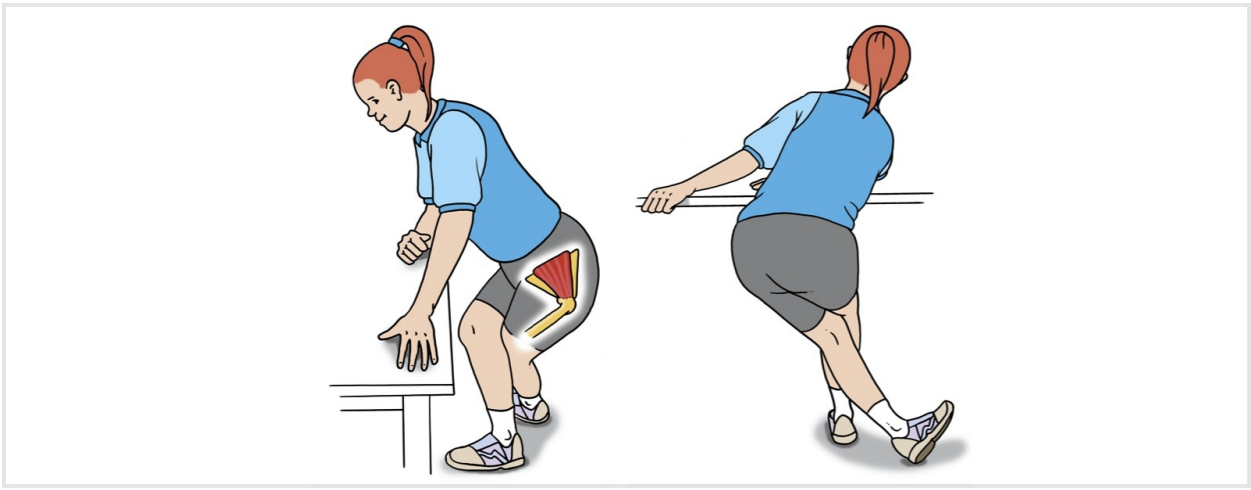
PRIMARY FUNCTION: Abducts the hip (moves the thigh outward).

SECONDARY FUNCTION: The front part of the muscle internally rotates and flexes the hip. The back part of the muscle externally rotates and extends the hip.

Deep buttock muscle - Exercise

m. gluteus medius

DEEP BUTTOCK MUSCLE | **EXERCISE**



STRETCHING: Adduct the leg in under the body. The degree of hip flexion determines the degree of stretch applied to the different parts of the muscle.

STARTING POSITION: Arm support as shown. The weight should be placed primarily on the flexed forward leg with the rear leg crossed behind the supporting leg.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Reach to the side with the stretch-side hip while supporting with the arms. Create as large an angle as possible between the thigh and torso. The stretch should be felt on the outside of the thigh.

COMMON ERRORS: Side bending the spine instead of adducting the hip.

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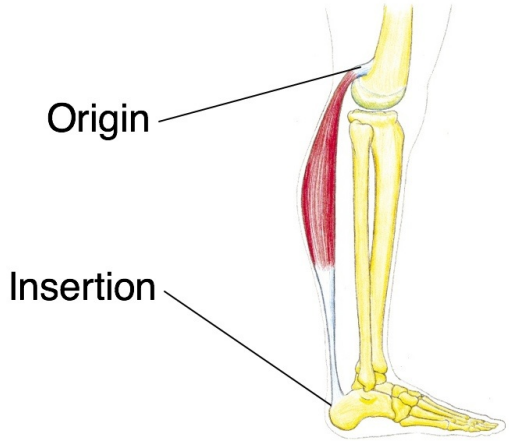
Calf muscle (long)

m. gastrocnemius



ORIGIN: Posterior femur immediately above the knee joint.

INSERTION: At the back of the heel (via the achilles tendon).

PRIMARY FUNCTION: Plantar flexes the ankle (standing on tiptoe).

SECONDARY FUNCTION: Flexes the knee.

Calf muscle (long) - Exercise 1(2)

m. gastrocnemius

CALF MUSCLE (LONG) | **EXERCISE 1(2)** | EXERCISE 2(2)

STRETCHING: Dorsiflex the foot with the knee straight.

STARTING POSITION: Standing with one foot in front of the other. The back foot, where the long calf muscle should be stretched, points slightly inwards towards the other foot, knee straight. Initially, arms are straight (elbows extended).

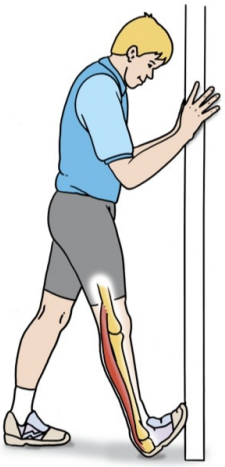
STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Bring the body and back leg forwards by bending the elbows and front leg. All weight should now be on the arms and front leg. Muscle tension should be felt in the calf.

COMMON ERRORS: Back foot points outwards. Heel lifts from floor. Weight on the back leg during stretching. Rocking back and forth.

Calf muscle (long) - Exercise 2(2)

m. gastrocnemius

CALF MUSCLE (LONG) | EXERCISE 1(2) | **EXERCISE 2(2)**



STRETCHING: Dorsiflex the foot with the knee straight.

STARTING POSITION: Standing with the stretch-side heel on the floor and ankle flexed, toes pressed against a wall or door.

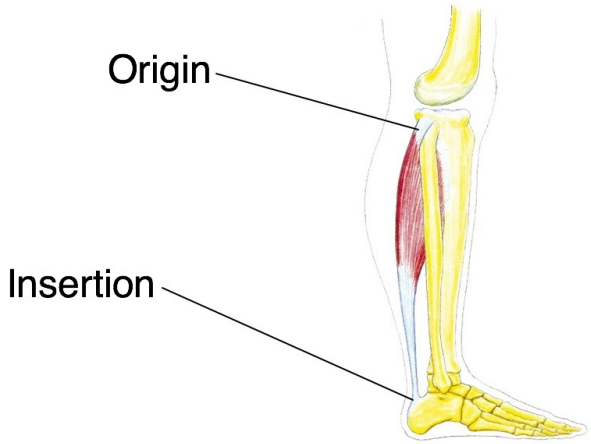
STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Flex the ankle by pressing the hip forward with straight knee. Tension should be felt in the calf.

COMMON ERRORS: Flexing the hip instead of pressing it forward. Bending the knee. Rocking.

***

Calf muscle (short)

m. soleus



ORIGIN: Posterior aspect of the upper tibia.

INSERTION: At the back of the heel (via the achilles tendon).

PRIMARY FUNCTION: Plantar flexes the ankle (standing on tiptoe).

Calf muscle (short) - Exercise 1(3)

m. soleus

STRETCHING: Dorsiflex the foot with the knee in a bent position.

STARTING POSITION: Feet placed one in front of the other. The toes of the backfoot should point inwards towards the front foot, and both knees should be slightly bent.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Bend the knee of the back-foot leg while simultaneously pressing the knee forwards. The stretch should be felt far down the calf.

COMMON ERRORS: Failure to press the knee forwards. Bouncing.

Calf muscle (short) - Exercise 2(3)

m. soleus

STRETCHING: Dorsiflex the foot with the knee in a bent position.

STARTING POSITION: Stand with the stretch-side heel resting on the floor and the toes resting against a wall or door frame (as shown).

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Push the stretch-side knee forwards, stretching the ankle and foot. The stretch should be felt along the back of the calf.

COMMON ERRORS: Bending the knee without pushing it forwards.

Calf muscle (short) - Exercise 3(3)

m. soleus

CALF MUSCLE (SHORT) | EXERCISE 1(3) | EXERCISE 2(3) | **EXERCISE 3(3)**

STRETCHING: Dorsiflex the foot with the knee in a bent position.

STARTING POSITION: Crouch with one foot behind you, the other pointing forwards, chest against thigh. Hands on floor at either side, palms downwards. Toes of ”stretching” leg in line with knee of opposite leg.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Press the lower leg forwards while pressing chest and shoulder towards thigh. Keep heel on floor. Tension should be felt in lower calf.

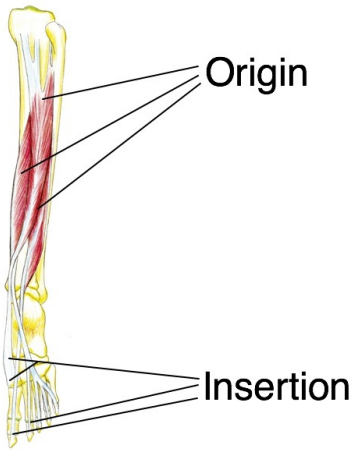
COMMON ERRORS: Lowering hips towards floor instead of pressing the lower leg forwards with the upper body.

***

Foot and toe flexors

m. flexor digitorum longus, m. flexor hallucis longus, m. tibialis posterior

FOOT AND TOE FLEXORS | EXERCISE



ORIGIN: Posterior aspects of the tibia and fibula.

INSERTION: Plantar surfaces of foot and toe bones.

PRIMARY FUNCTION: Plantar flexes the ankle and toes.

Foot and toe flexors - Exercise

m. flexor digitorum longus, m. flexor hallucis longus, m. tibialis posterior

FOOT AND TOE FLEXORS | **EXERCISE**

STRETCHING: Dorsiflex and pronate the foot while extending the toes.

STARTING POSITION: Kneel as shown. Grasp around the big toe and inside of the foot with the opposite-side hand and around the outside of the foot with the stretch-side hand.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Bend the toes and foot upward as far as possible with the help of the opposite side hand and lift the outside of the foot using the stretch-side hand. The stretch should be felt along the inside and back of the lower leg.

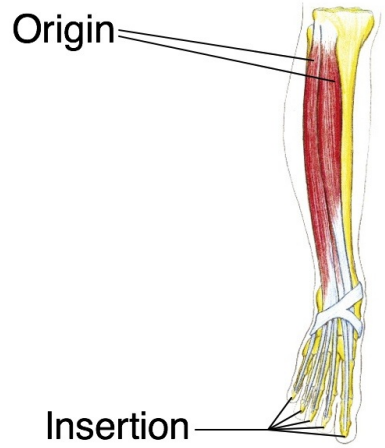
COMMON ERRORS: Insufficient lifting of the outside of the foot, not enough upward bend of the toes.

***

Foot and toe extensors

m. extensor digitorum longus, m. extensor hallucis longus, m. tibialis anterior

FOOT AND TOE EXTENSORS | EXERCISE



PRIMARY FUNCTION: Dorsiflexes and supinates the foot. Extends toes.

ORIGIN: Anterior superior aspects of the tibia and fibula.

INSERTION: Medial and plantar aspects of the 1st cuneiform bone and base of the 1st metatarsal (tibialis anterior), Base and dorsal aspects of toe bones.

Foot and toe extensors - Exercise

m. extensor digitorum longus, m. extensor hallucis longus, m. tibialis anterior

STRETCHING: Plantar flex and flex the toes while pulling the foot outward.

STARTING POSITION: Sit with the stretch-side lower leg resting on the thigh. Grasp with the opposite hand around the front part of the foot and all of the toes. Bend downwards.

STRETCH AT LEAST 15 SEC. REPEAT 3 TIMES, RESTING 10 SEC. BETWEEN STRETCHES: Use the hand to bend the toes and foot downwards while simultaneously inverting the foot. The stretch should be felt on the front and outside of the lower leg.

COMMON ERRORS: Not bending the toes and/or the foot as far as possible.

Index

- m. tibialis posterior
- Front of the thigh
  - m. rectus femoris

H

- Hamstrings
  - m. biceps femoris
  - m. semimembranosus
  - m. semitendinosus
- Hip adductors
  - m. adductor brevis
  - m. adductor longus
  - m. adductor magnus
  - m. obturatorius externus
  - m. pectinus

I

- Iliopsoas
  - m. iliopsoas

J

- Joint

L

- Levator Scapulae
  - m. levator scapulae
- Lower Trapezius and Rhomboids
  - m. rhomboideus major and minor
  - m. trapezius transversa and ascendens

M

Muscle [1] [2]

Q

Quadratus Lumborum
- m. quadratus lumborum

Quality of technique

S

Shortened

Small external rotators of the hip
- m. gemellus inferior
- m. gemellus superior
- m. obturatorius internus
- m. piriformis
- m. quadriceps coxae

Sprain

Sternocleidomastoid and Scalenes
- m. scalenius anterior and medius
- m. sternocleidomastoideus

T

Tensor fasciae latae
- m. tensor fasciae latae

Teres Major
- m. teres major

Triceps
- m. triceps

U

Upper Cervical Extenders
- m. obliquus capitis superior and inferior
- m. rectus capitis lateralis
- m. rectus capitis posterior minor and major

Upper Trapezius
m. trapezius descendens

W

Wrist Extensors
m. extensor carpi radialis brevis and longus

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