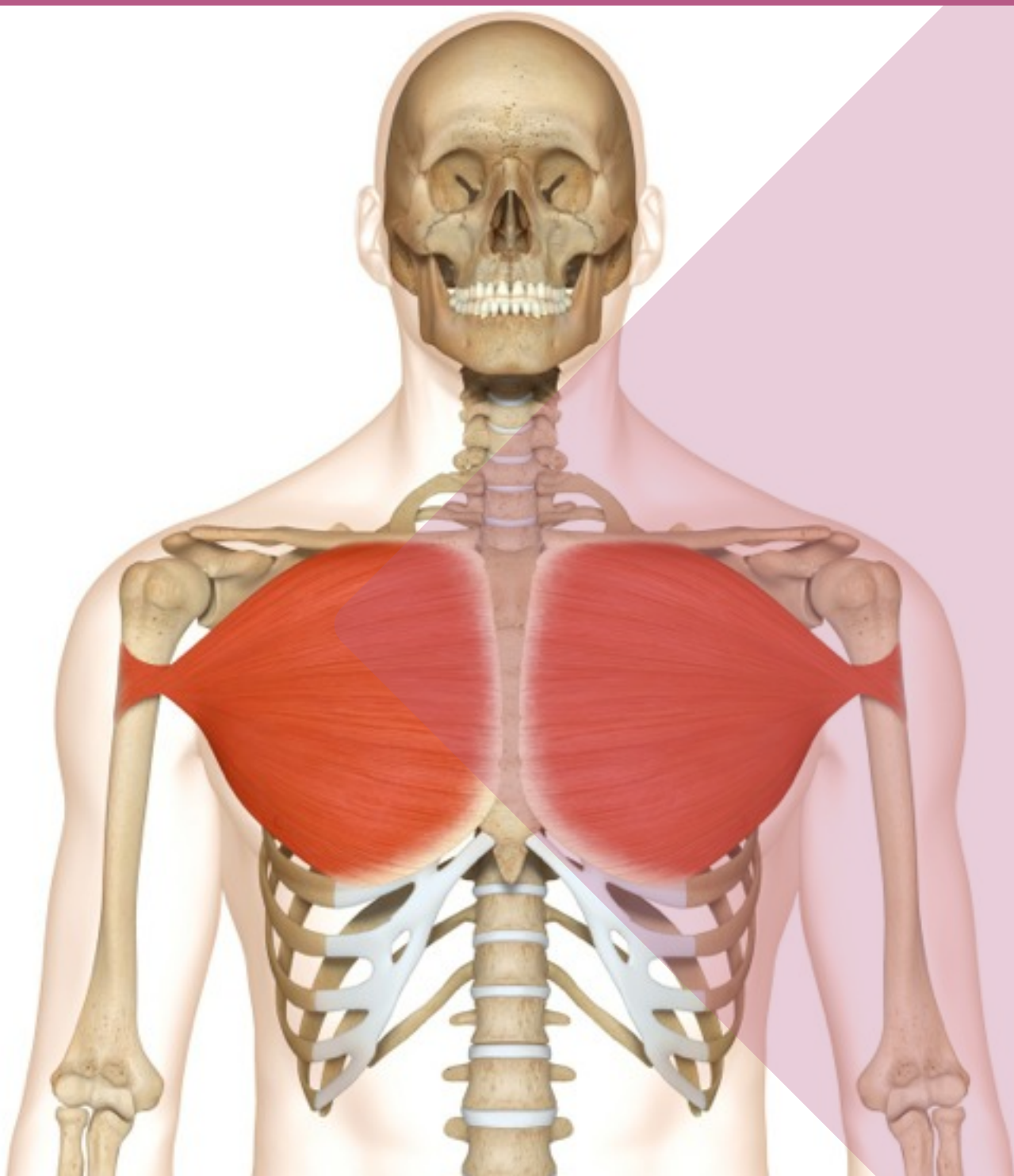
WWW.ACTIVEIQ.CO.UK

Muscle Manual



How to use this guide

This muscle anatomy guide is designed to serve as a learning tool for those studying for fitness-related qualifications. For this purpose, the coloured tabs at the bottom of each page indicate whether the information relates to knowledge requirements for Level 2 (fitness instruction) or Level 3 (personal training). Please note that the knowledge for Level 2 also forms part of the Level 3 requirement. The tabs marked 'Additional knowledge' highlight muscles that are supplementary to Level 2 and 3 knowledge requirements.

The information has been presented in a step by step format that will not only aid revision, but will also support use of the manual during practical workshops. Each individual muscle or muscle group is illustrated with origin and insertion points, as well as relevant bony landmarks, and the accompanying text makes use of the following icons to simplify understanding and aid revision.

Muscles of the lower leg and foot

The muscles of the leg and foot play a key role in the support and locomotion of the human body. These muscles are often divided into four groups: the 'calf' muscles (posterior leg), the peroneals (lateral leg), the ankle/toe extensors (anterior leg), and the ankle/toe flexors (deep posterior leg). At the ankle, the muscles function to dorsiflex (extend) or plantar flex (flex) the foot); in the foot, there are added movements of inversion, eversion and flexion/extension of the toes. The leg muscles that act on the foot are often known as the extrinsic foot muscles whilst the muscles located deeper in the foot are referred to as intrinsic.

Their anatomy is easily studied as most of these muscles are directly accessible to palpation, and with the exception of the popliteus, they all attach to the foot.

Gastrocnemius

Audio: Gastrocnemius

Standing on your toes
Type to enter text
Walking uphill, climbing stairs
Pedalling a bike uphill

Daily Use

Cardio: cycling, walking/ running, stepper, rower

Resistance: calf raise, squat, lunge, deadlift, step-up, leg press, leg curl

Power: jumping, hopping

Balance: single leg balance exercises

Gym

level || knowledge

The gastrocnemius is the most superficial muscle of the posterior leg. Comprising of two heads, it crosses both the ankle and knee joints.

MUSCLE ACTIONS: Plantar flexion of the ankle, flexion of the knee

facts

muscle

Soleus

Audio: Soleus

Standing on your toes
Walking uphill, climbing stairs
Pedalling a bike uphill

Daily
Use

Cardio: cycling, walking/ running, stepper, rower

Resistance: calf raise, squat, lunge, deadlift, step-up, leg press, leg cur

Power: jumping, hopping

Balance: single leg balance exercises

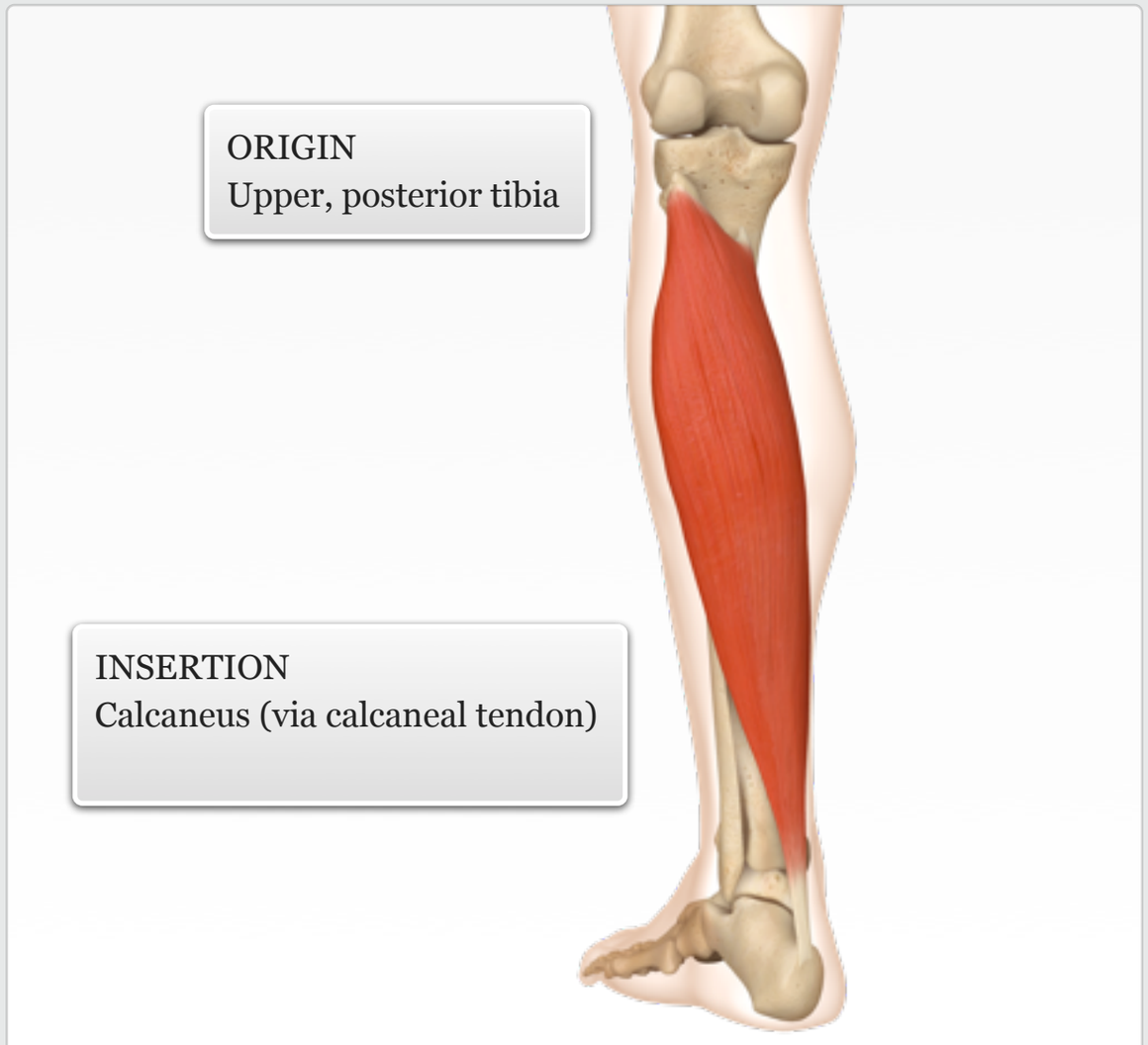
Gym

level || knowledge

The thick soleus muscle is deep to the gastrocnemius, however its medial and lateral fibres are clearly palpable and extend further distal than the heads of the gastrocnemius.

MUSCLE ACTIONS: Plantar flexion of the ankle

facts



muscle

Plantaris

Audio: Plantaris

Standing on your toes
Walking uphill, climbing stairs
Pedalling a bike uphill

Daily
Use

Cardio: cycling, walking/ running, stepper, rower

Resistance: calf raise, squat, lunge, deadlift, step-up, leg press, leg curl

Power: jumping, hopping

Balance: single leg balance exercises

Gym

additional + knowledge

The plantaris is a short muscle that lies at an oblique angle along the posterior knee, yet has the longest tendon in the body which extends down the length of the leg and attaches to the calcaneus. It generally works with the gastrocnemius.

MUSCLE ACTIONS: Weakly plantar flexes the ankle; weakly flexes the knee

facts

ORIGIN
Lateral lower edge of the femur

INSERTION
Calcaneus (via calcaneal tendon)

muscle

Popliteus

Audio: Popliteus

Running, cycling, swimming

Unlocks the knee during walking/running

Protects lateral meniscus during knee flexion

Daily Use

Cardio: cycling, walking / running

Resistance: leg curl, leg press, squat

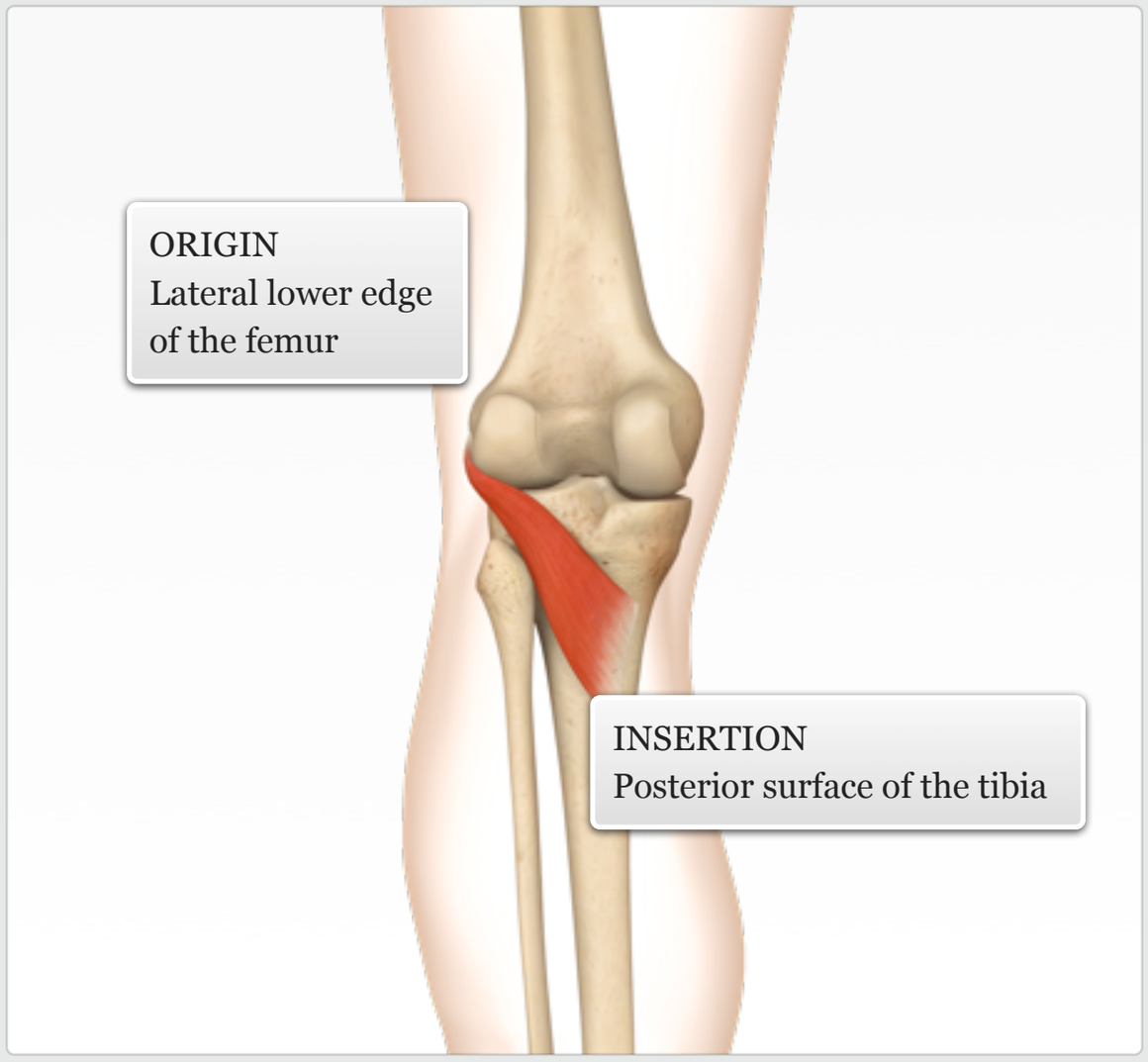
Power: jumping, kicking

Balance: single leg squat

Gym

The popliteus is a small muscle located in the popliteal space. Lying beneath the gastrocnemius and plantaris, it is the deepest muscle of the posterior knee.

MUSCLE ACTIONS: Internally rotates the flexed knee, flexes the knee



additional + knowledge

facts

muscle

Peroneus longus and brevis

Audio: Peroneus longus and brevis

Scraping mud off inside edge of shoe

Walking/running off-road

Ice skating (end of stroke)

Daily Use

Cardio: walking, running, stepping

Resistance: calf raise, ankle eversion (band)

Power: hopping, jumping, cutting/planting

Balance: single leg balance exercises (stabilisation)

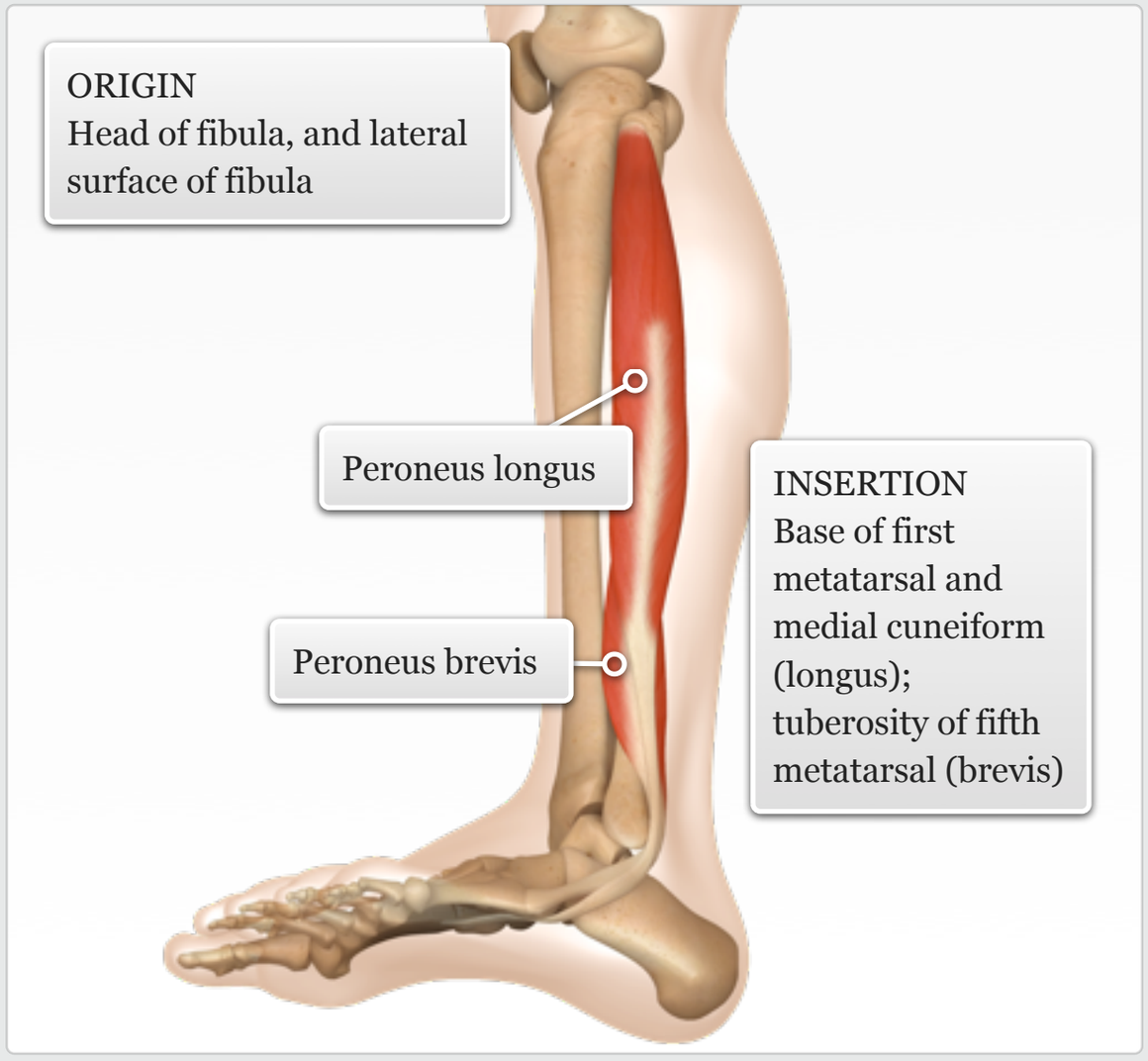
Gym

additional + knowledge

The peroneus longus and brevis are slender muscles located on the lateral side of the leg, lying between the extensor digitorum longus and the soleus. Their distal tendons are palpable along the side of the heel and behind the lateral malleolus.

MUSCLE ACTIONS: Evert the foot, plantar flex the ankle

facts



muscle

Tibialis anterior

Audio: Tibialis anterior

Putting on and taking off socks/shoes

Lifting foot during swing phase of gait

Daily Use

Cardio: walking, running, cycling (with cleats)

Resistance: standing/lying ankle dorsiflexion (band)

Power: hopping, jumping (landing), cutting/planting

Balance: single leg balance exercises (stabilisation)

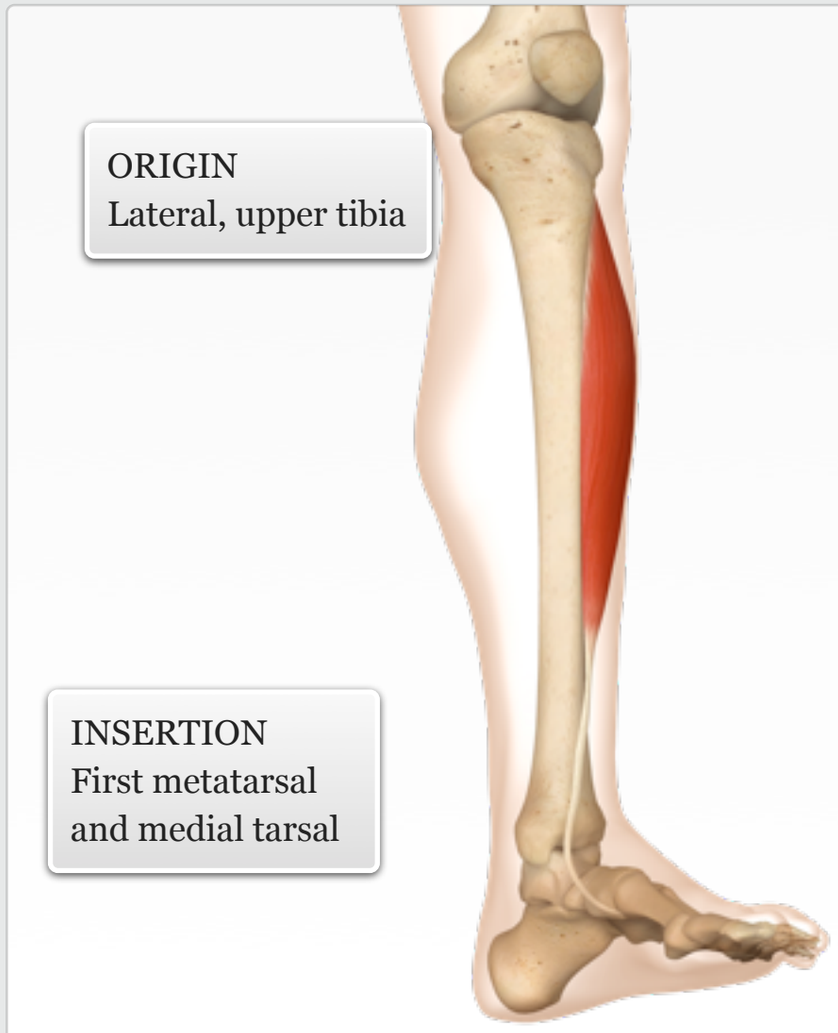
Gym

level || knowledge

The tibialis anterior is a large superficial muscle, and the most visible of the extensors of the ankle and toes. It lies against the lateral surface of the tibia.

MUSCLE ACTIONS: Dorsiflexion and inversion of the ankle

facts



muscle

Extensor digitorum longus

Audio: Extensor digitorum longus

Putting on and taking off socks/shoes

Lifting foot during swing phase of gait

Walking barefoot on hot sand

Daily Use

Cardio: walking, running, cycling (with cleats)

Resistance: standing/lying ankle dorsiflexion (band)

Power: hopping, jumping (landing), cutting/planting

Balance: single leg balance exercises (stabilisation)

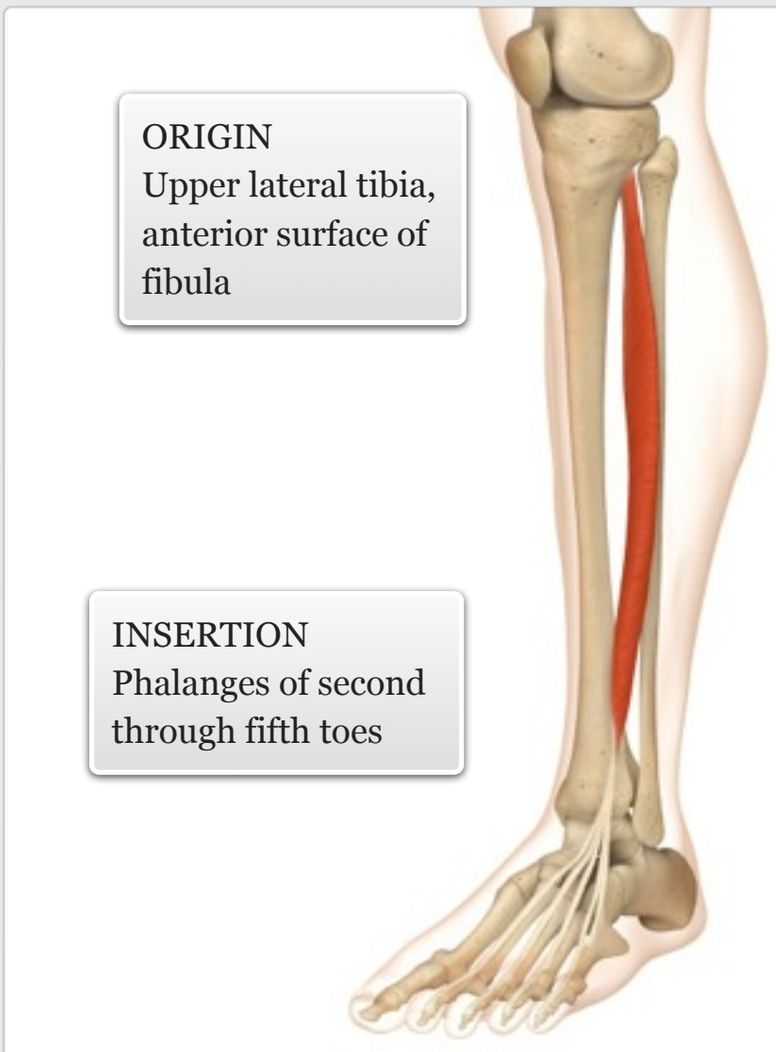
Gym

additional + knowledge

The extensor digitorum longus is partially superficial and lies between the tibialis anterior and the peroneals. Its four tendons are clearly palpable on the dorsal surface of the foot.

MUSCLE ACTIONS: Everts the foot; dorsiflexes the ankle; extends second through fifth toes

facts



muscle

Extensor hallucis longus

Audio: Extensor hallucis longus

Putting on and taking off socks/shoes

Lifting foot during swing phase of gait

Walking barefoot on hot sand

Daily Use

Cardio: walking, running, cycling (with cleats)

Resistance: standing/lying ankle dorsiflexion (band)

Power: hopping, jumping (landing), cutting/planting

Balance: single leg balance exercises (stabilisation)

Gym

additional + knowledge

The extensor hallucis longus lies deep to the anterior tibialis and the extensor digitorum longus, and is not directly palpable; however, its distal tendon can be palpated on the dorsal surface of the foot.

MUSCLE ACTIONS: Inverts the foot; dorsiflexes the ankle; extends the first toe

facts

muscle

Flexor hallucis longus

Audio: Flexor hallucis longus

Walking on tip-toes

Walking on uneven surfaces

Turning the bath tap on/off with your toes

Daily Use

Cardio: walking, running

Resistance: toe gripping exercises

Power: hopping, jumping, cutting/planting

Balance: single leg balance exercises (stabilisation)

Gym

The flexor hallucis longus is one of three slender muscles of the posterior compartment of the leg. The muscle arises from the inferior fibular surface and its fibres pass obliquely downward and backward, helping to support the longitudinal arch of the foot.

MUSCLE ACTIONS: Flexes the first toe, inverts the foot, weakly plantar flexes the ankle

ORIGIN
Middle half of posterior fibula

INSERTION
First toe

additional + knowledge

facts

muscle

Tibialis posterior

Audio: Tibialis posterior

Pushing down on car pedals

Walking on uneven surfaces

Daily Use

Cardio: walking, running

Resistance: bent knee and seated calf raises

Power: hopping, jumping, cutting/planting

Balance: single leg balance exercises (stabilisation)

Gym

The tibialis posterior is the most central of the muscles of the posterior compartment of the leg. It is also the deepest of all the calf muscles and helps support the arch of the foot.

MUSCLE ACTIONS: Inverts the foot; plantar flexes the ankle

ORIGIN
Posterior surface of tibia and fibula

INSERTION
All five tarsal bones and bases of second through to fourth metatarsals

additional + knowledge

facts

muscle

Flexor digitorum longus

Audio: Flexor digitorum longus

Walking on uneven surfaces, particularly barefoot

Turning the bath tap on/off with your toes

Daily Use

Cardio: walking, running

Resistance: bent knee and seated calf raises

Power: hopping, jumping, cutting/planting

Balance: single leg balance exercises (stabilisation)

Gym

additional + knowledge

The flexor digitorum longus is situated on the tibial side of the leg. Its fibres pass obliquely forward and lateral, ending in a tendon that passes behind the medial malleolus and under the foot.

MUSCLE ACTIONS: Flexes the second through to fifth toes; weakly plantar flexes the ankle; inverts the foot

facts

ORIGIN
Posterior surface of tibia

INSERTION
Phalanges of second through to fifth toes

muscle

Muscles of the pelvis and thigh

The muscles of the pelvis and thigh primarily produce movement around the hip and knee joints, and play a pivotal role in dynamic stabilisation of the body. These muscles are often divided into five groups: the quadriceps (anterior and lateral thigh), the hamstrings (posterior thigh), the gluteals (posterior/lateral hip), the adductors (medial thigh), and the lateral rotators (deep lateral hip). At the hip, the muscles function to flex/extend, medially/laterally rotate, and abduct/adduct the hip joint; at the knee, these muscles produce movements of flexion/extension and medial/lateral rotation. Along with those of the lower leg and foot, these muscles (particularly the gluteals and quadriceps) are uniquely adapted for efficient bipedal gait.

Quadriceps group

Audio: Quadriceps group

Standing up from a sitting position

Stepping up onto a curb

Kicking a ball

Stabilisation of the knee during squatting and bending

Daily Use

N/A

Gym

level || knowledge

Rectus femoris

Vastus intermedius

Vastus medialis

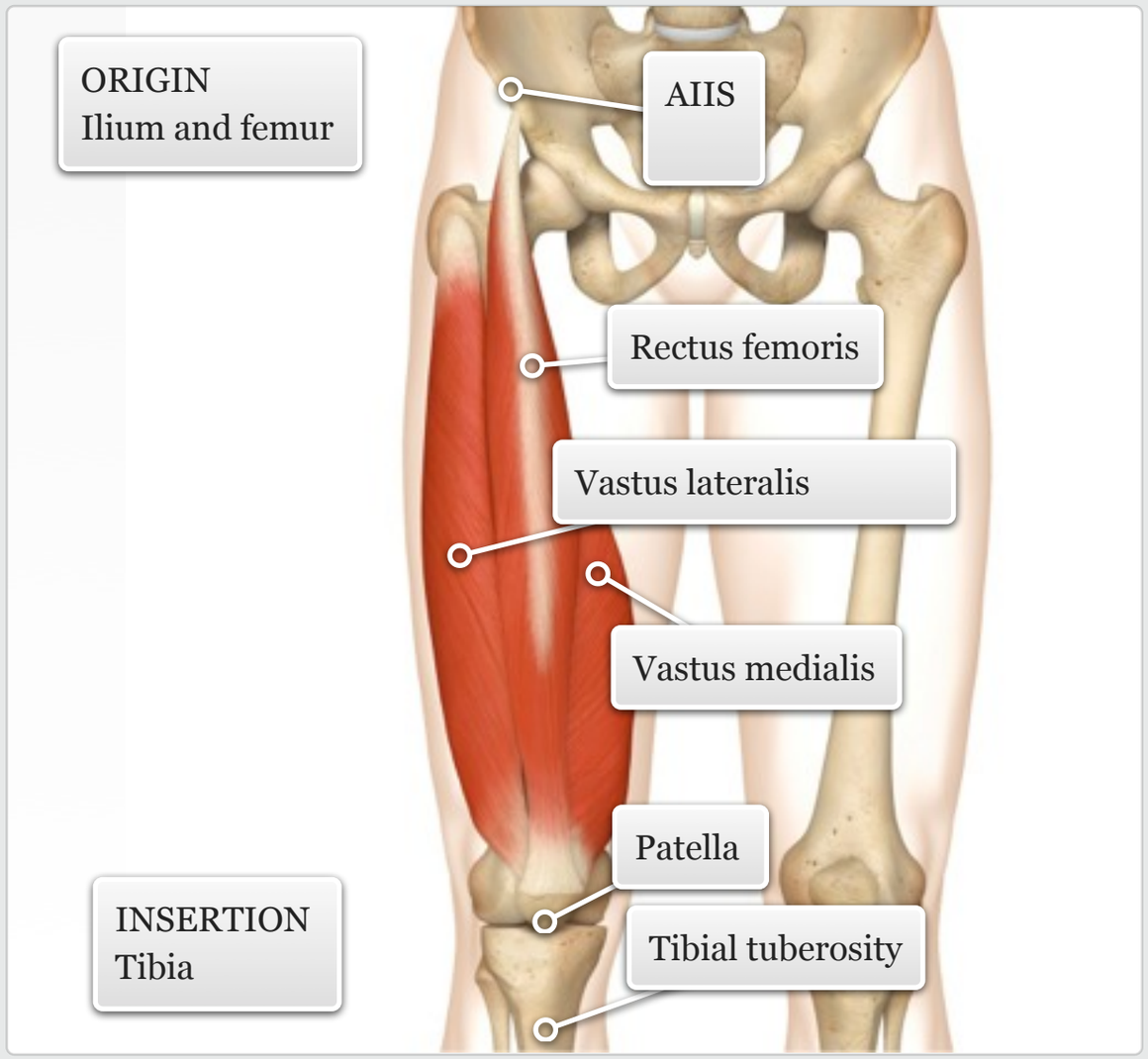
Vastus lateralis

The four large muscles of the quadriceps primarily extend the knee and originate from the pelvis and upper end of the thigh, converging into a single tendon just above the knee.

The superficial rectus femoris, located on the anterior thigh, is the only muscle that crosses the hip and knee; vastus intermedius is deep to the rectus femoris. The vastus medialis forms a 'teardrop' shape at the distal end of the medial thigh, while the vastus lateralis runs along the lateral thigh.

MUSCLE ACTIONS: Extension of the knee, flexion of the hip

facts



muscle

Rectus femoris

Audio: Rectus femoris

Standing up from a sitting position

Stepping up onto a curb

Kicking a ball

Stabilisation of the knee during squatting and bending

Daily Use

Cardio: cycling, walking/ running, stepper, rower, cross trainer

Resistance: leg press, knee extension, squat/deadlift/ lunge/step up variations

Power: jumping, hopping

Balance: single leg exercise variations

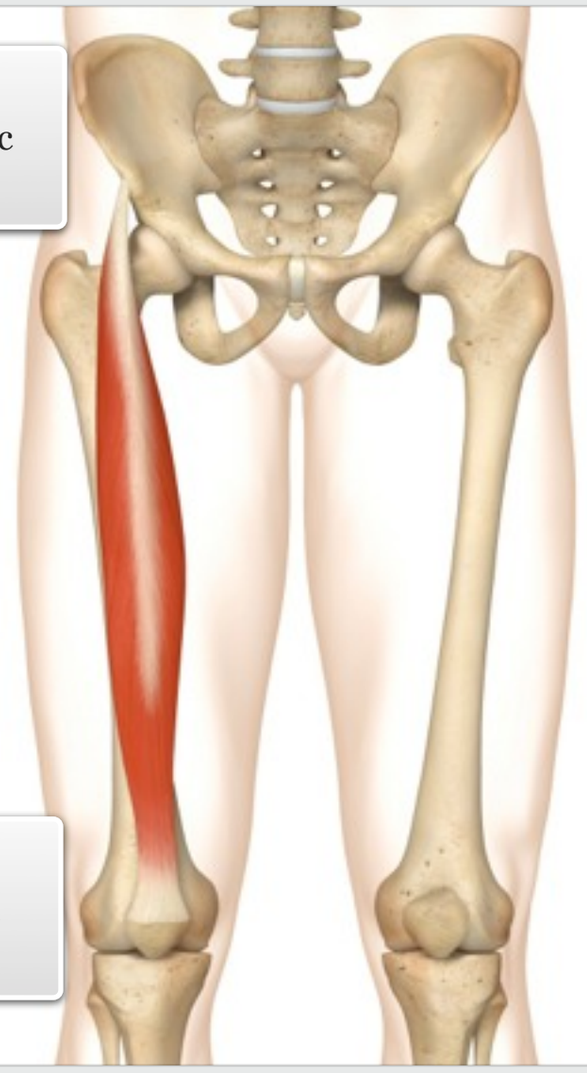
Gym

level ||| knowledge

MUSCLE ACTIONS: Flexion of the hip and extension of the knee

facts

ORIGIN
Anterior inferior iliac spine (AIIS)



INSERTION
Anterior, upper tibia via the patella

muscle

Vastus intermedius

Audio: Vastus intermedius

Standing up from a sitting position

Stepping up onto a curb

Kicking a ball

Stabilisation of the knee during squatting and bending

Daily Use

Cardio: cycling, walking/ running, stepper, rower, cross trainer

Resistance: leg press, knee extension, squat/deadlift/ lunge/step up variations

Power: jumping, hopping

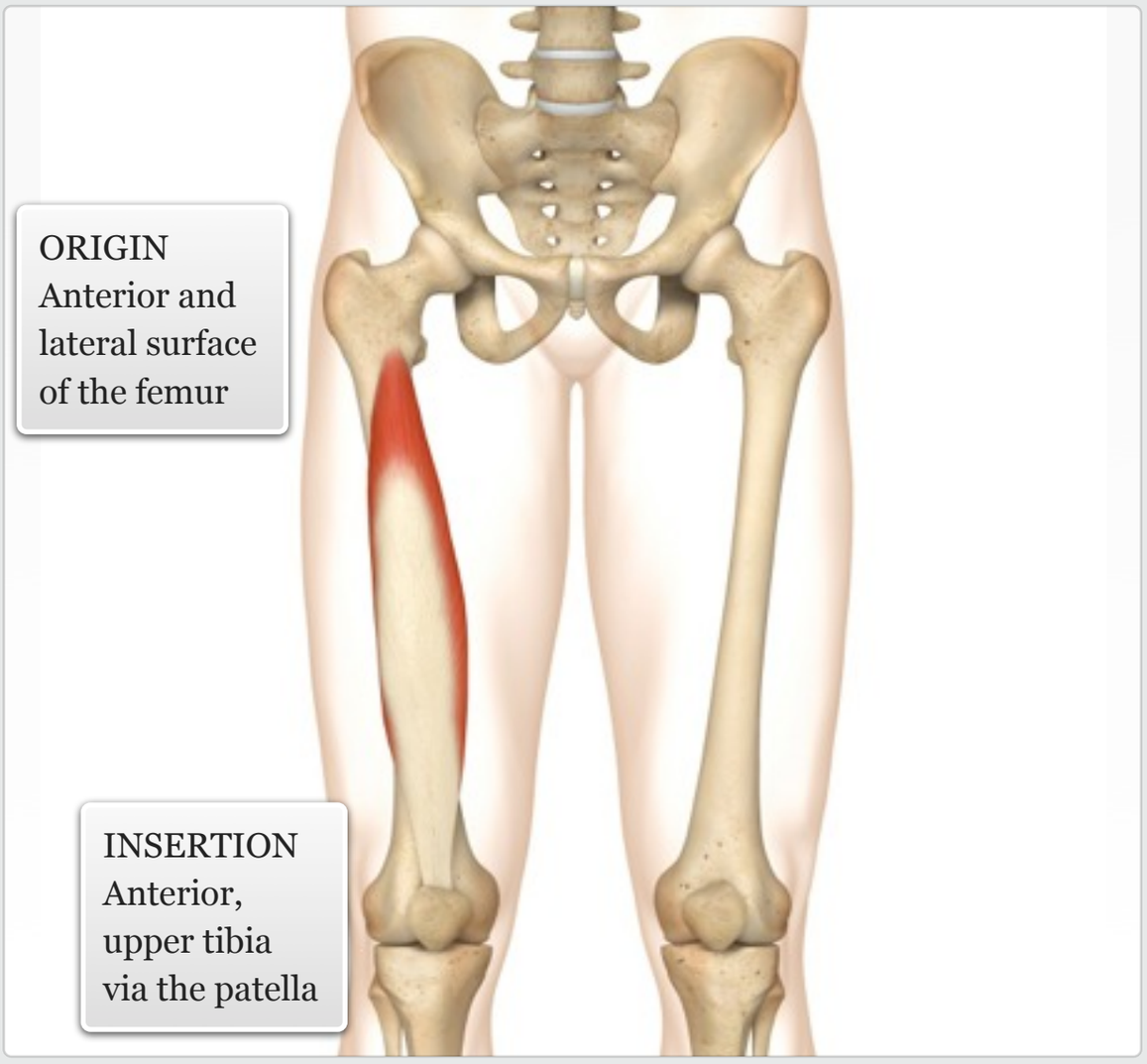
Balance: single leg exercise variations

Gym

level ||| knowledge

MUSCLE ACTIONS: Extension of the knee

facts



muscle

Vastus medialis

Audio: Vastus medialis

Standing up from a sitting position

Stepping up onto a curb

Kicking a ball

Stabilisation of the knee during squatting and bending

Daily Use

Cardio: cycling, walking/ running, stepper, rower, cross trainer

Resistance: leg press, knee extension, squat/deadlift/ lunge/step up variations

Power: jumping, hopping

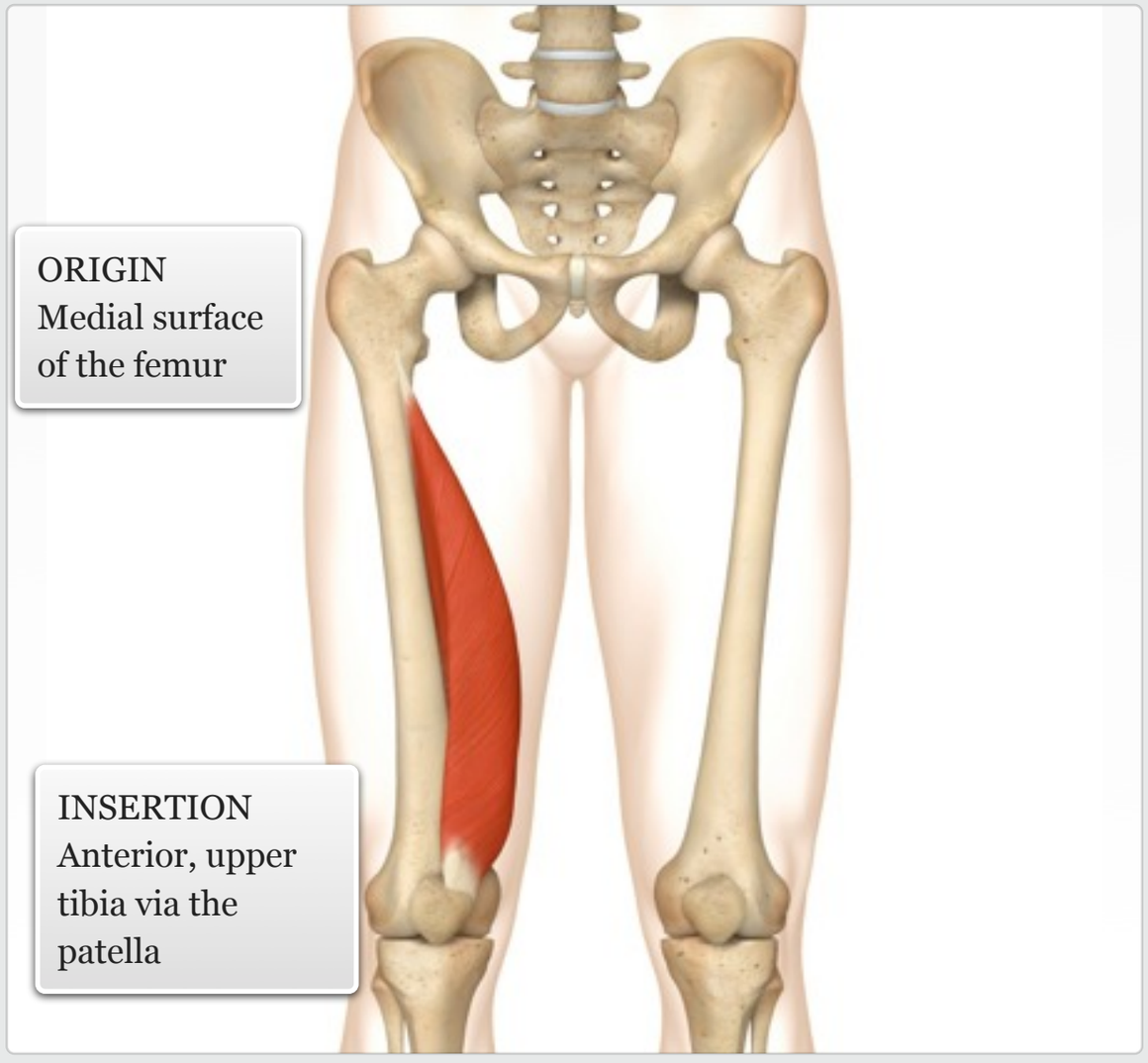
Balance: single leg exercise variations

Gym

level ||| knowledge

MUSCLE ACTIONS: Extension of the knee

facts



muscle

Vastus lateralis

Audio: Vastus lateralis

Standing up from a sitting position

Stepping up onto a curb

Kicking a ball

Stabilisation of the knee during squatting and bending

Daily Use

Cardio: cycling, walking/ running, stepper, rower, cross trainer

Resistance: leg press, knee extension, squat/deadlift/ lunge/step up variations

Power: jumping, hopping

Balance: single leg exercise variations

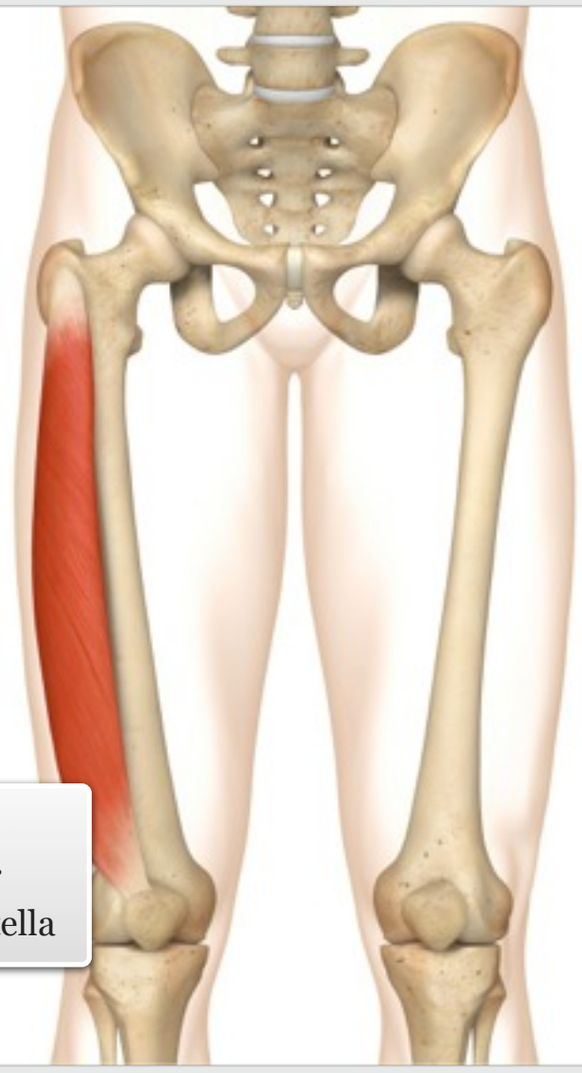
Gym

level ||| knowledge

MUSCLE ACTIONS: Extension of the knee

facts

ORIGIN
Greater trochanter and lateral surface of the femur



INSERTION
Anterior, upper tibia via the patella

muscle

Hamstrings group

Audio: Hamstrings group

Running, cycling, swimming

Climbing stairs

Stabilisation of the hip when bending

Wiping feet on a doormat

Daily Use

N/A

Gym

level || knowledge

Biceps femoris

Semitendinosus

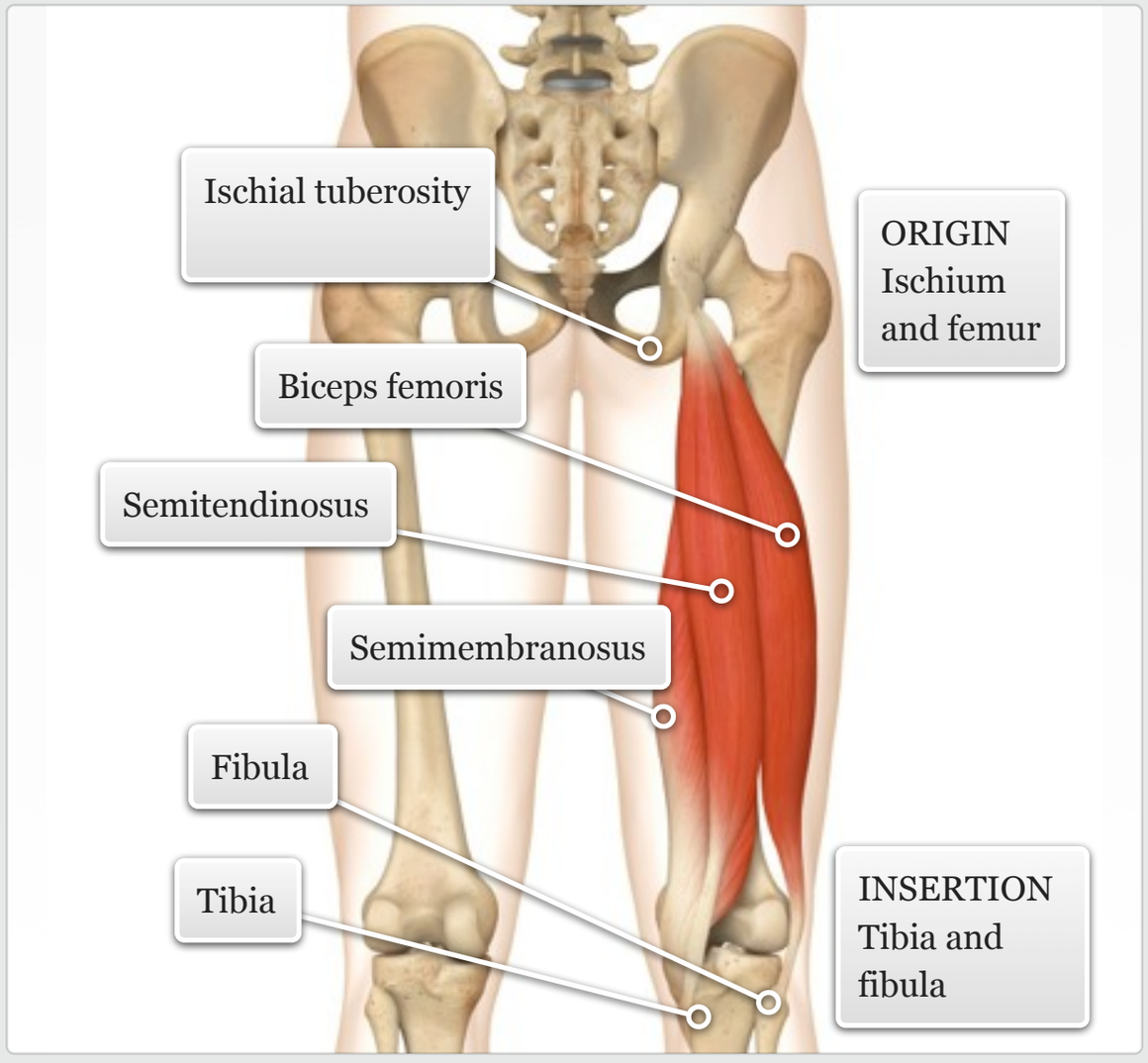
Semimembranosus

The hamstrings are located along the posterior thigh and are not as big as the quadriceps they are nevertheless strong hip extensors and knee flexors. All three hamstring muscle have a common origin at the ischium, and their tendons are easily palpable.

The biceps femoris is the most lateral of the hamstrings and has two heads – a superficial long head and a deeper short head. The semitendinosus lies superficial to the deeper semimembranosus, both of which are located more medially on the posterior thigh.

MUSCLE ACTIONS: Extension of hip and flexion of knee

facts



muscle

Biceps femoris

Audio: Biceps femoris

Running, cycling, swimming

Climbing stairs

Stabilisation of the hip when bending

Wiping feet on a doormat

Daily Use

Cardio: running, stepper, cross trainer

Resistance: leg curl, leg press, squat/deadlift/lunge/ step up variations

Power: jumping, hopping

Balance: single leg squat/ deadlift

Gym

level ||| knowledge

MUSCLE ACTIONS: Extension and external rotation of the hip. Flexion of the knee

facts

ORIGIN
Ischial tuberosity and posterior surface of the femur

INSERTION
Head of the fibula

muscle

Semitendinosus

Audio: Semitendinosus

Running, cycling, swimming

Climbing stairs

Stabilisation of the hip when bending

Wiping feet on a doormat

Daily Use

Cardio: running, stepper, cross trainer

Resistance: leg curl, leg press, squat/deadlift/lunge/ step up variations

Power: jumping, hopping

Balance: single leg squat/ deadlift

Gym

level ||| knowledge

MUSCLE ACTIONS: Extension of the hip. Flexion of the knee, posteriorly tilts the pelvis

facts

muscle

Semimembranosus

Audio: Semimembranosus

Running, cycling, swimming

Climbing stairs

Stabilisation of the hip when bending

Wiping feet on a doormat

Daily Use

Cardio: running, stepper, cross trainer

Resistance: leg curl, leg press, squat/deadlift/lunge/ step up variations

Power: jumping, hopping

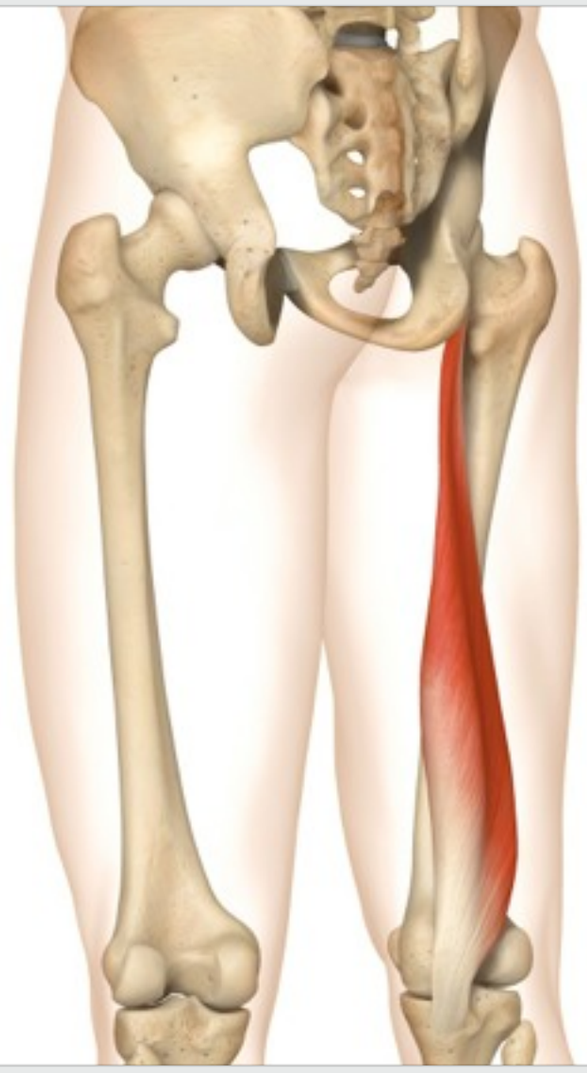
Balance: single leg squat/ deadlift

Gym

level ||| knowledge

MUSCLE ACTIONS: Extension of the hip. Flexion of the knee, posteriorly tilts the pelvis

facts



ORIGIN
Ischial tuberosity

INSERTION
Upper medial surface of the tibia

muscle

Gluteals

Audio: Gluteals

Running, cycling, swimming, skating, dancing

Climbing stairs

Stabilisation of the hip when bending

Daily Use

N/A

Gym

level || knowledge

Gluteus maximus

Gluteus medius

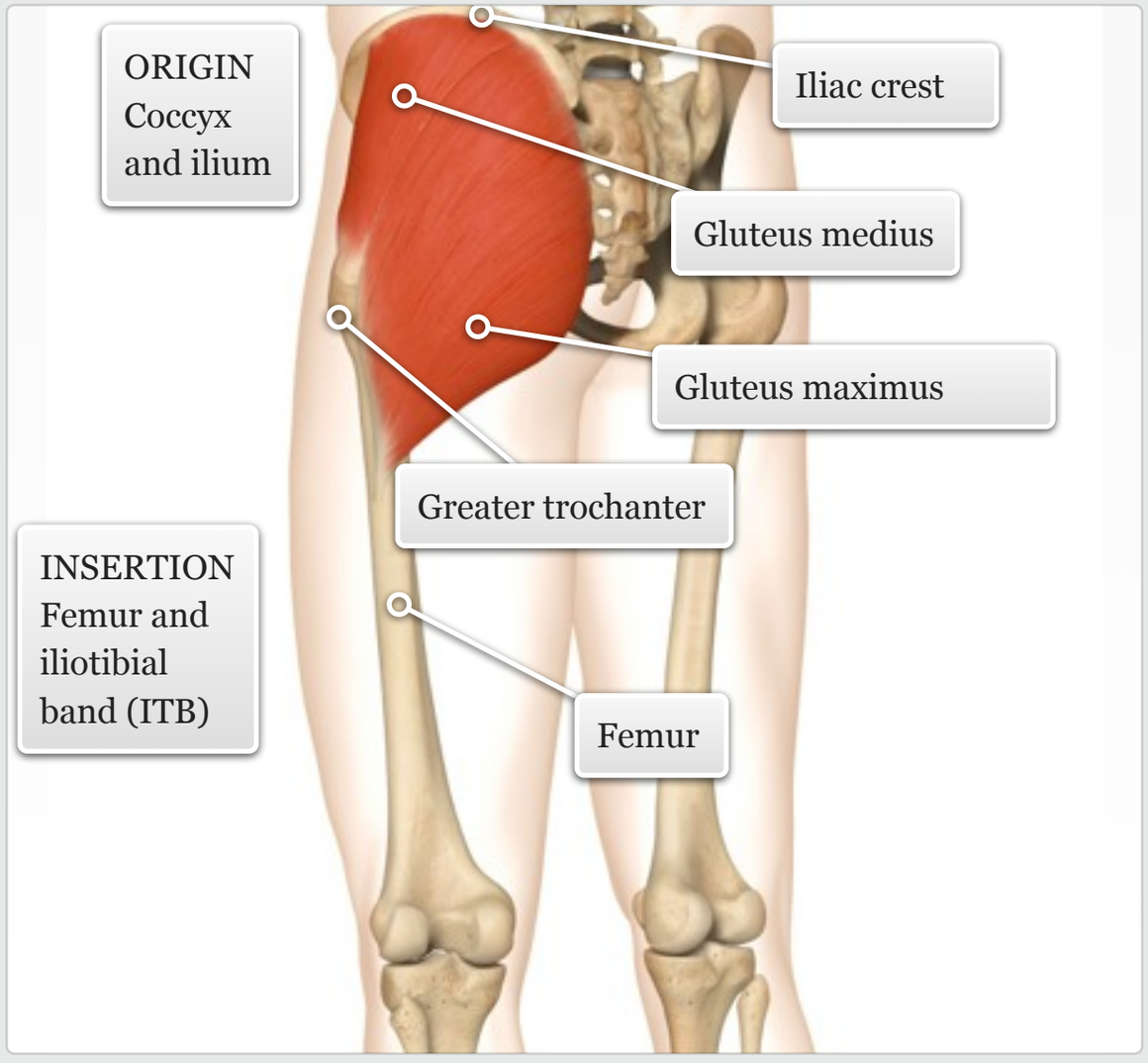
Gluteus minimus

The three gluteal muscles are located on the posterior aspect of the ilium, deep to the surrounding adipose tissue.

The large gluteus maximus is the most posterior and superficial of the three, and runs diagonally across the buttock; the gluteus medius lies on the lateral side of the hip. Both the gluteus maximus and medius are powerful extensors and abductors of the hip. The gluteus minimus (not shown) lies deep to the gluteus medius and flexes and medially rotates the hip.

MUSCLE ACTIONS: Extension, external rotation and abduction of the hip

facts



muscle

Gluteus maximus

Audio: Gluteus maximus

Running, cycling, swimming, skating, dancing

Climbing stairs

Stabilisation of the hip when bending

Daily Use

Cardio: running, stepper, cross trainer, rower

Resistance: leg press, leg curl, squat, deadlift, lunge, step up, standing/lying hip extension

Power: jumping, hopping

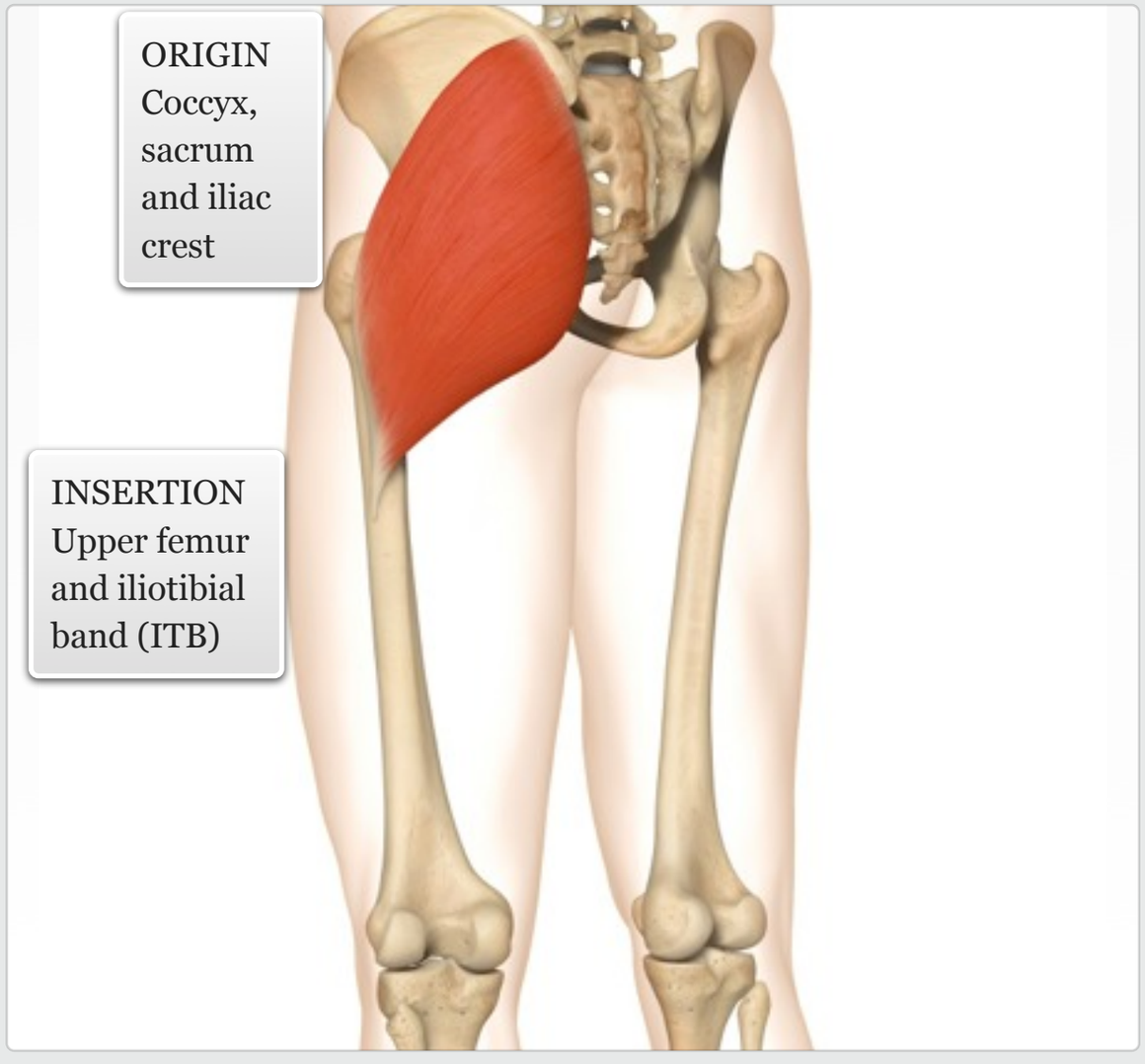
Balance: single leg exercise variations

Gym

level || knowledge

MUSCLE ACTIONS: Extension, abduction and external rotation of the hip

facts



muscle

Gluteus medius

Audio: Gluteus medius

Running, cycling, swimming, skating, dancing

Climbing stairs

Stabilisation of the hip when bending

Daily Use

Cardio: running, stepper, cross trainer, rower

Resistance: leg press, leg curl, side lunge, standing/lying abduction

Power: jumping, hopping, cutting/planting

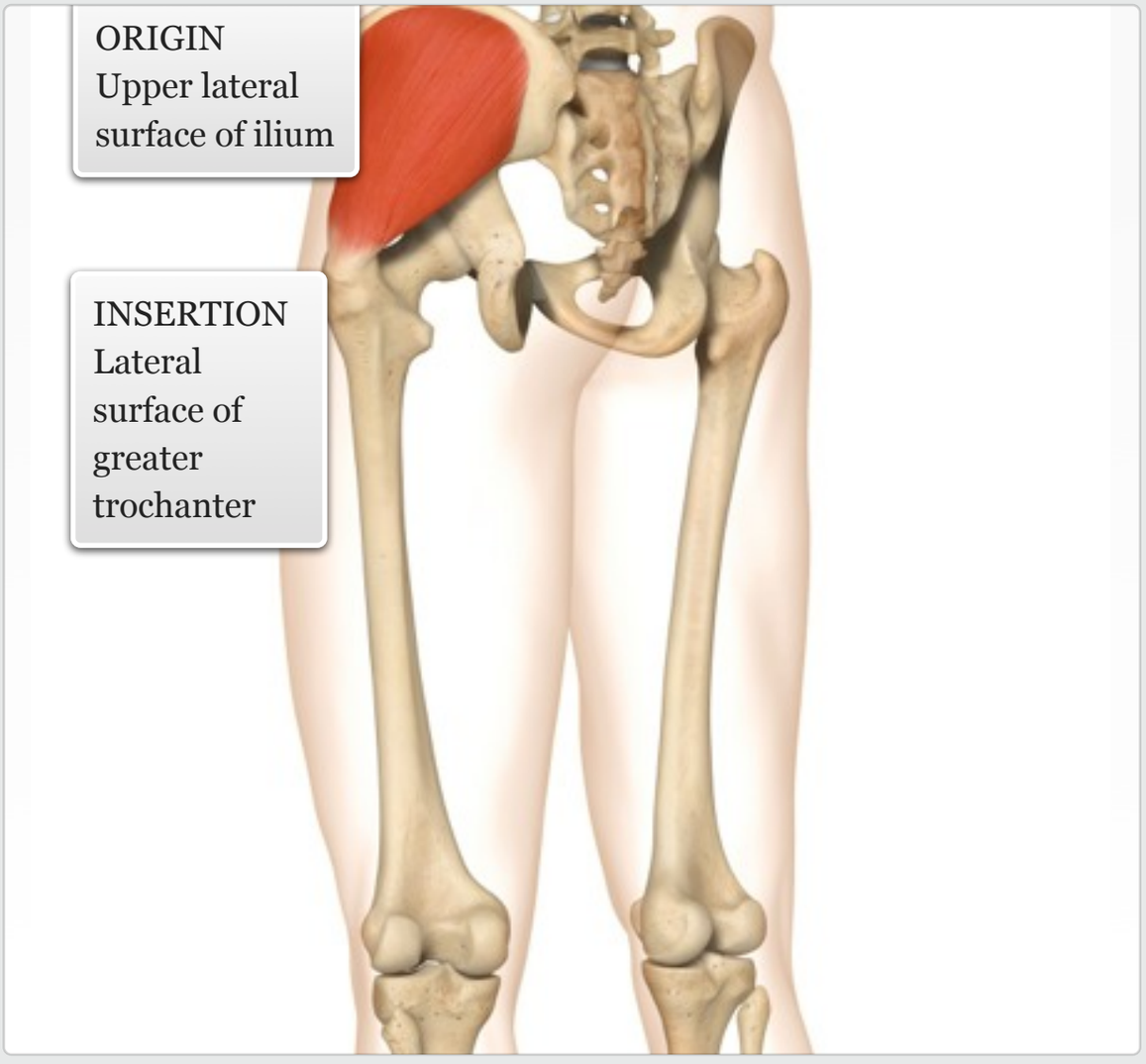
Balance: single leg exercise variations

Gym

level ||| knowledge

MUSCLE ACTIONS: Abduction and internal rotation of hip (anterior fibres); extension and external rotation of hip (posterior fibres)

facts



muscle

Gluteus minimus

Audio: Gluteus minimus

Running, cycling, swimming, skating, dancing

Climbing stairs

Stabilisation of the hip when bending

Daily Use

Cardio: running, stepper, cross trainer, rower

Resistance: leg press, leg curl, side lunge, standing/lying abduction, wood chopping

Power: jumping, hopping, cutting/planting

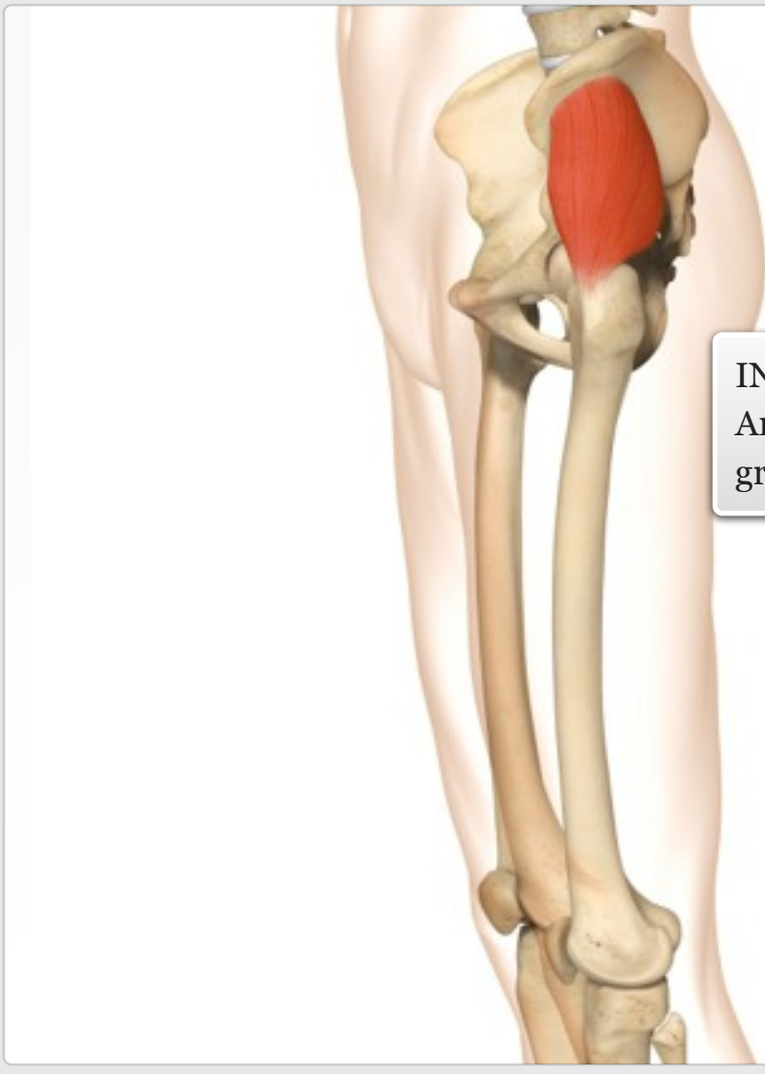
Balance: single leg exercise variations

Gym

level ||| knowledge

MUSCLE ACTIONS: Abduction and internal rotation of the hip

facts



muscle

Hip adductor group

Audio: Hip adductor group

Wood chopping

Ice skating (during turning)

Horse riding (gripping with thighs)

Stabilising the pelvis/hip during walking/running and bending

Daily Use

N/A

Gym

Adductor magnus

Adductor longus

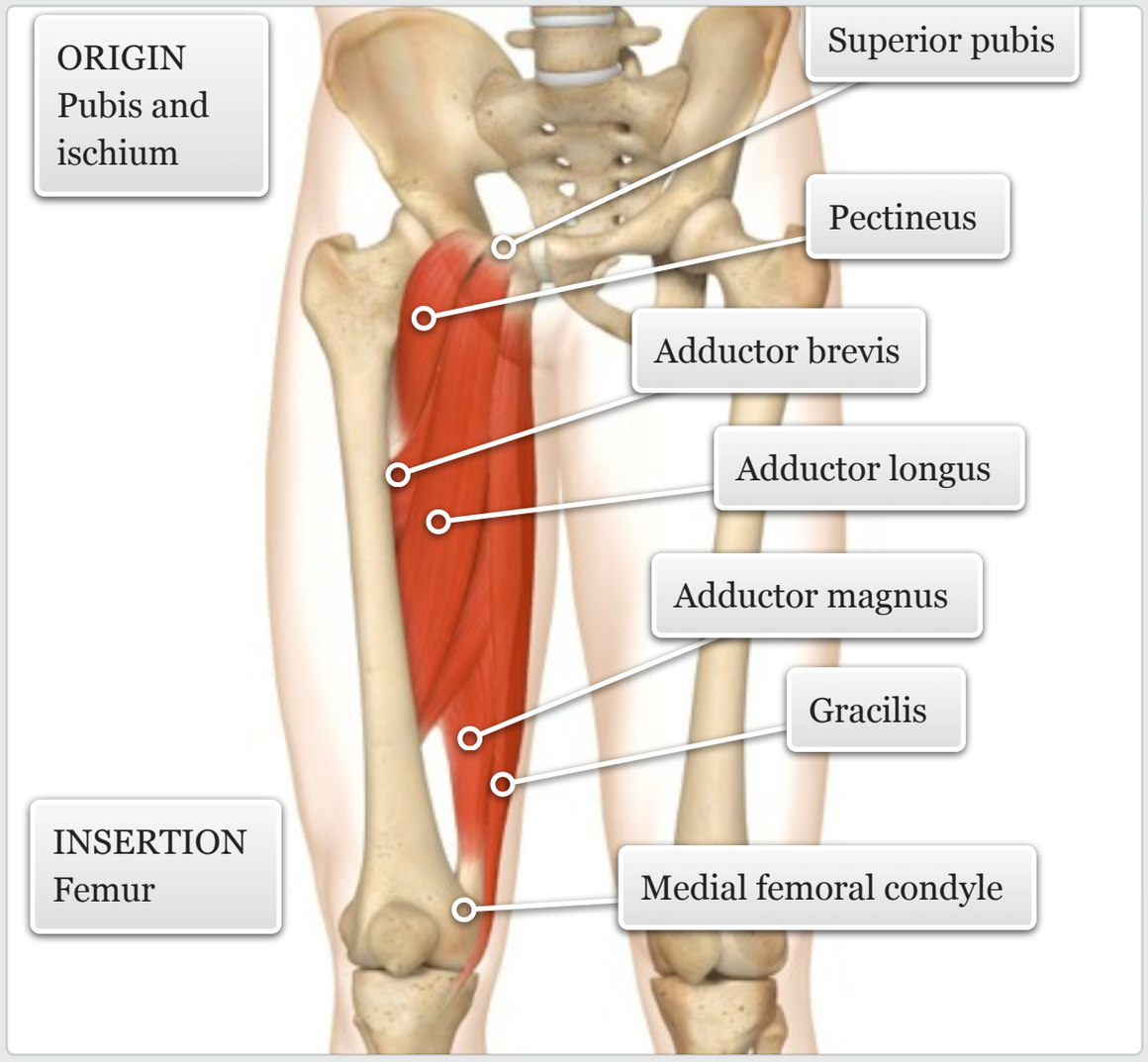
Adductor brevis

Pectineus

Gracilis

The five adductors are located along the medial thigh between the quadriceps and hamstrings. Of the five muscles, the pectineus and adductor longus are the most anterior; lying behind them is the adductor brevis, and the most posterior is the adductor magnus (anterior to the hamstrings). These four muscles are positioned posterior to the quadriceps. The fifth adductor, gracilis, lies on the medial thigh, and is the only adductor that crosses the knee joint.

MUSCLE ACTIONS: Adduction of the hip



level || knowledge

facts

muscle

Adductor magnus

Audio: Adductor magnus

Wood chopping

Ice skating (during turning)

Horse riding (gripping with thighs)

Stabilising the pelvis/hip during walking/running and bending

Daily Use

Cardio: running, cycling, stepper, rower, swimming

Resistance: lying/standing/seated hip adduction; wood chop variations; stabilisation during squatting and lunging

Power: jumping, hopping, kicking

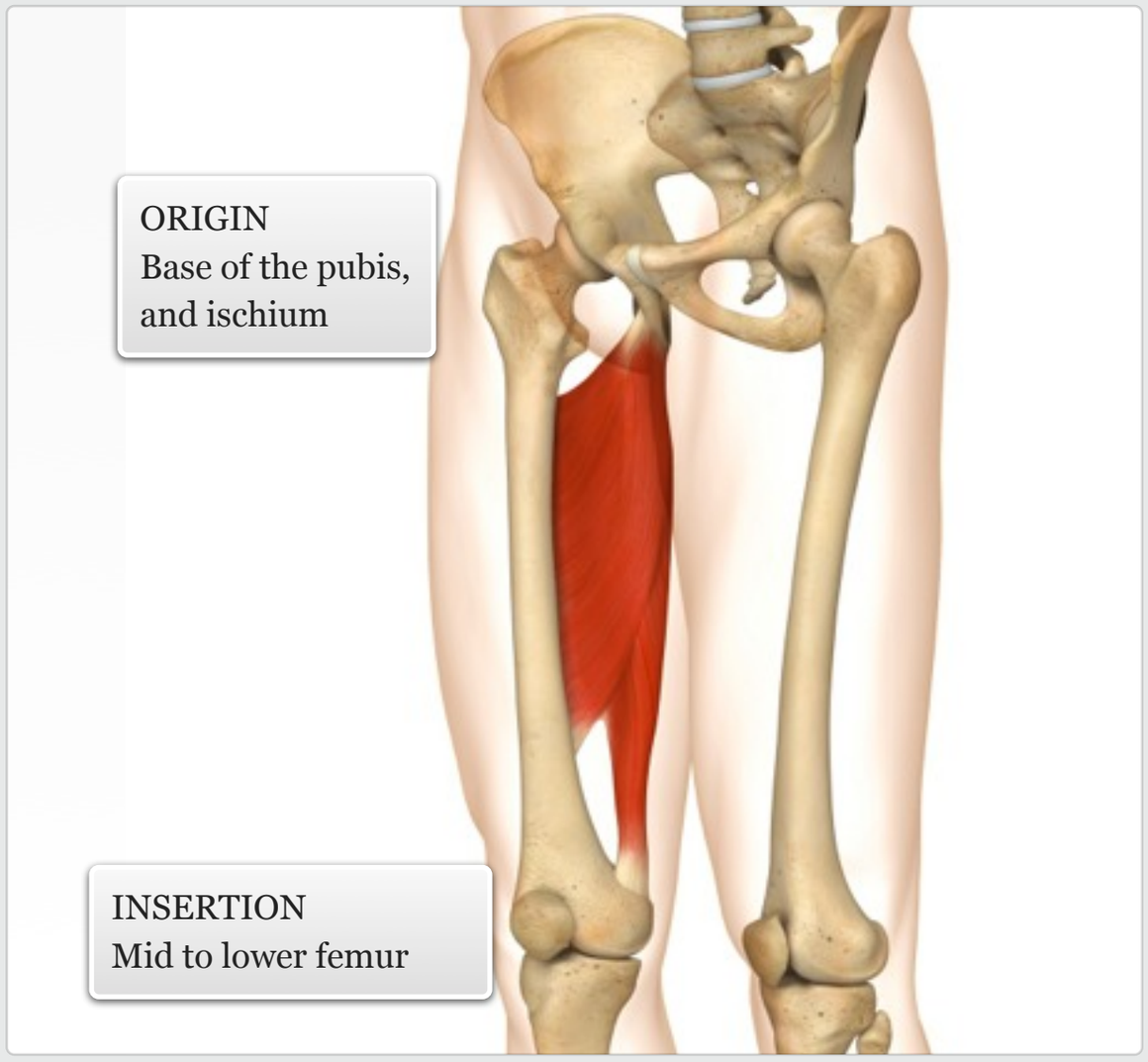
Balance: stabilisation during single leg exercises

Gym

level ||| knowledge

MUSCLE ACTIONS: Adduction, internal rotation and extension of the hip

facts



muscle

Adductor longus

Audio: Adductor longus

Wood chopping

Ice skating (during turning)

Horse riding (gripping with thighs)

Stabilising the pelvis/hip during walking/running and bending

Daily Use

Cardio: running, cycling, stepper, rower, swimming

Resistance: lying/standing/seated hip adduction; wood chop variations; stabilisation during squatting and lunging

Power: jumping, hopping, kicking

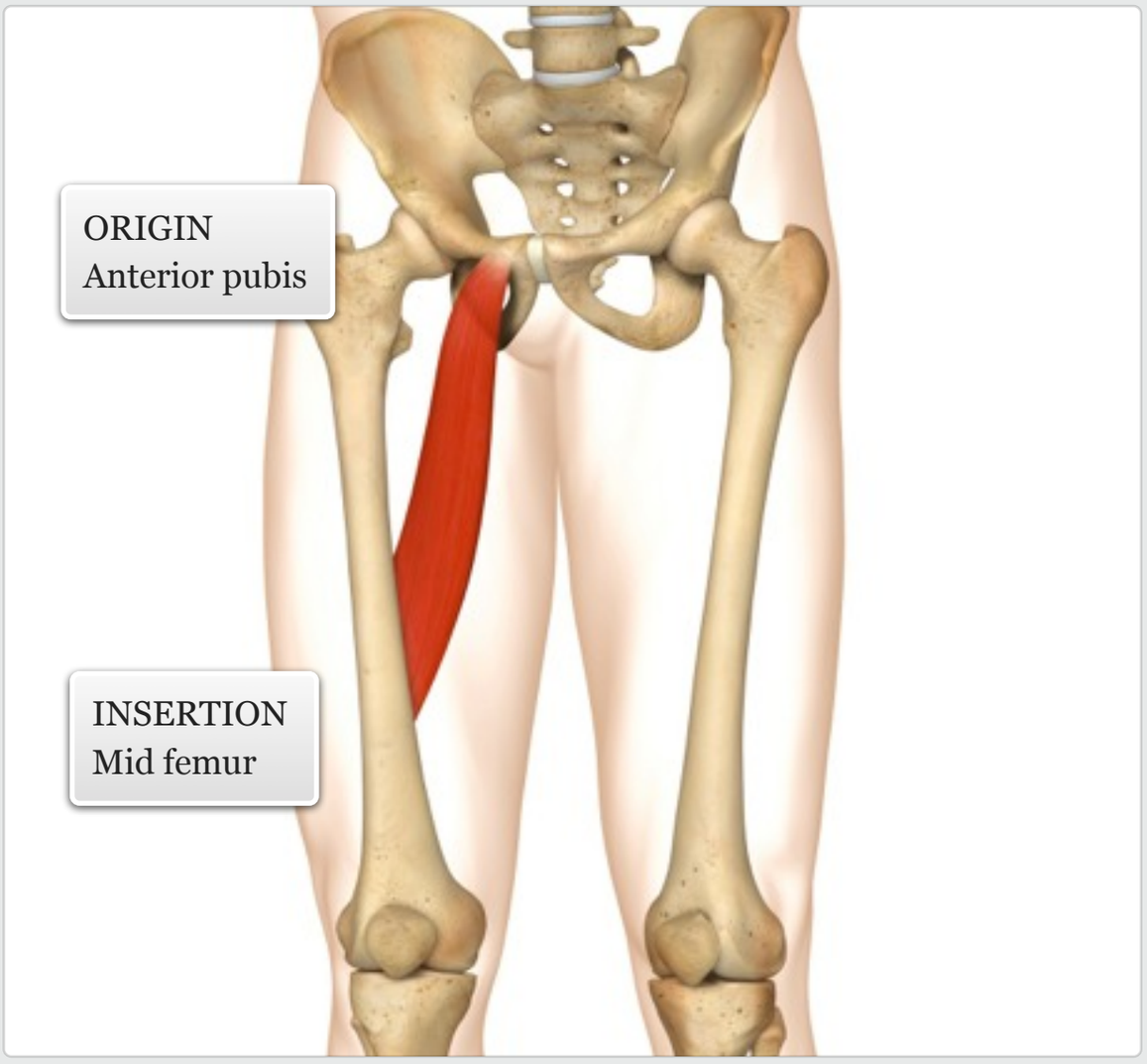
Balance: stabilisation during single leg exercises

Gym

level ||| knowledge

MUSCLE ACTIONS: Adduction and internal rotation of the hip

facts



muscle

Adductor brevis

Audio: Adductor brevis

Wood chopping

Ice skating (during turning)

Horse riding (gripping with thighs)

Stabilising the pelvis/hip during walking/running and bending

Daily Use

Cardio: running, cycling, stepper, rower, swimming

Resistance: lying/standing/seated hip adduction; wood chop variations; stabilisation during squatting and lunging

Power: jumping, hopping, kicking

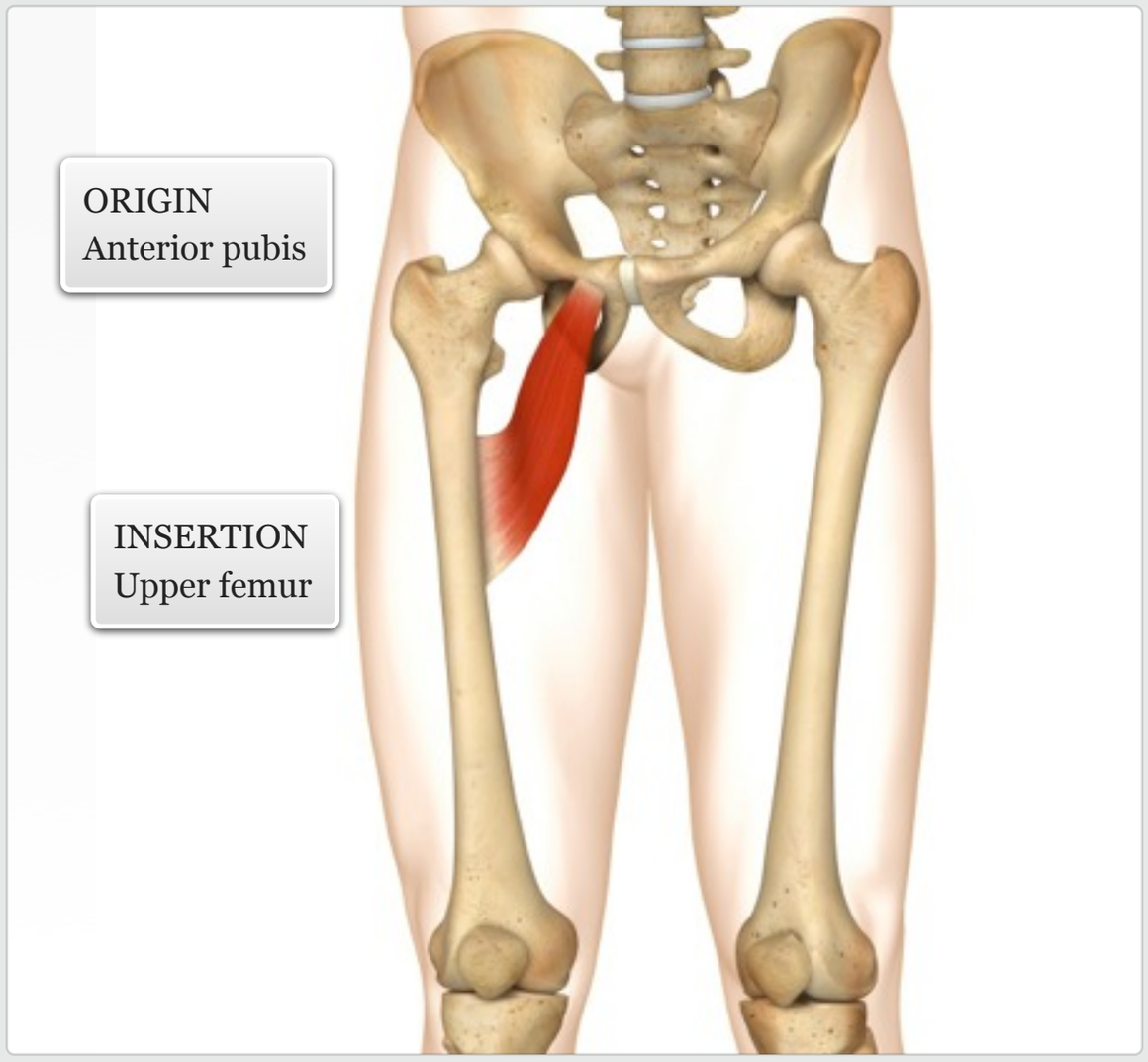
Balance: stabilisation during single leg exercises

Gym

level ||| knowledge

MUSCLE ACTIONS: Adduction and internal rotation of the hip

facts



muscle

Pectineus

Audio: Pectineus

Wood chopping

Ice skating (during turning)

Horse riding (gripping with thighs)

Stabilising the pelvis/hip during walking/running and bending

Daily Use

Cardio: running, cycling, stepper, rower, swimming

Resistance: lying/standing/seated hip adduction; wood chop variations; stabilisation during squatting and lunging

Power: jumping, hopping, kicking

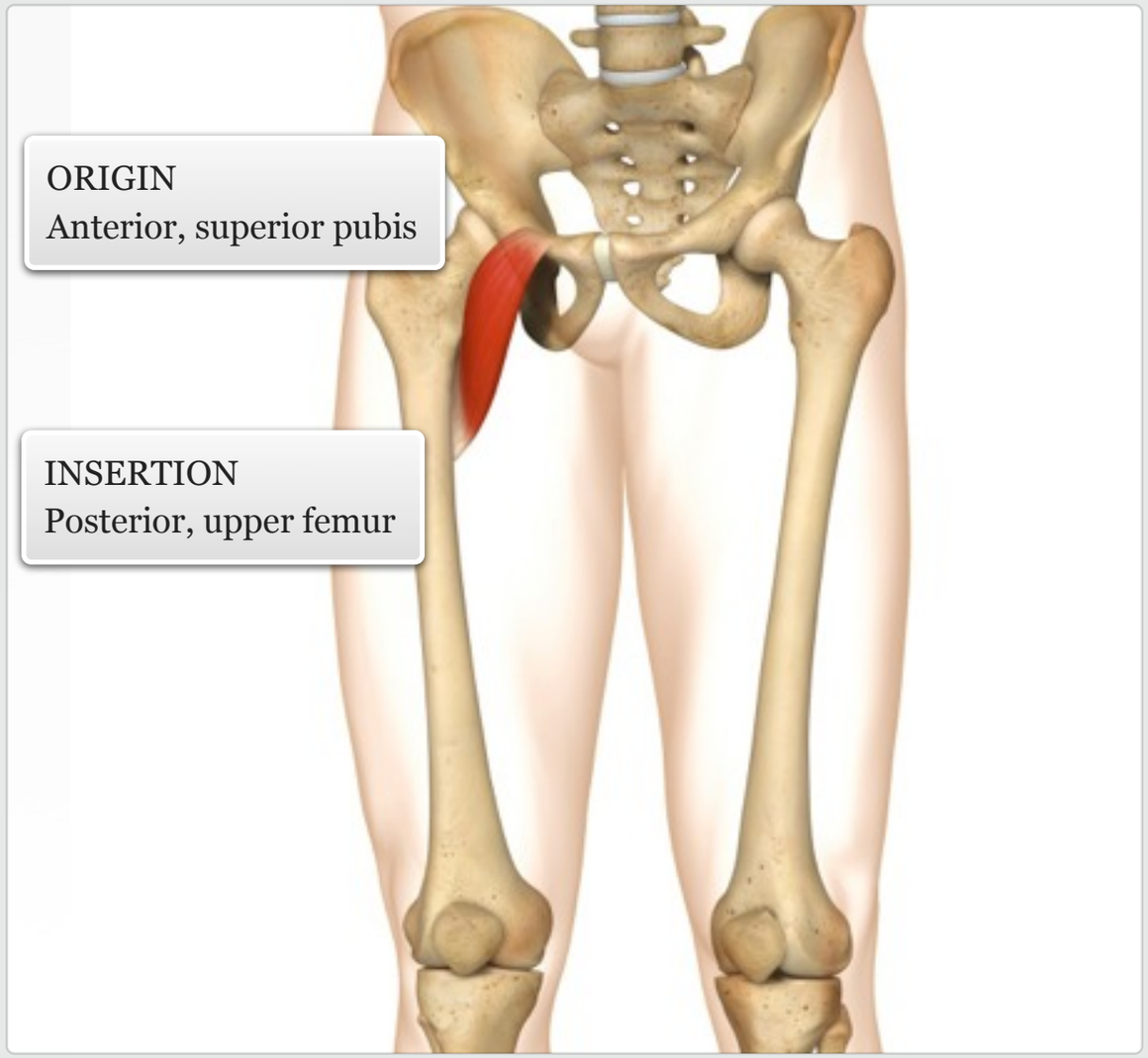
Balance: stabilisation during single leg exercises

Gym

level III knowledge

MUSCLE ACTIONS: Adduction and fexion of the hip

facts



muscle

Gracilis

Audio: Gracilis

Wood chopping

Ice skating (during turning)

Horse riding (gripping with thighs)

Stabilising the pelvis/hip during walking/running and bending

Daily Use

Cardio: running, cycling, stepper, rower, swimming

Resistance: lying/standing/seated hip adduction; wood chop variations; leg curl; side lunge

Power: jumping, hopping, kicking

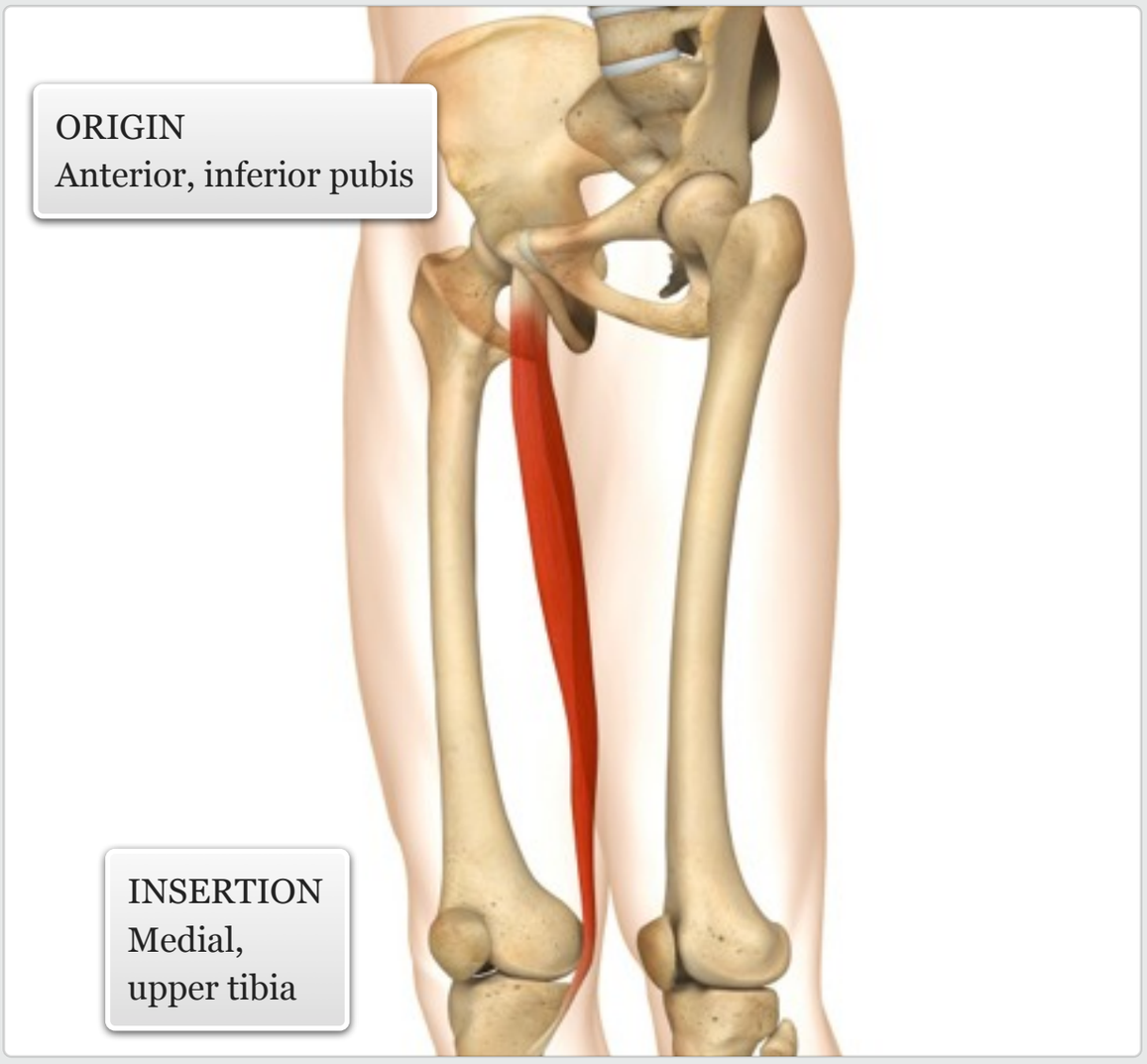
Balance: stabilisation during single leg exercises

Gym

level ||| knowledge

MUSCLE ACTIONS: Adduction and internal rotation of the hip, flexion of the knee

facts



muscle

Hip Fexors

Audio: Hip Fexors

Walking uphill, climbing, hiking

Getting out of bed/up off the floor (sit-up type movement)

Daily Use

N/A

Gym

level || knowledge

Iliacus

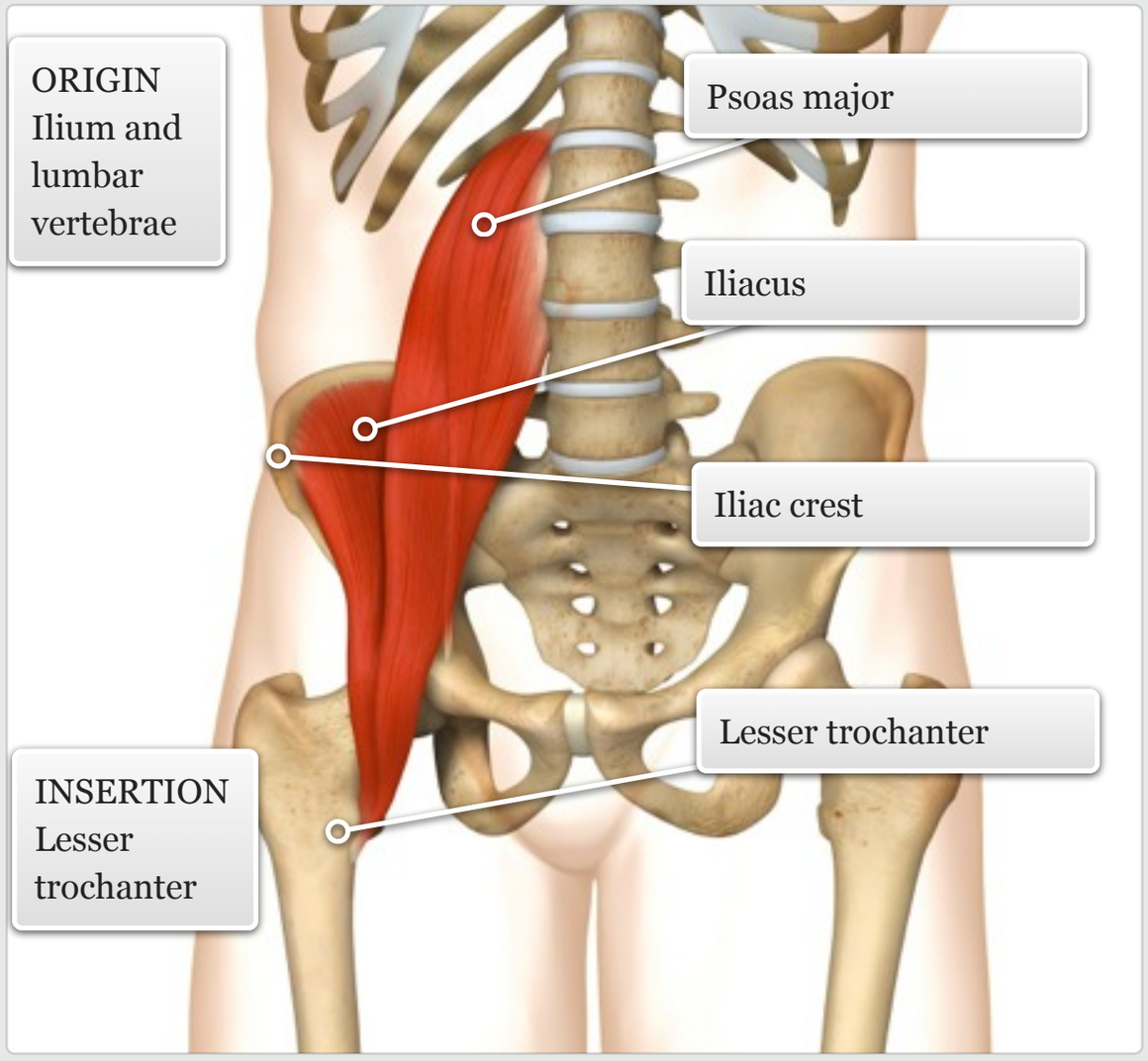
Psoas major

The iliacus and psoas major are collectively known as the iliopsoas, and are important hip fexors and stabilisers of the low back. Butchers will often refer to these muscles as 'tenderloin'.

The long psoas major muscle is located deep to the abdominal viscera, and stretches from the lumbar vertebrae to the lesser trochanter. The shorter, bulkier iliacus also runs deep to the abdominal contents, originating at the iliac fossa.

MUSCLE ACTIONS: Flexion of the hip

facts



muscle

Iliacus

Audio: Iliacus

Walking uphill, climbing, hiking

Getting out of bed/up off the floor (sit-up type movement)

Daily Use

Cardio: running, cycling, stepper

Resistance: lying/standing/ hanging leg raises; jack-knife on stability ball; plank variations

Power: tuck jumps, front kicks

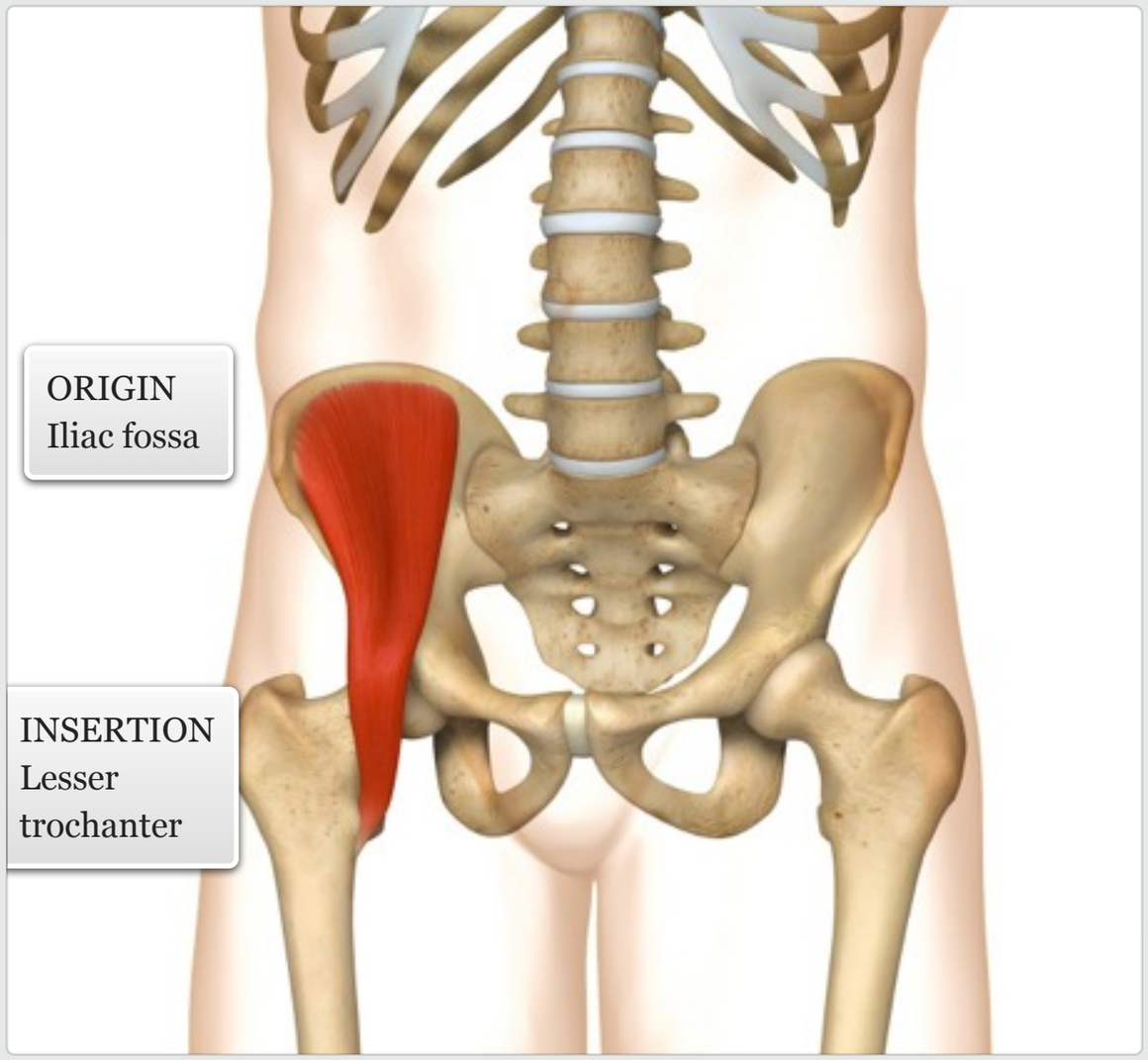
Balance: single leg exercises that involve hip flexion

Gym

level III knowledge

MUSCLE ACTIONS: Flexion and external rotation of the hip

facts



muscle

Psoas major

Audio: Psoas major

Walking uphill, climbing, hiking

Getting out of bed/up off the floor (sit-up type movement)

Daily Use

Cardio: running, cycling, stepper

Resistance: lying/standing/ hanging leg raises; jack-knife on stability ball; plank variations

Power: tuck jumps, front kicks

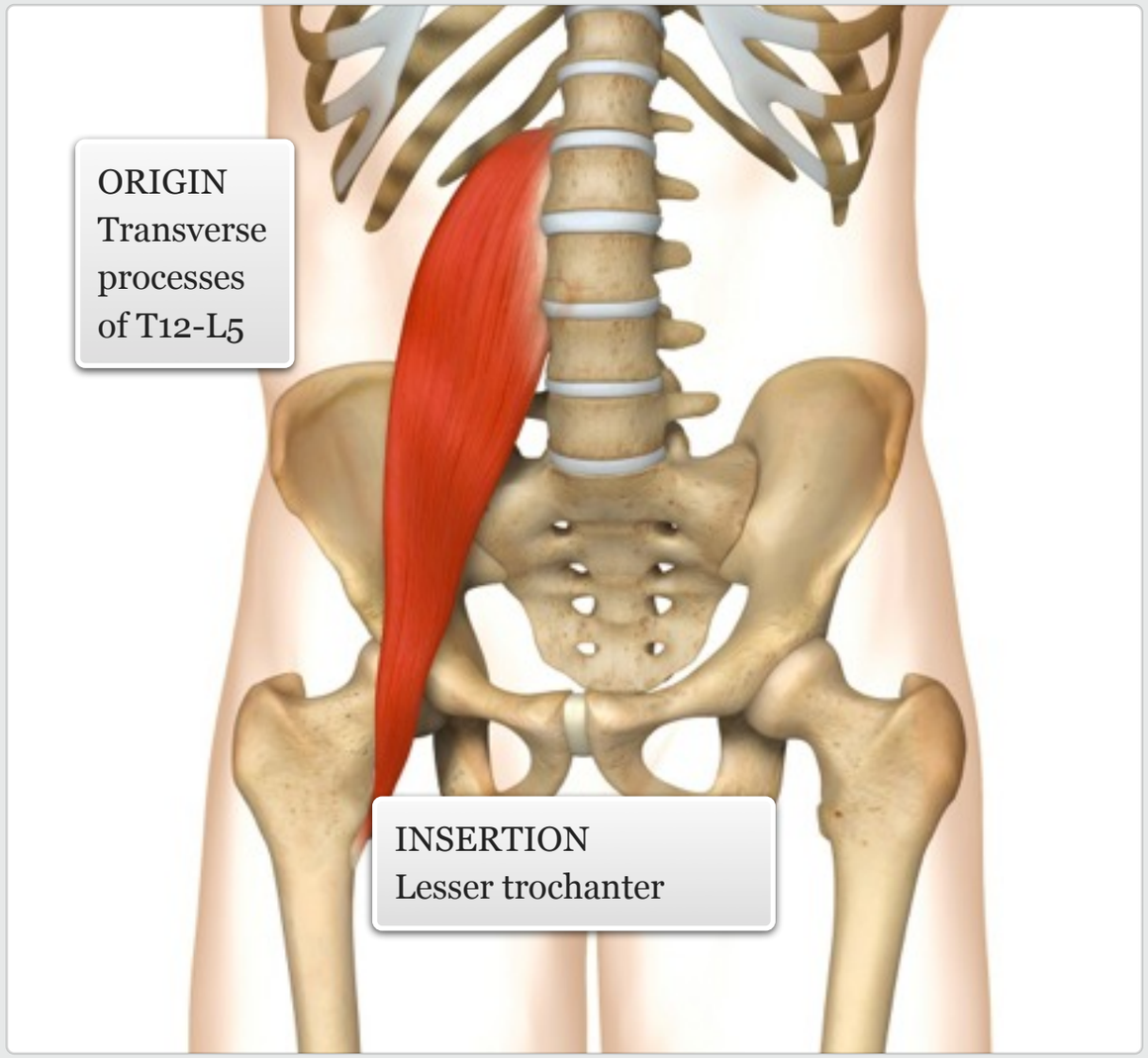
Balance: single leg exercises that involve hip flexion

Gym

level ||| knowledge

MUSCLE ACTIONS: Flexes and externally rotates the hip, laterally flexes the spine, anteriorly tilts the pelvis when the femur is fixed

facts



muscle

Tensor fasciae latae and iliotibial tract

Audio: Tensor fasciae latae and iliotibial tract

Raising legs to climb into a car

Daily Use

Cardio: running, cycling

Resistance: squatting

Power: jumping, kicking (to side)

Balance: single leg balance reach

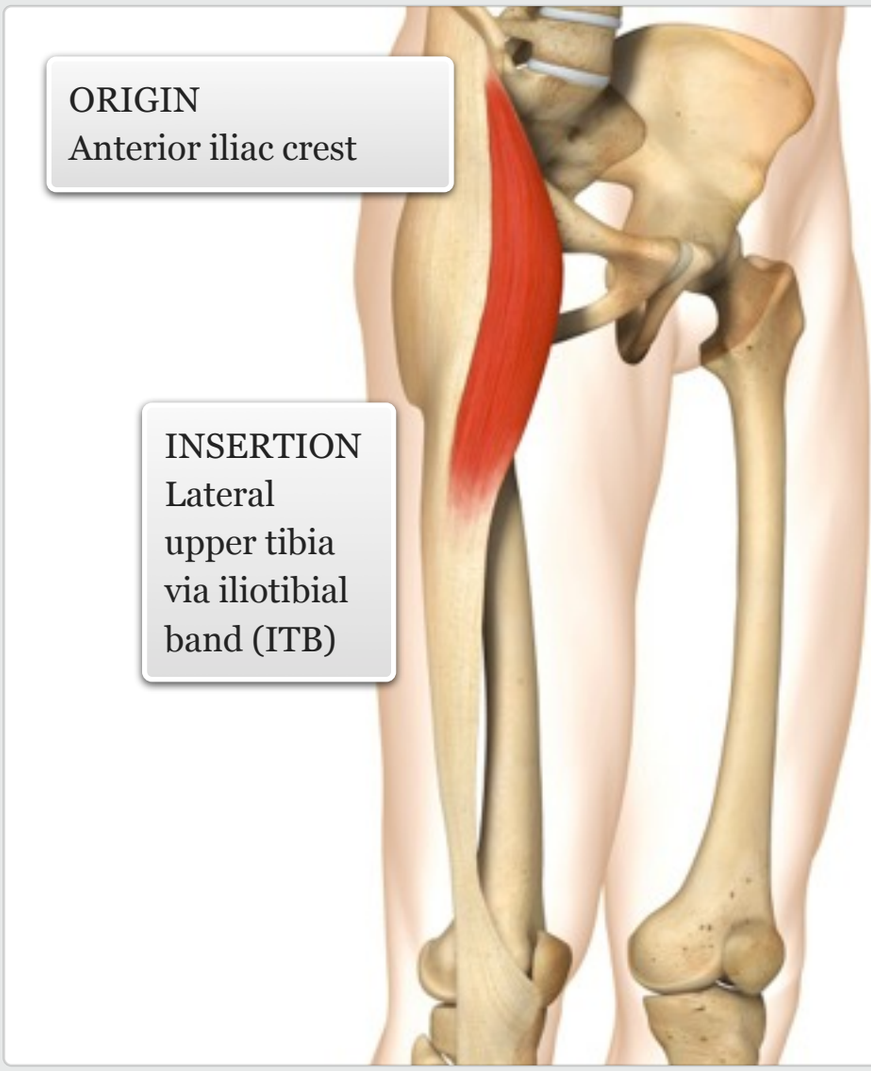
Gym

level ||| knowledge

The tensor fasciae latae (TFL) is a small, superficial muscle located on the lateral side of the upper thigh, and attaches to the iliotibial tract along with the gluteus maximus. The iliotibial tract is a superficial sheet of fascia running along the lateral thigh, emerging from the gluteal fascia and inserting at the tibial tubercle. It is considered to be a strong stabilising component of the hip and knee.

MUSCLE ACTIONS: Flexion and abduction of the hip

facts



muscle

Sartorius

Audio: Sartorius

Sitting on the floor in a tailor/ lotus position

Crossing/uncrossing legs

Daily Use

Cardio: cycling, walking/ running, stepper

Resistance: leg raise variations, sit-ups (feet secured); stability ball jack-knife

Power: jumping

Gym

level ||| knowledge

The sartorius is the longest muscle in the body, extending from the anterior superior iliac spine (ASIS), across the front of the thigh, to the medial aspect of the knee.

MUSCLE ACTIONS: Flexion, abduction and external rotation of the hip, flexion and internal rotation of the knee.

facts

ORIGIN
Anterior superior iliac spine (ASIS)

INSERTION
Medial upper tibia

muscle

Piriformis

Audio: Piriformis

Stabilisation of pelvis during standing

Controlling rapid hip medial rotation during gait

Daily Use

Cardio: cycling, walking/ running, stepper

Resistance: stabilisation during squat, lunge, deadlift, step-up, leg press

Power: jumping, hopping

Balance: single leg balance exercises

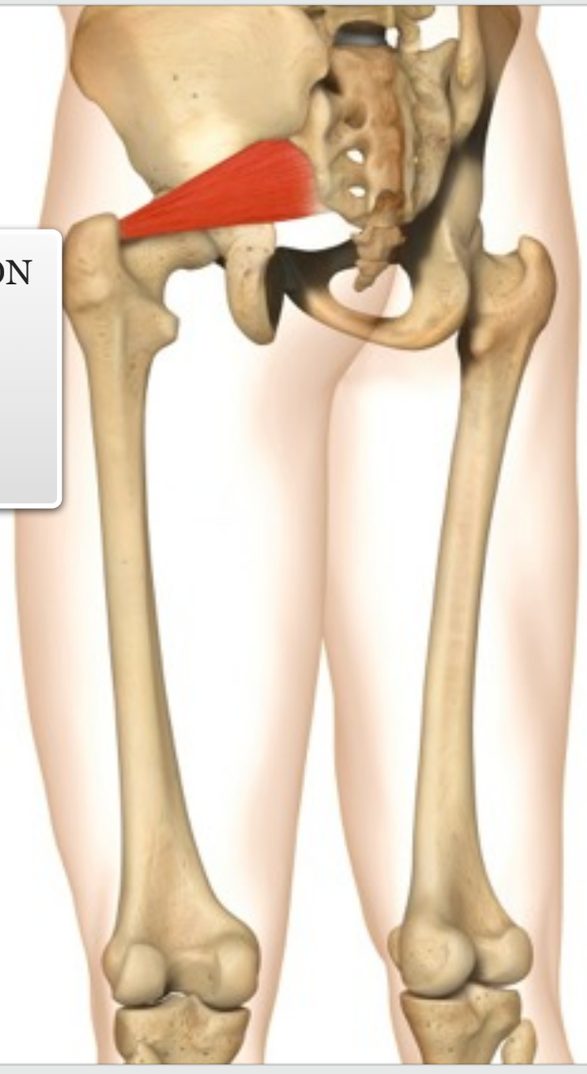
Gym

level ||| knowledge

The piriformis is a flat muscle that lies superficial to the sciatic nerve and deep to the gluteus maximus. It is one of six deep lateral rotators of the hip.

MUSCLE ACTIONS: Abduction and external rotation of the hip.

facts



muscle

Quadratus femoris

Audio: Quadratus femoris

Stabilisation of pelvis during standing

Controlling rapid hip medial rotation during gait

Daily Use

Cardio: cycling, walking/ running, stepper

Resistance: stabilisation during squat, lunge, deadlift, step-up, leg press

Power: jumping, hopping

Balance: single leg balance exercises

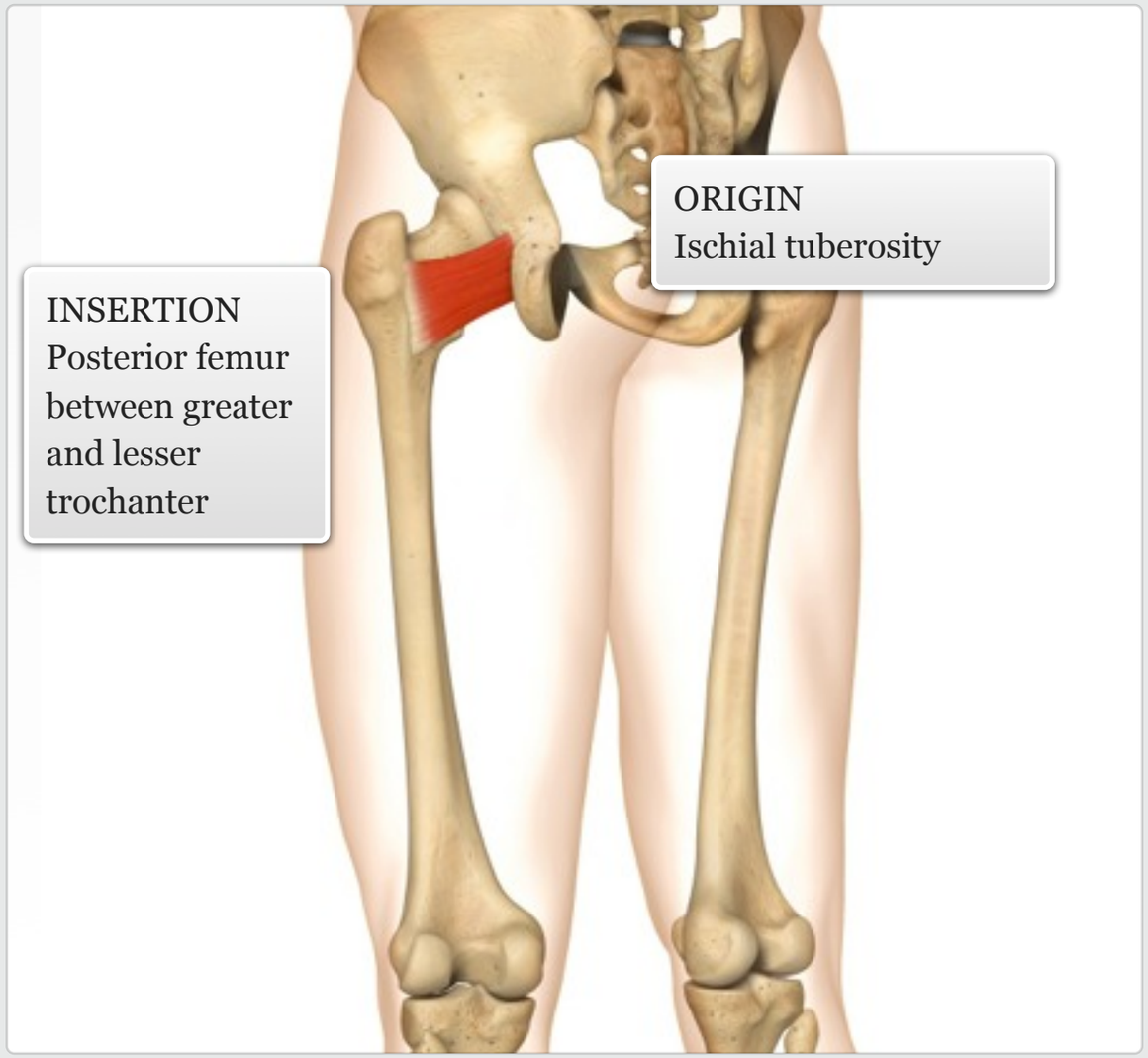
Gym

additional + knowledge

The quadratus femoris is a flat muscle that is a strong lateral rotator of the hip; it also acts to stabilise the femoral head in the acetabulum. The muscle is aligned with the inferior gemellus above and the adductor magnus below.

MUSCLE ACTIONS: Laterally rotates the hip; assists to adduct the hip

facts



muscle

Obturator externus and internus

Audio: Obturator externus and internus

Stabilisation of pelvis during standing

Controlling rapid hip medial rotation during gait

Daily Use

Cardio: cycling, walking/ running, stepper

Resistance: stabilisation during squat, lunge, deadlift, step-up, leg press

Power: jumping, hopping

Balance: single leg balance exercises

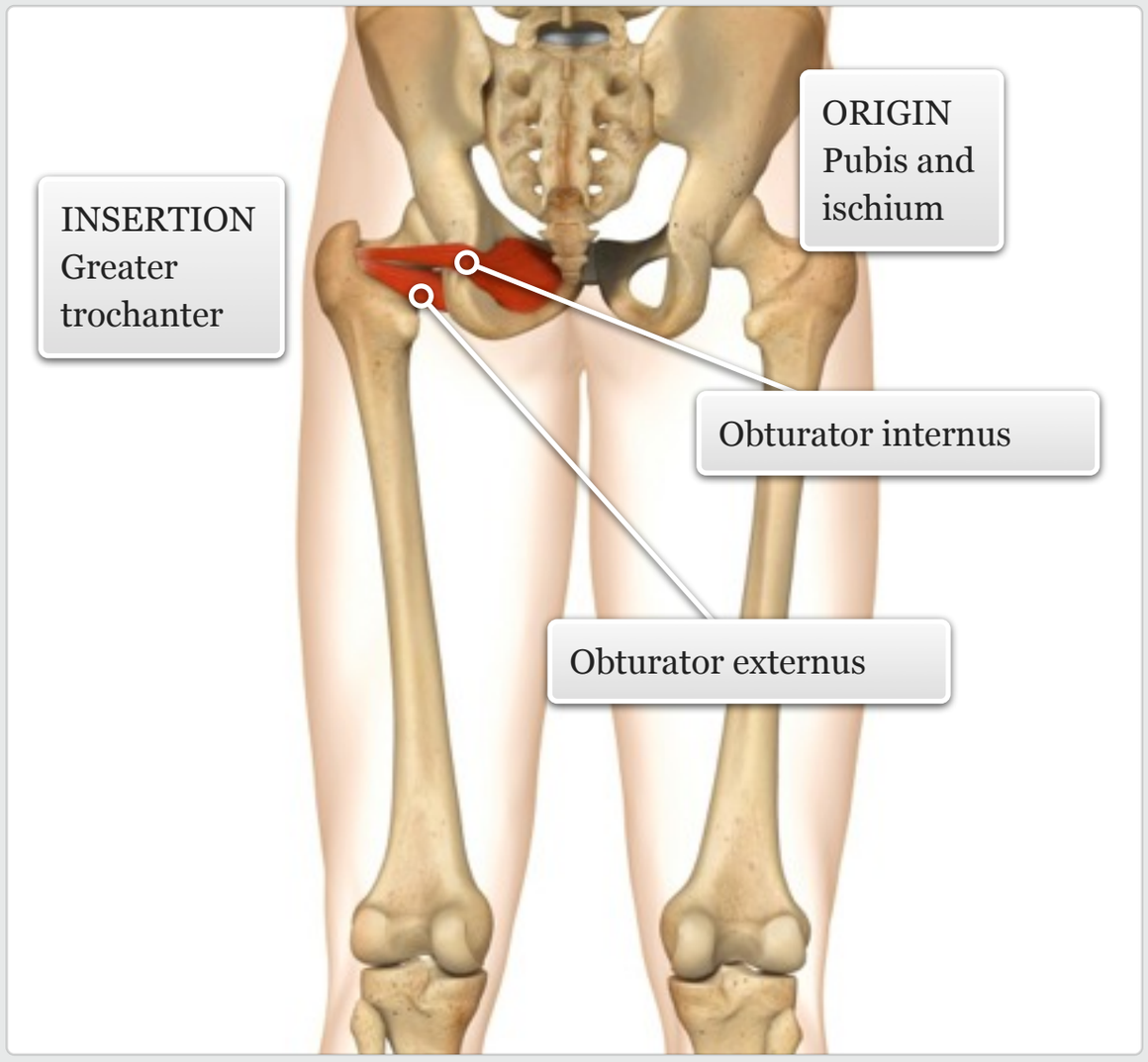
Gym

additional + knowledge

The small obturator externus and the thicker obturator internus muscles are both fan-shaped, whose tendons cross the posterior aspect of the femoral neck. As well as laterally rotating the hip, both muscles act to stabilise the femoral head in the acetabulum.

MUSCLE ACTIONS: Laterally rotates the hip.

facts



muscle

Gemellus superior and inferior

Audio: Gemellus superior and inferior

Stabilisation of pelvis during standing

Controlling rapid hip medial rotation during gait

Daily Use

Cardio: cycling, walking/ running, stepper

Resistance: stabilisation during squat, lunge, deadlift, step-up, leg press

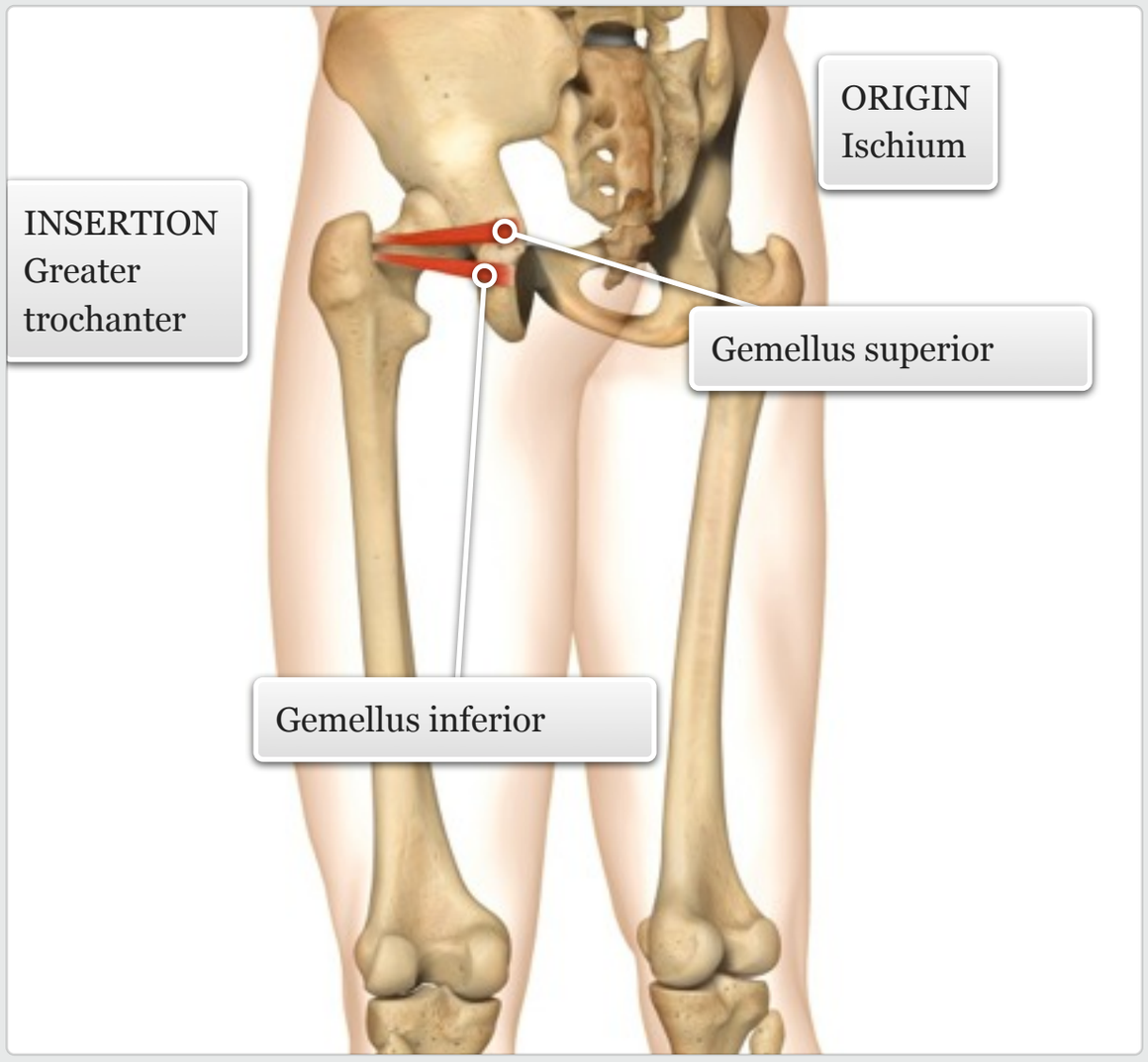
Power: jumping, hopping

Balance: single leg balance exercises

Gym

The gemellus superior and inferior are narrow, triangular muscles that are often considered as extra-pelvic parts of the obturator internus.

MUSCLE ACTIONS: Laterally rotates the hip.



additional + knowledge

facts

muscle

Muscles of the spine and thorax

The muscles of the spine and thorax are located on the posterior trunk and abdominal region, and produce movement of the vertebral column and rib cage. The unique arrangement of these muscles (often into dense, interwoven bands) allows them to play an important role in both trunk stability and mobility. These muscles are best understood when divided into four main groups according to their function: the extensors (erector spinae, quadratus lumborum), the flexors (abdominal wall), the lateral flexors (quadratus lumborum, obliques), and the rotators (obliques, multifidi).

These muscles are used both statically during the maintenance of upright posture, as well as dynamically in bending and lifting movements.

Rectus abdominis

Audio: Rectus abdominis

Sitting up in bed

Coughing, sneezing and defecating

Daily Use

Cardio: all cardio exercises*

Resistance: specifically crunch/sit-up variations; all resistance exercises*

Power: all power exercises*

Balance: all balance exercises*

*any integrated exercise/movement pattern will utilise the core musculature to a degree, depending on load and intensity

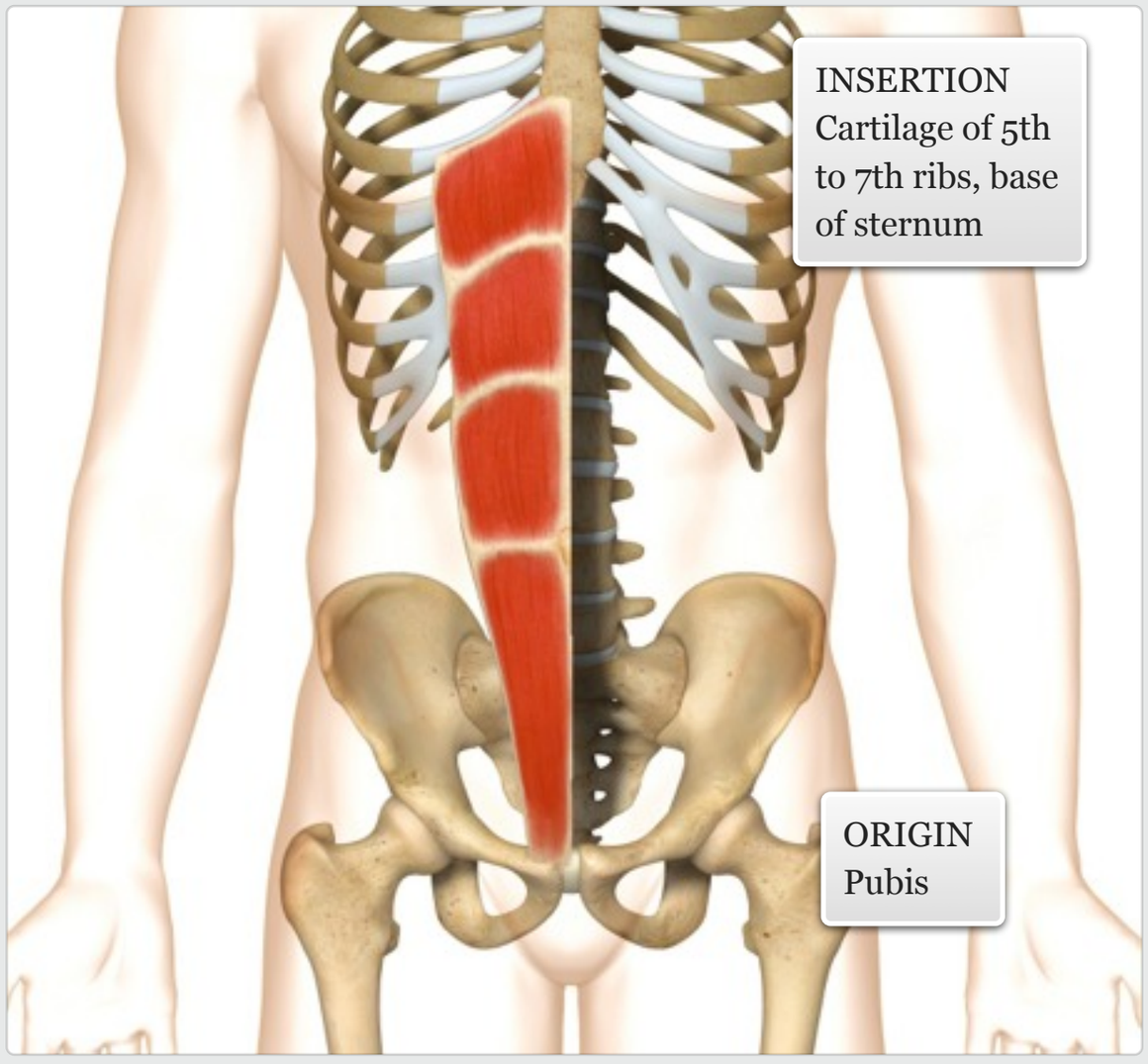
Gym

level || knowledge

The rectus abdominis (also known as the 'washboard' or six-pack) is a paired muscle running vertically on each side of the anterior abdominal wall, and is the most superficial of the abdominal muscles.

MUSCLE ACTIONS: Flexion and lateral flexion of the spine, posteriorly tilts the pelvis.

facts



muscle

Internal oblique

Audio: Internal oblique

Sitting up in bed and reaching for alarm clock

Chopping wood, raking leaves

Coughing, sneezing and defecating

Daily Use

Cardio: all cardio exercises*

Resistance: specifically torso rotation (e.g. twisting crunch); all resistance exercises*

Power: specifically throwing movements; all power exercises*

Balance: all balance exercises*

*any integrated exercise/movement pattern will utilise the core musculature to a degree, depending on load and intensity

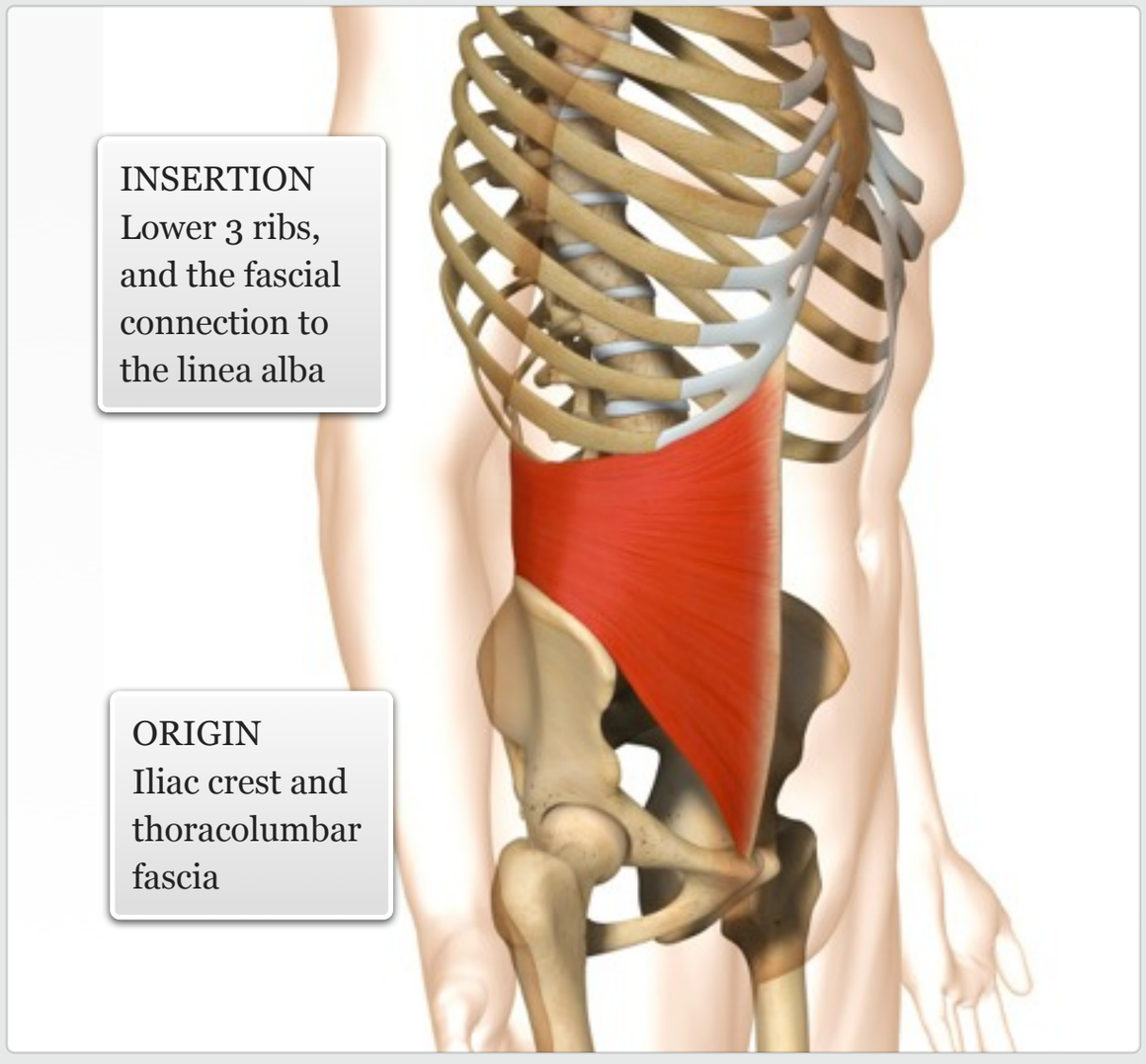
Gym

level || knowledge

The internal oblique is a thin muscle that wraps around the waist, and whose fibres run perpendicular to the external oblique. The muscle runs up and towards the midline from its origin.

MUSCLE ACTIONS: Rotation and lateral flexion of the spine.

facts



muscle

External oblique

Audio: External oblique

Sitting up in bed and reaching for alarm clock

Chopping wood, raking leaves

Coughing, sneezing and defecating

Daily Use

Cardio: all cardio exercises*

Resistance: specifically torso rotation (e.g. twisting crunch); all resistance exercises*

Power: specifically throwing movements; all power exercises*

Balance: all balance exercises*

*any integrated exercise/movement pattern will utilise the core musculature to a degree, depending on load and intensity

Gym

The external oblique is the largest and the most superficial of the three flat muscles of the lateral anterior abdominal wall. It is best palpated at its attachments to the lower ribs.

MUSCLE ACTIONS: Rotation and lateral flexion of the spine.

level || knowledge

facts

muscle

Quadratus lumborum

Audio: Quadratus lumborum

Hiking the hip when stepping over a box

Raising yourself up from a side lying position

Ballroom dancing (especially salsa and tango)

Daily Use

Cardio: walking, running, stepping

Resistance: side bends

Power: hopping, kicking, jumping

Balance: single leg balance exercises (stabilisation)

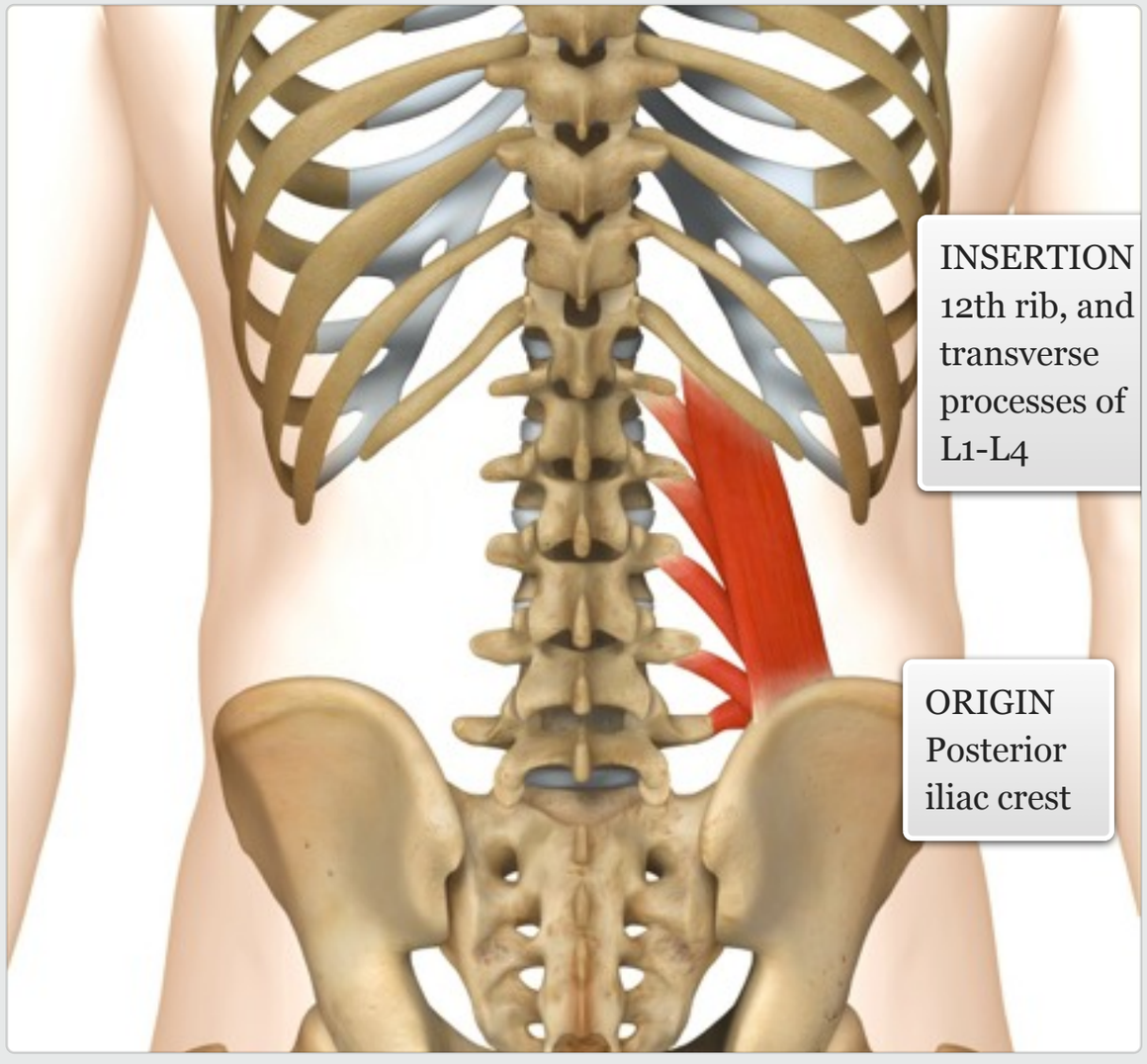
Gym

level || knowledge

The quadratus lumborum is a thick muscle, often considered to be an abdominal muscle located on the posterior surface of the thorax. Its medial portion is deep to the erector spinae, but its lateral edge is accessible from the side of the torso.

MUSCLE ACTIONS: Lateral flexion and extension of the spine, laterally tilts the pelvis.

facts



muscle

Pelvic floor muscles

Audio: Pelvic floor muscles

Coughing, sneezing

Holding the urge to defecate or urinate

Daily Use

Resistance: pelvic floor contractions (Kegel exercises)

Gym

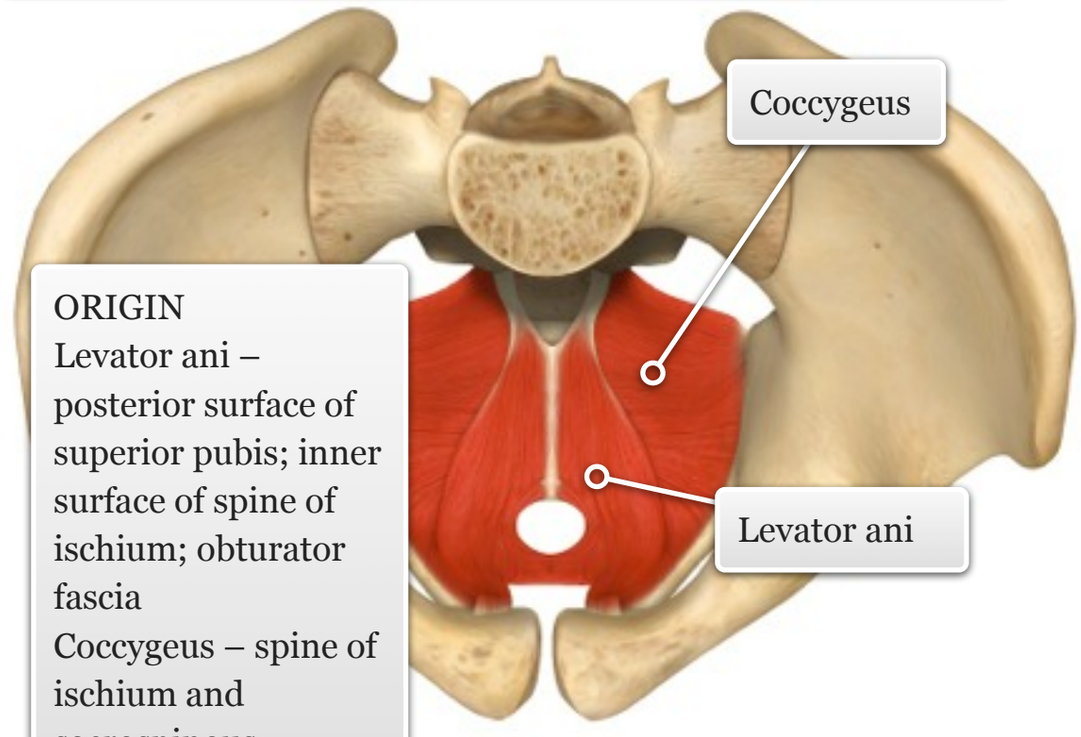
additional + knowledge

The pelvic floor muscles is formed primarily by two levator ani and two coccygeus muscles. Along with the surrounding fascia, these sets of muscles span the inside floor of the pelvis, and help to support the abdominal/pelvic viscera.

MUSCLE ACTIONS: Supports viscera; maintenance of continence; facilitates birth.

facts

INSERTION
Levator ani - coccyx, rectum, and levator ani on the other side
Coccygeus – coccyx and lower sacrum



ORIGIN
Levator ani – posterior surface of superior pubis; inner surface of spine of ischium; obturator fascia
Coccygeus – spine of ischium and sacrospinous ligament

muscle

Diaphragm

Audio: Diaphragm

Singing

Blowing up a balloon

Deep breathing during meditation

Daily Use

Any exercise that significantly raises heart rate or requires deeper breathing

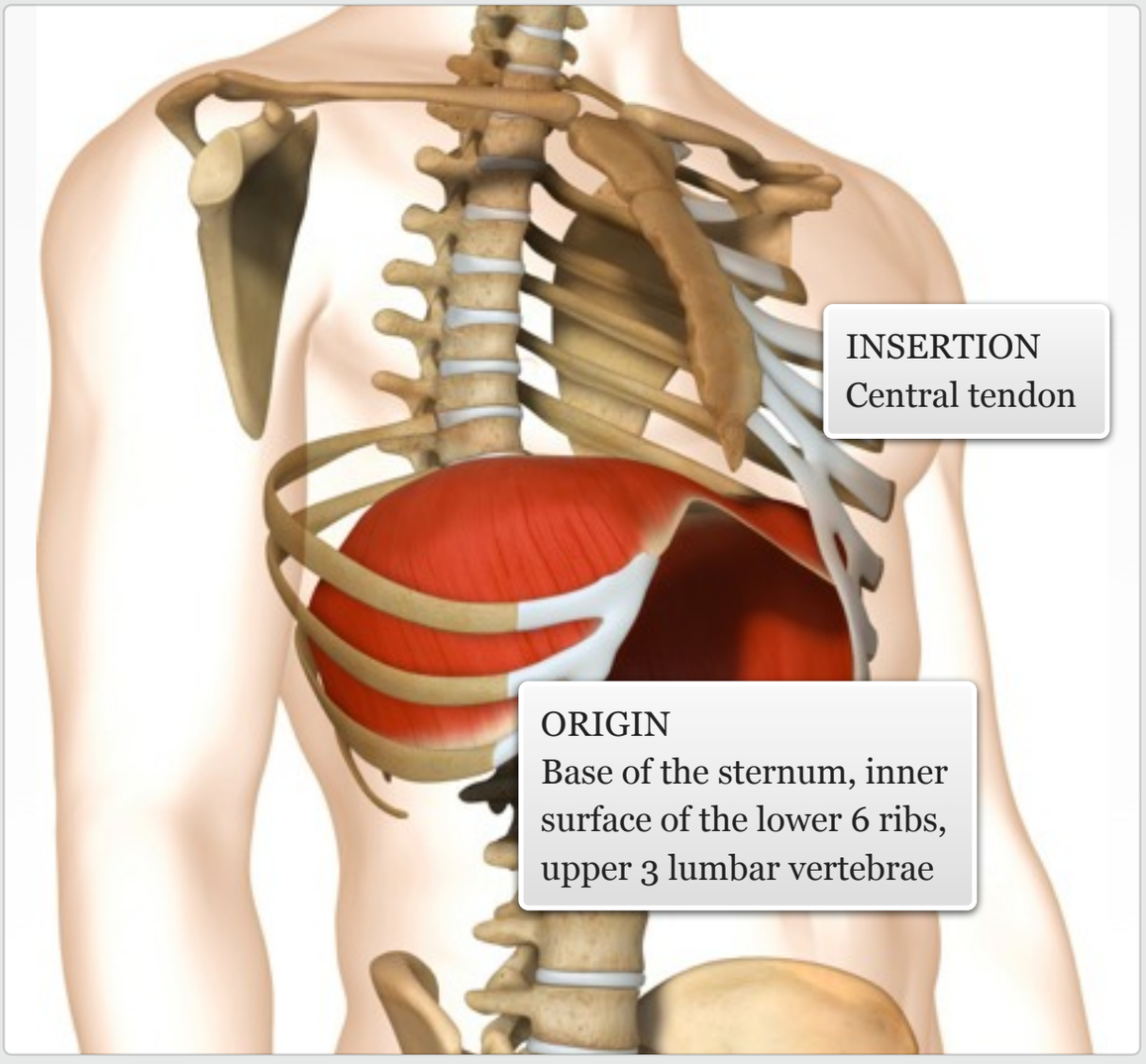
Gym

level || knowledge

The diaphragm is the primary muscle of respiration. Its broad dome-like shape separates the upper and lower thoracic cavities, and its fibres have a number of attachments that converge at a central tendon.

MUSCLE ACTIONS: Draws down central tendon of diaphragm; increases volume of thorax during inhalation.

facts



muscle

Intercostal muscles

Audio: Intercostal muscles

Singing

Blowing up a balloon

Deep breathing during meditation

Daily Use

Any exercise that significantly raises heart rate or requires deeper breathing

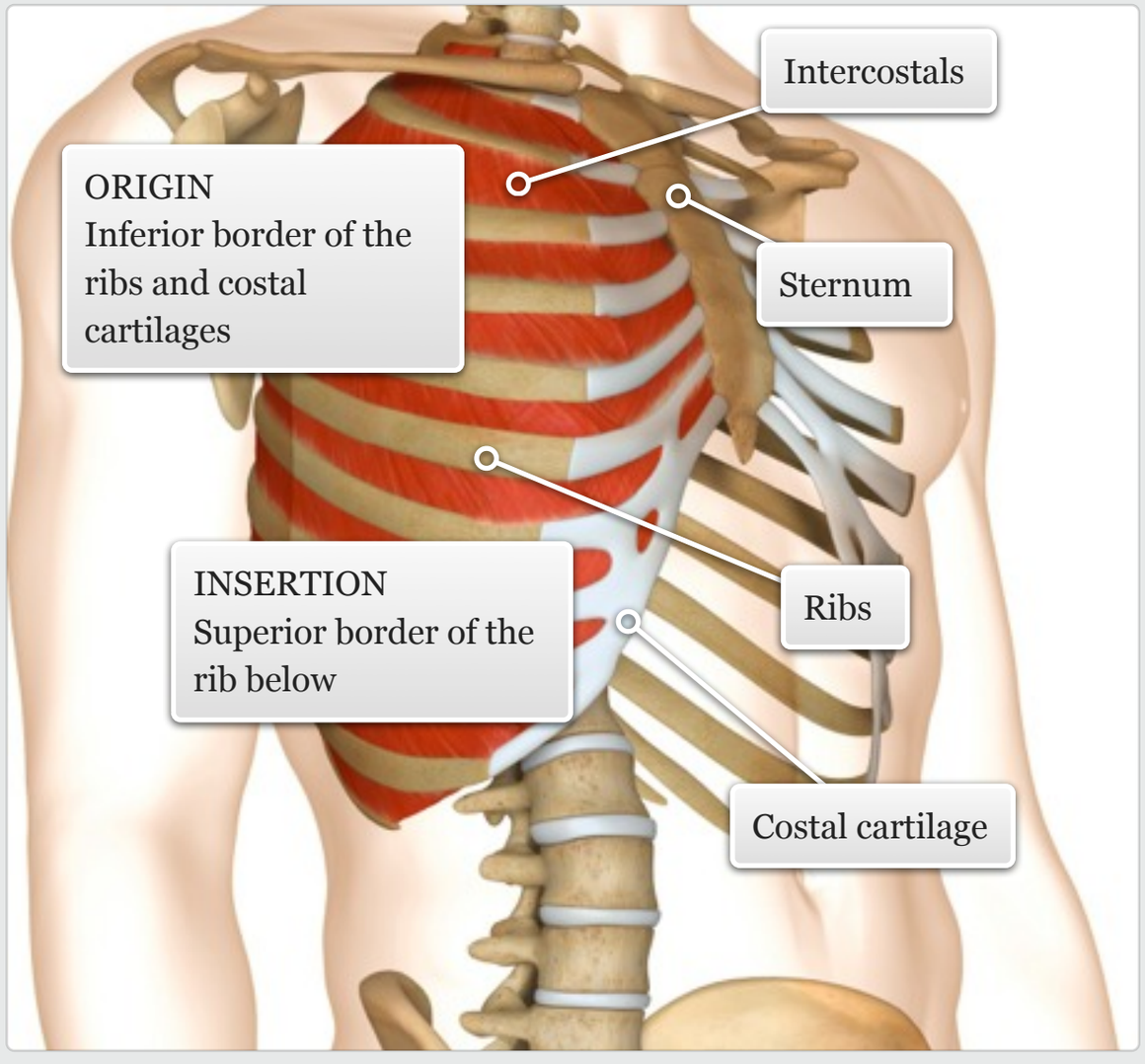
Gym

level || knowledge

The intercostal muscles are small slender muscles between the ribs, and are well known as the meat on 'spare ribs'. The fibres of these two muscle groups run perpendicular to each other. They help to stabilise the rib cage and assist in respiration.

MUSCLE ACTIONS: Elevate ribs to aid inspiration, draw ribs down to aid expiration.

facts



muscle

Thoracolumbar fascia and muscles

Audio: Thoracolumbar fascia and muscles

N/A

Daily Use

N/A

Gym

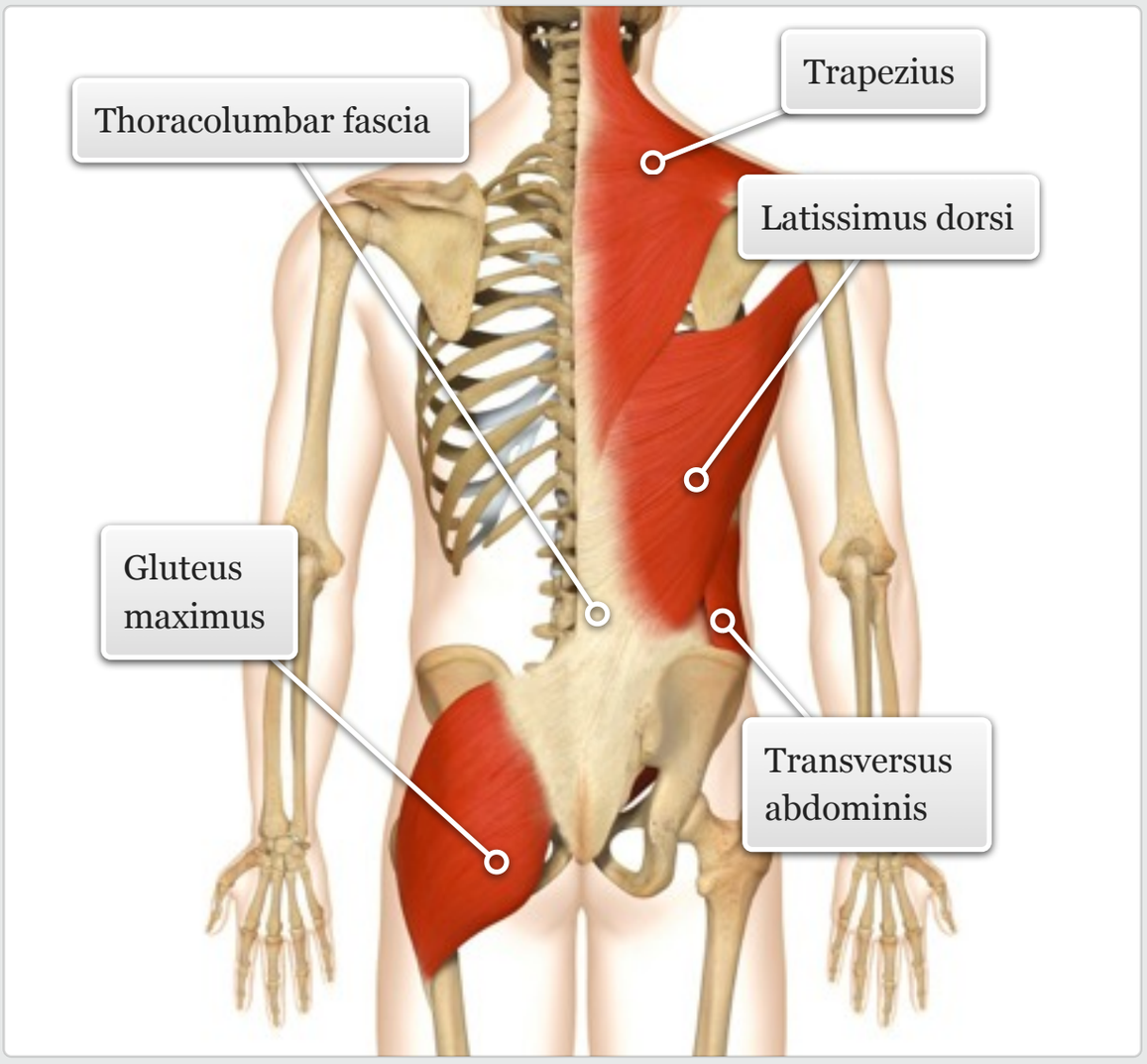
additional + knowledge

The thoracolumbar fascia is a large diamond-shaped sheet that is most developed in the lumbar region. A number of back muscles lie within the criss-cross layers of the fascia, and the fascia is also continuous with a number of muscles, including the gluteus maximus, transversus abdominis, latissimus dorsi, and trapezius.

The fascia has three layers - anterior, middle, and posterior.

The muscles that connect into the three layers of the thoracolumbar fascia help to provide both a stabilizing and biomechanical role for the body.

facts



muscle

Erector spinae group

Audio: Erector spinae group

Maintaining upright posture

Bending to the side to pick up a bag or suitcase

Returning to standing after tying your shoelaces

Daily Use

N/A

Gym

level || knowledge

Spinalis

Longissimus

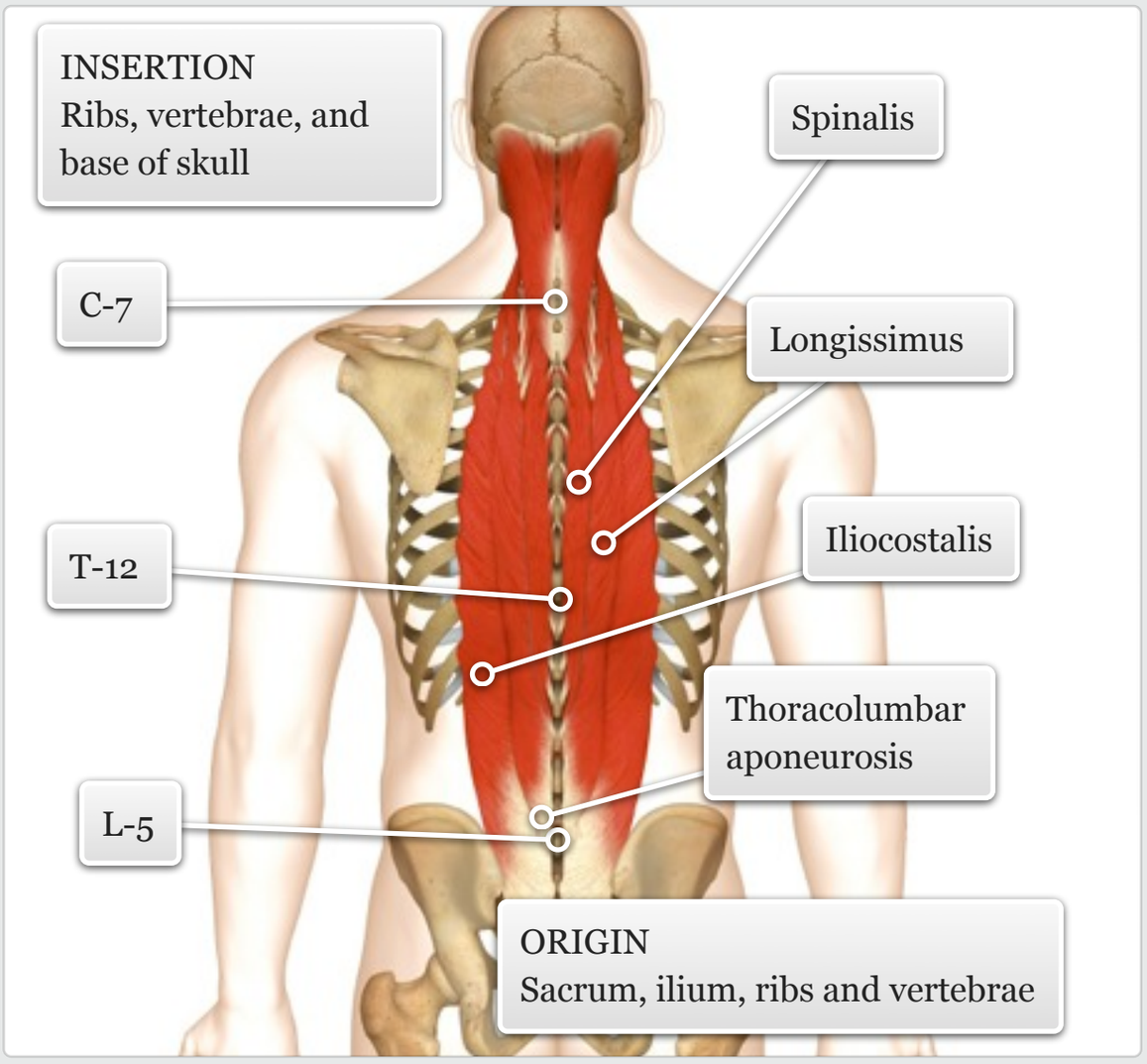
Iliocostalis

The erector spinae group runs from the sacrum to the base of the skull. The group has three main branches – spinalis, longissimus, and iliocostalis.

The spinalis is the smallest of the erector spinae muscles, and lies closest to the spine in the lamina groove. The thick longissimus and iliocostalis form a visible mound alongside the lumbar and thoracic spine.

MUSCLE ACTIONS: Extension and lateral flexion of the spine.

facts



muscle

Spinalis

Audio: Spinalis

Maintaining upright posture

Bending to the side to pick up a bag or suitcase

Returning to standing after tying your shoelaces

Daily Use

Cardio: any exercise or movement that requires the spine to be held unsupported, e.g. running, cycling, rowing

Resistance: any exercise or movement that requires the spine to be held unsupported and/or extend within a functional range of motion, e.g. squatting, lunging, stability ball back extension

Gym

level ||| knowledge

MUSCLE ACTIONS: Lateral flexion and extension of the spine

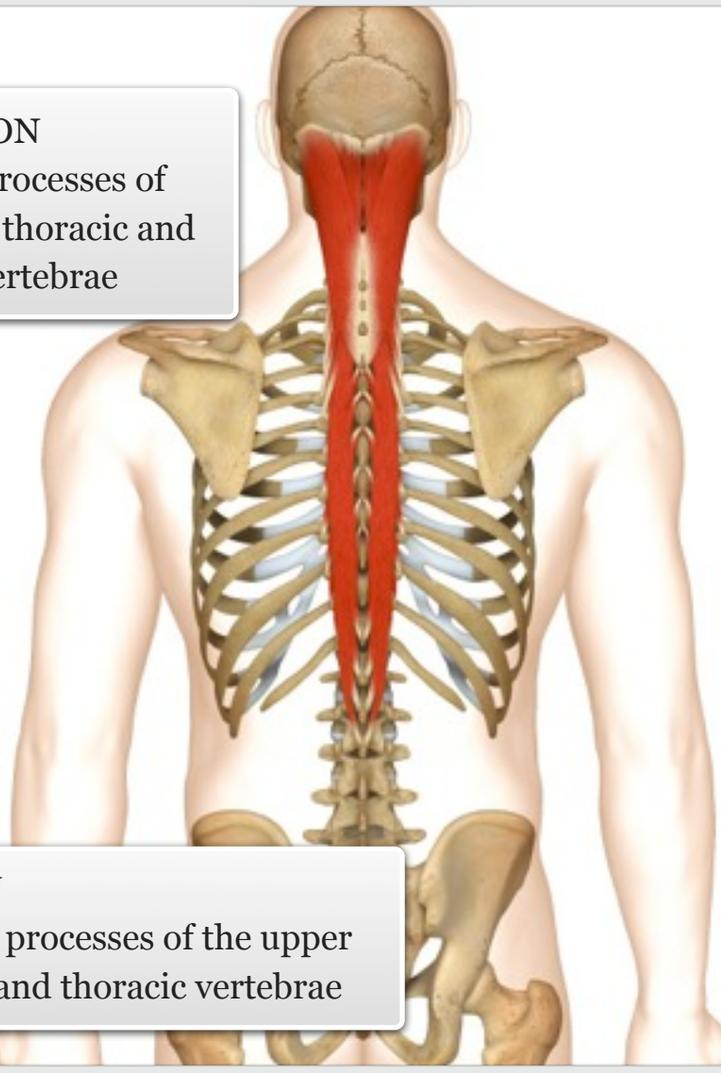
GYM USE CONTINUED:

Power: any exercise or movement that requires the spine to stabilise or extend/rotate explosively, e.g. jumping, backward/oblique ball toss

Balance: any exercise or movement that requires the spine to be held unsupported, e.g. single leg balance

facts

INSERTION
Spinous processes of the upper thoracic and cervical vertebrae



ORIGIN
Spinous processes of the upper lumbar and thoracic vertebrae

muscle

Longissimus

Audio: Longissimus

Maintaining upright posture

Bending to the side to pick up a bag or suitcase

Returning to standing after tying your shoelaces

Daily Use

Cardio: any exercise or movement that requires the spine to be held unsupported, e.g. running, cycling, rowing

Resistance: any exercise or movement that requires the spine to be held unsupported and/or extend within a functional range of motion, e.g. squatting, lunging, stability ball back extension

Gym

level ||| knowledge

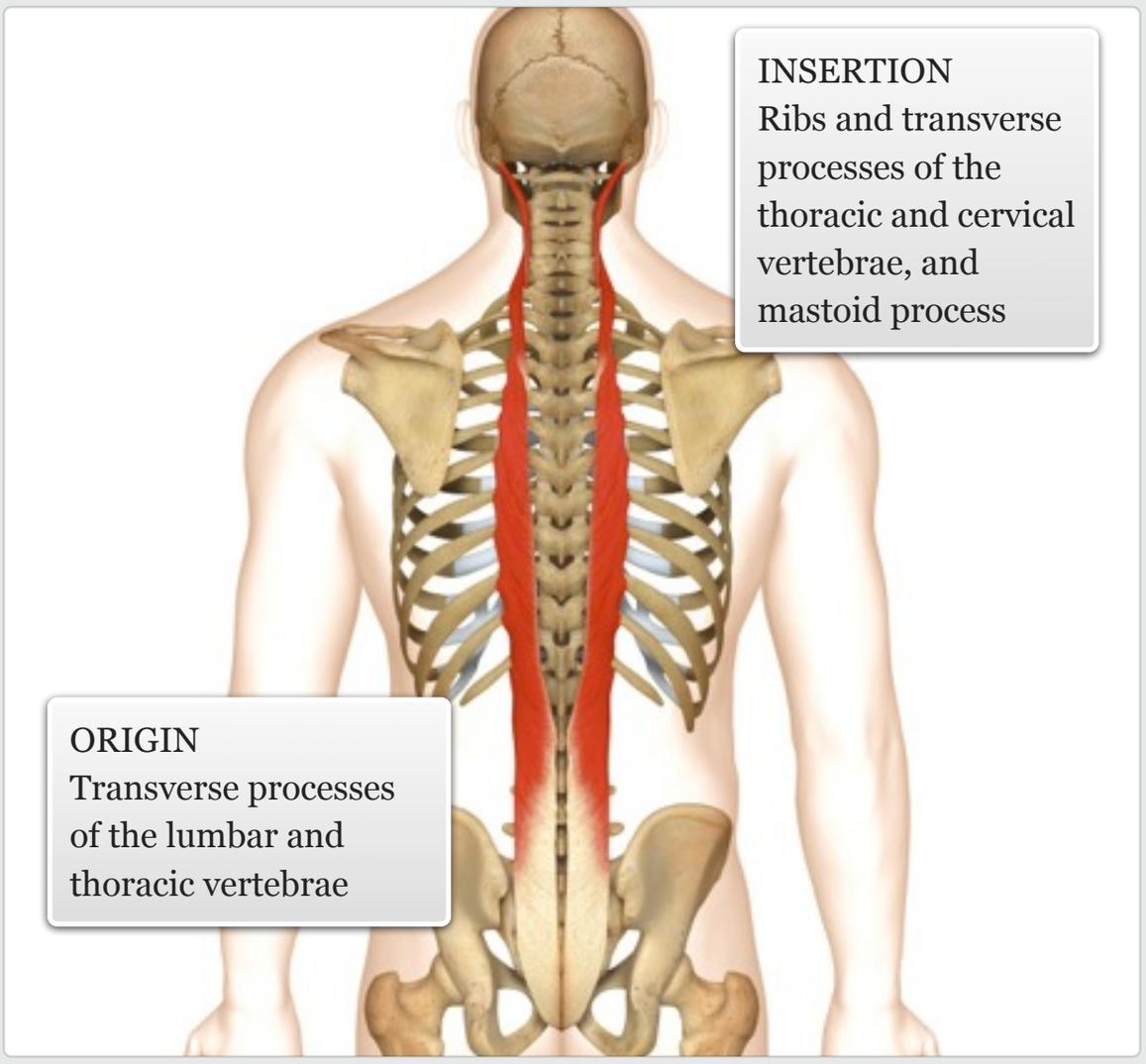
MUSCLE ACTIONS: Lateral flexion and extension of the spine

GYM USE CONTINUED:

Power: any exercise or movement that requires the spine to stabilise or extend/rotate explosively, e.g. jumping, backward/oblique ball toss

Balance: any exercise or movement that requires the spine to be held unsupported, e.g. single leg balance

facts



muscle

Iliocostalis

Audio: Iliocostalis

Maintaining upright posture

Bending to the side to pick up a bag or suitcase

Returning to standing after tying your shoelaces

Daily Use

Cardio: any exercise or movement that requires the spine to be held unsupported, e.g. running, cycling, rowing

Resistance: any exercise or movement that requires the spine to be held unsupported and/or extend within a functional range of motion, e.g. squatting, lunging, stability ball back extension

Gym

level III knowledge

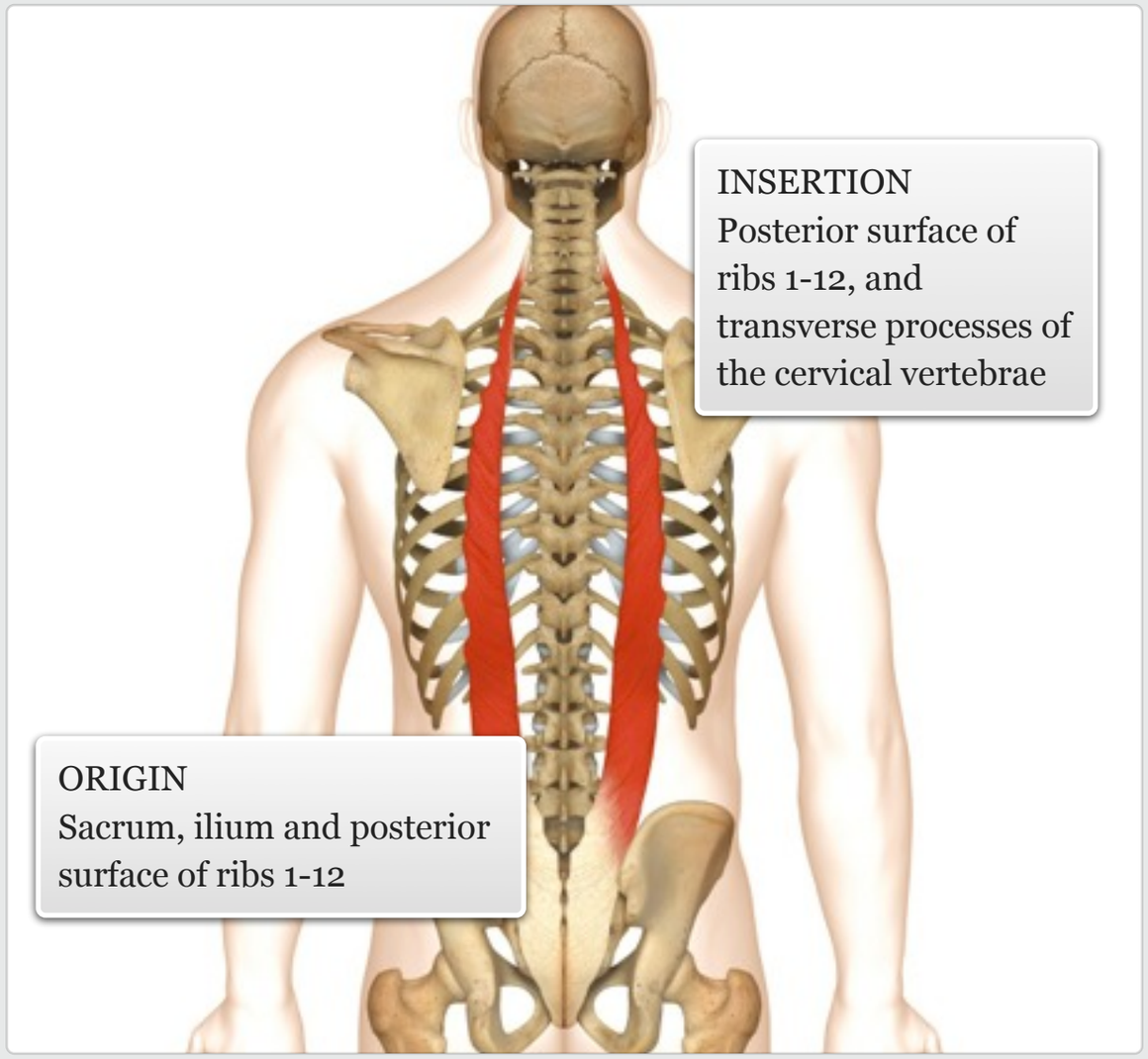
MUSCLE ACTIONS: Lateral flexion and extension of the spine

GYM USE CONTINUED:

Power: any exercise or movement that requires the spine to stabilise or extend/rotate explosively, e.g. jumping, backward/oblique ball toss

Balance: any exercise or movement that requires the spine to be held unsupported, e.g. single leg balance

facts



muscle

Multifidus

Audio: Multifidus

Turning to put on a seatbelt

Stretching/rotating during a yawn

Returning from any bending movement

Daily Use

Any exercise that requires the control and maintenance of optimal posture, particularly during spinal extension and rotation

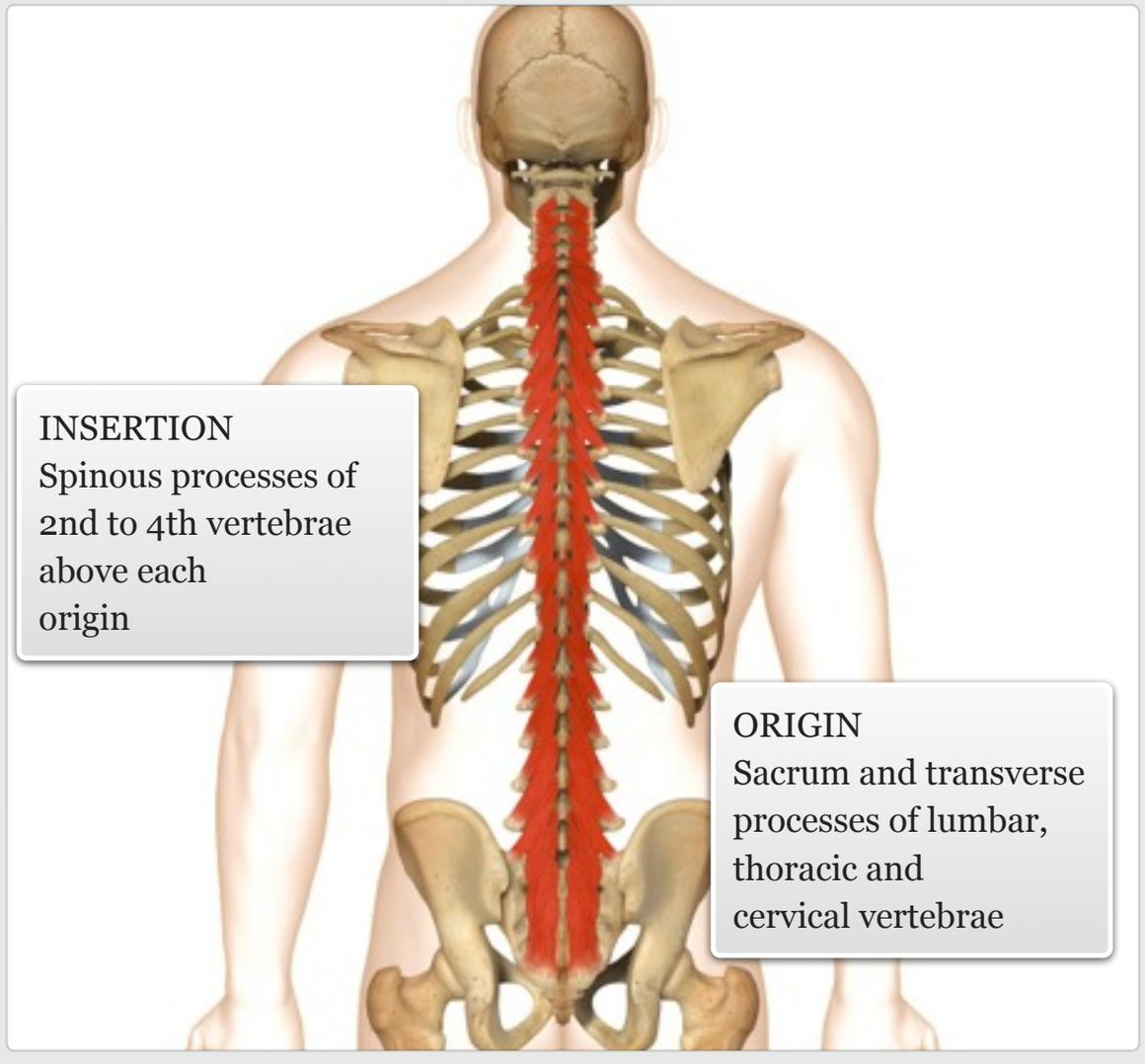
Gym

level ||| knowledge

The multifidus is a series of small muscles which travel up the length of the spine. These surprisingly thick muscles are accessible in the lumbar region, and are the only muscles that have fibres lying across the posterior surface of the sacrum.

MUSCLE ACTIONS: Extension and rotation of the spine

facts



muscle

Rotatores, interspinalis and intertransversarii

Audio: Rotatores, interspinalis and intertransversarii

Sitting, standing and moving with an unsupported spine

Daily Use

Any exercise that requires the control and maintenance of optimal posture, particularly during spinal extension, rotation and lateral flexion

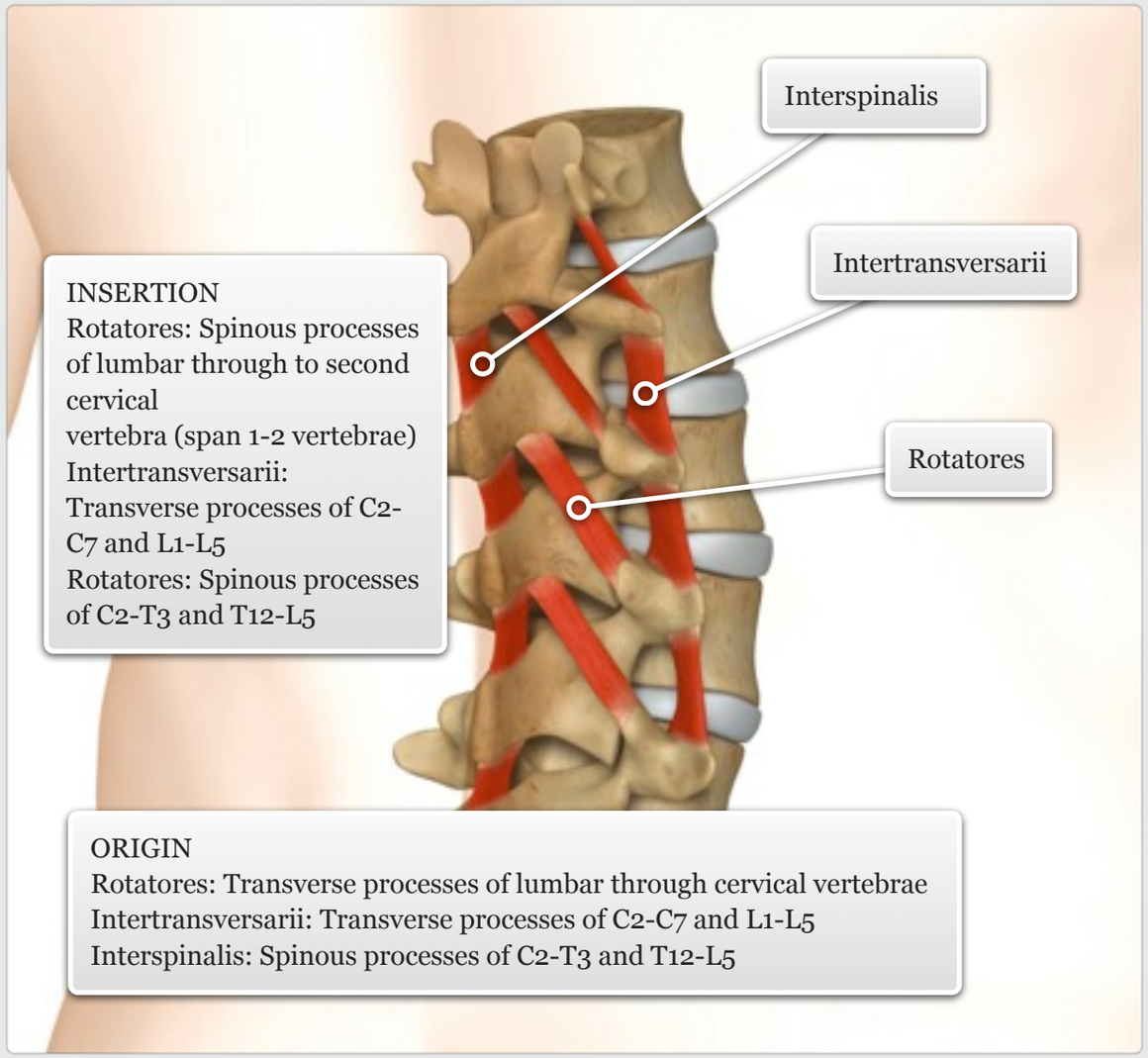
Gym

additional + knowledge

The rotatores lie deep to the multifidi and span the entire spine; the intertransversarii are the deepest muscles in the cervical and lumbar regions, spanning between the transverse processes. The interspinalis muscles span the cervical and lumbar regions between the spinous processes of adjacent vertebrae.

MUSCLE ACTIONS: Rotatores: Extension of the spine (all muscles); rotation of the spine to opposite side (rotatores); lateral flexion of the spine to same side (intertransversarii)

facts



muscle

Muscles of the shoulder and arm

The muscles of the shoulder and arm span the entire back and ribcage, and also extend down to the elbow. Anatomically, and functionally, they are an extremely diverse group of muscles, producing movement of the humerus, clavicle, scapula, ribs, and cervical vertebrae. These muscles are often classified as either superficial (including the deltoid, trapezus, latissimus dorsi and pec major) or deep (including the rotator cuff, rhomboids, levator scapulae, pec minor). At the shoulder, these muscles function to flex/extend, medially/laterally rotate, and abduct/adduct, and horizontally abduct/adduct the shoulder joint; at the scapula, the muscles produce movements of elevation/depression, retraction/protraction and upward/downward rotation; the muscles of the arm create flexion/extension, and some rotation at the elbow joint.

The superficial muscles of the shoulder and arm contribute to larger dynamic movements of the upper body (e.g. throwing, pushing/pulling), while the deeper muscles assist those of the spine in creating static and dynamic stabilisation during such movements.

Rhomboid group

Audio: Rhomboid group

Sticking out the chest

Shrugging the shoulders

Stretching the chest upon waking

Pulling open a drawer

Daily Use

N/A

Gym

level || knowledge

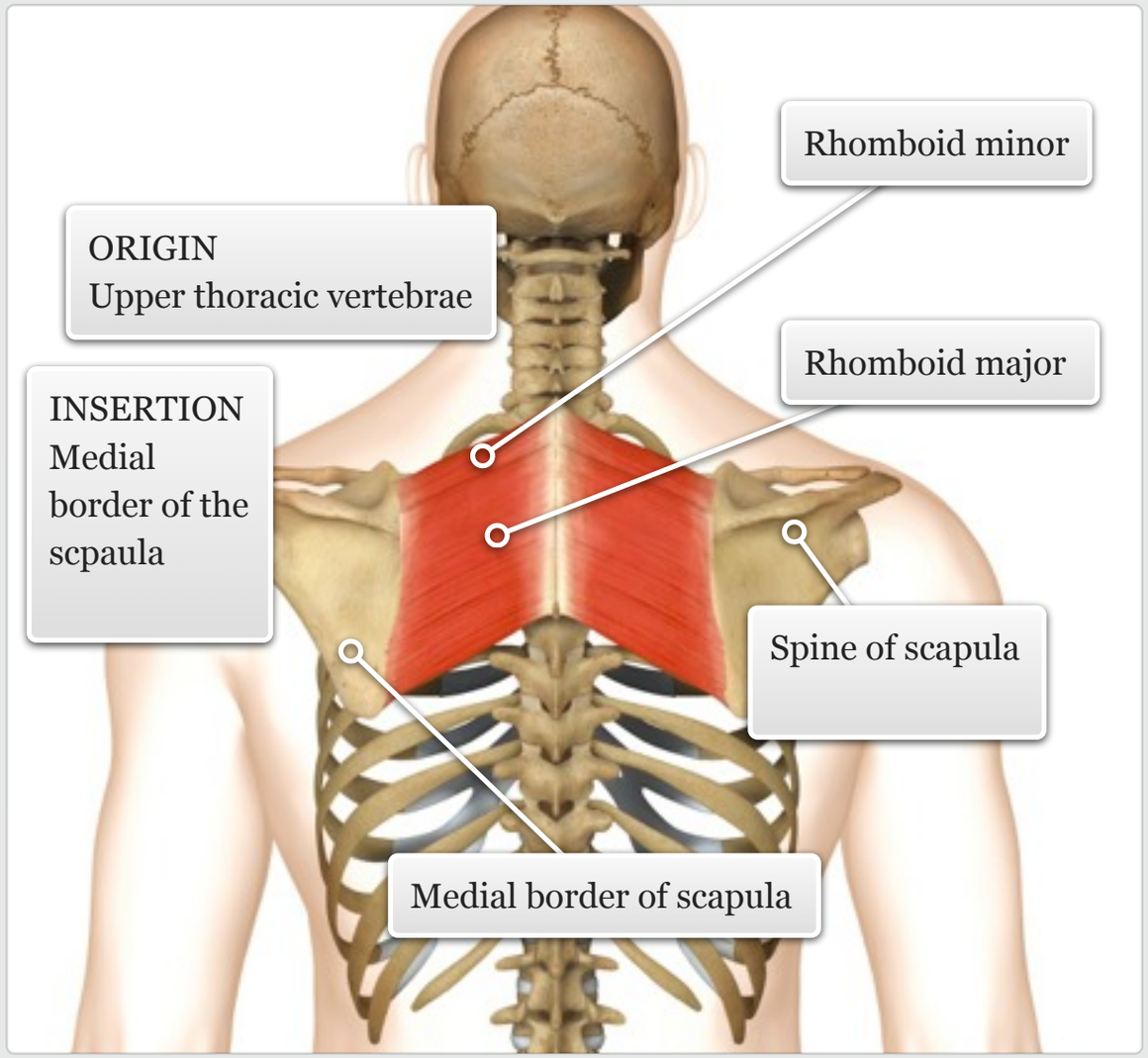
Rhomboid major

Rhomboid minor

The rhomboids are located between the scapula and spine, and are so-called, because of their geometric shape. The rhomboid major is larger than the minor, although they are difficult to distinguish individually. These muscles lie deep to the trapezius, and superficial to the erector spinae.

MUSCLE ACTIONS: Retraction and elevation of the scapula

facts



muscle

Rhomboid major

Audio: Rhomboid major

Sticking out the chest

Shrugging the shoulders

Stretching the chest upon waking

Pulling open a drawer

Daily Use

Cardio: rowing, cross trainer, Nordic skiing, swimming

Resistance: any type of rowing exercise (e.g. seated, bent over etc.); reverse flyes

Power: all types of throwing actions, swinging a bat/racket

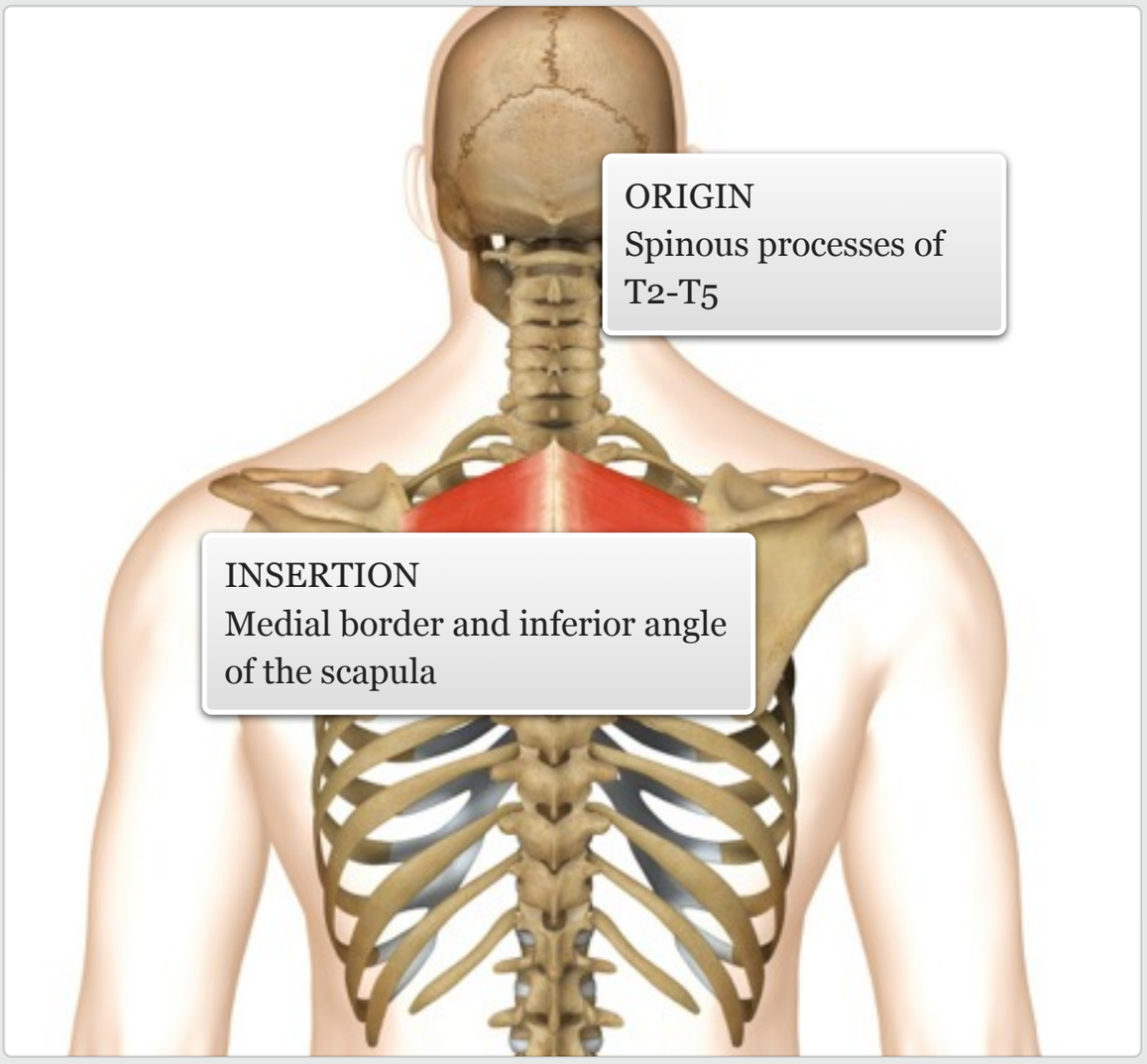
Balance: upper body balance exercises, e.g. push up, single arm-leg reach, side bridge/support

Gym

level III knowledge

MUSCLE ACTIONS: Retraction and elevation of the scapula

facts



muscle

Rhomboid minor

Audio: Rhomboid minor

Sticking out the chest

Shrugging the shoulders

Stretching the chest upon waking

Pulling open a drawer

Daily Use

Cardio: rowing, cross trainer, Nordic skiing, swimming

Resistance: any type of rowing exercise (e.g. seated, bent over etc.); reverse flyes

Power: all types of throwing actions, swinging a bat/racket

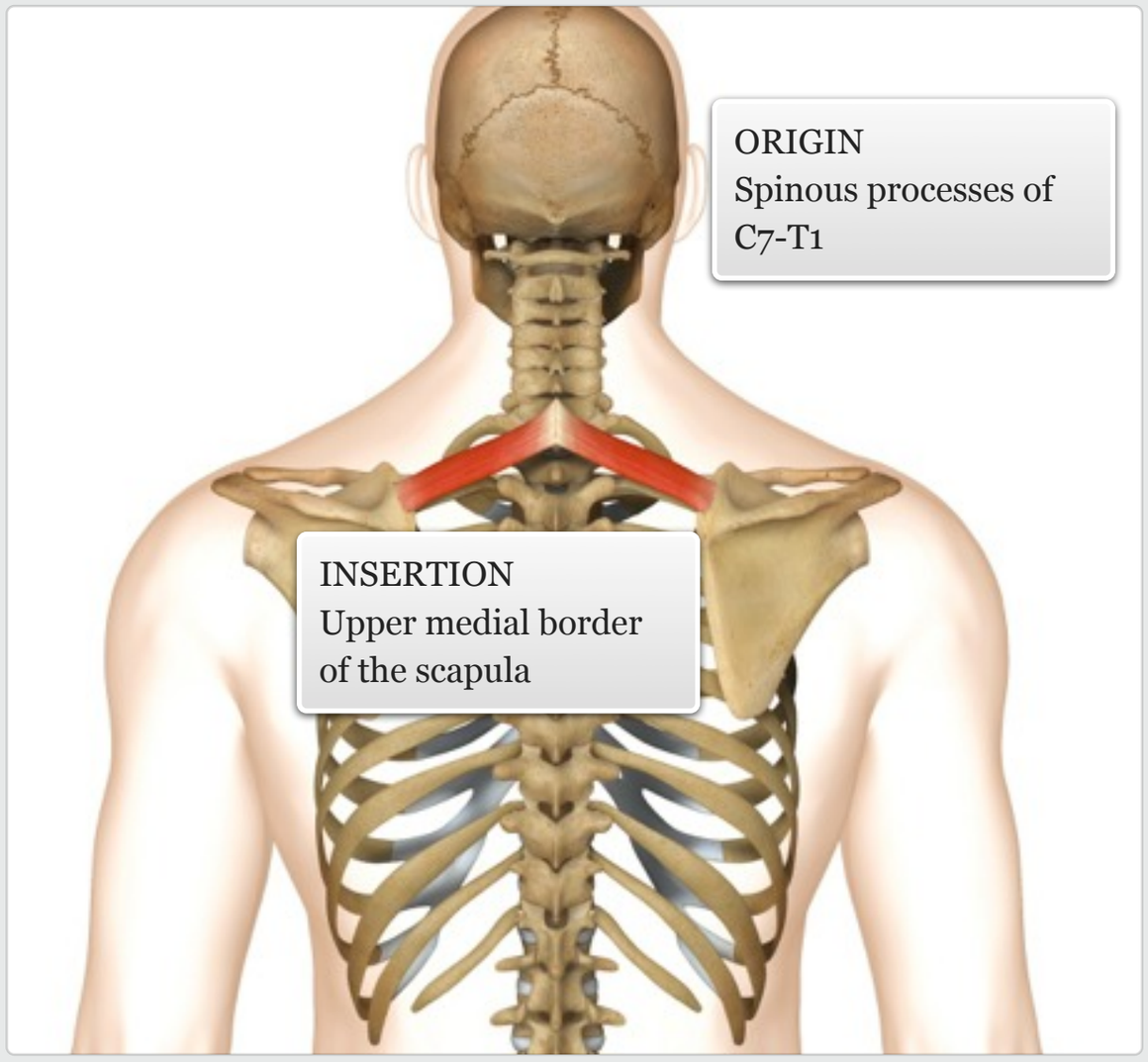
Balance: upper body balance exercises, e.g. push up, single arm-leg reach, side bridge/ support

Gym

level III knowledge

MUSCLE ACTIONS: Retraction and elevation of the scapula

facts



muscle

Trapezius

Audio: Trapezius

Shrugging the shoulders

Holding a phone between ear and shoulder

Carrying a rucksack

Daily Use

Cardio: rowing, swimming, cycling (when out of seat)

Resistance: barbell/dumbbell shrugs, upright rows

Power: 'clean' portion of clean and jerk

Balance: handstand

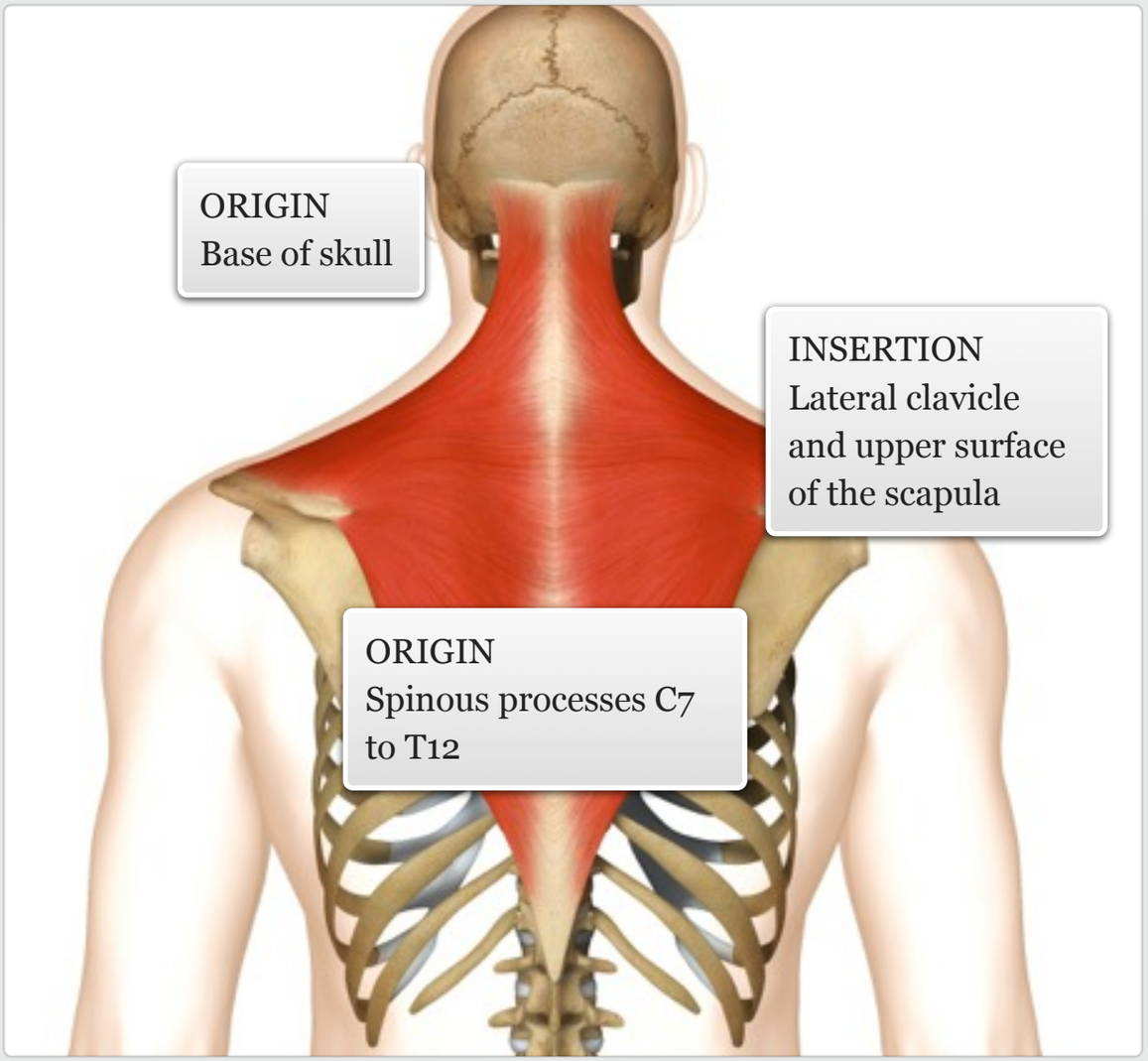
Gym

level || knowledge

The trapezius lies superficially across the neck and upper/middle back, appearing like a 'cape' over the shoulders. Its fibres can be divided into three groups – upper, middle and lower – and all fibres are easy to palpate.

MUSCLE ACTIONS: Elevation, retraction, and depression of shoulder girdle; extension, lateral flexion and rotation of the neck

facts



muscle

Levator scapulae

Audio: Levator scapulae

Looking over the shoulder

Carrying a heavy shopping bag

Side-lying in bed on a pillow

Daily Use

Cardio: rowing, swimming, cycling (when out of seat)

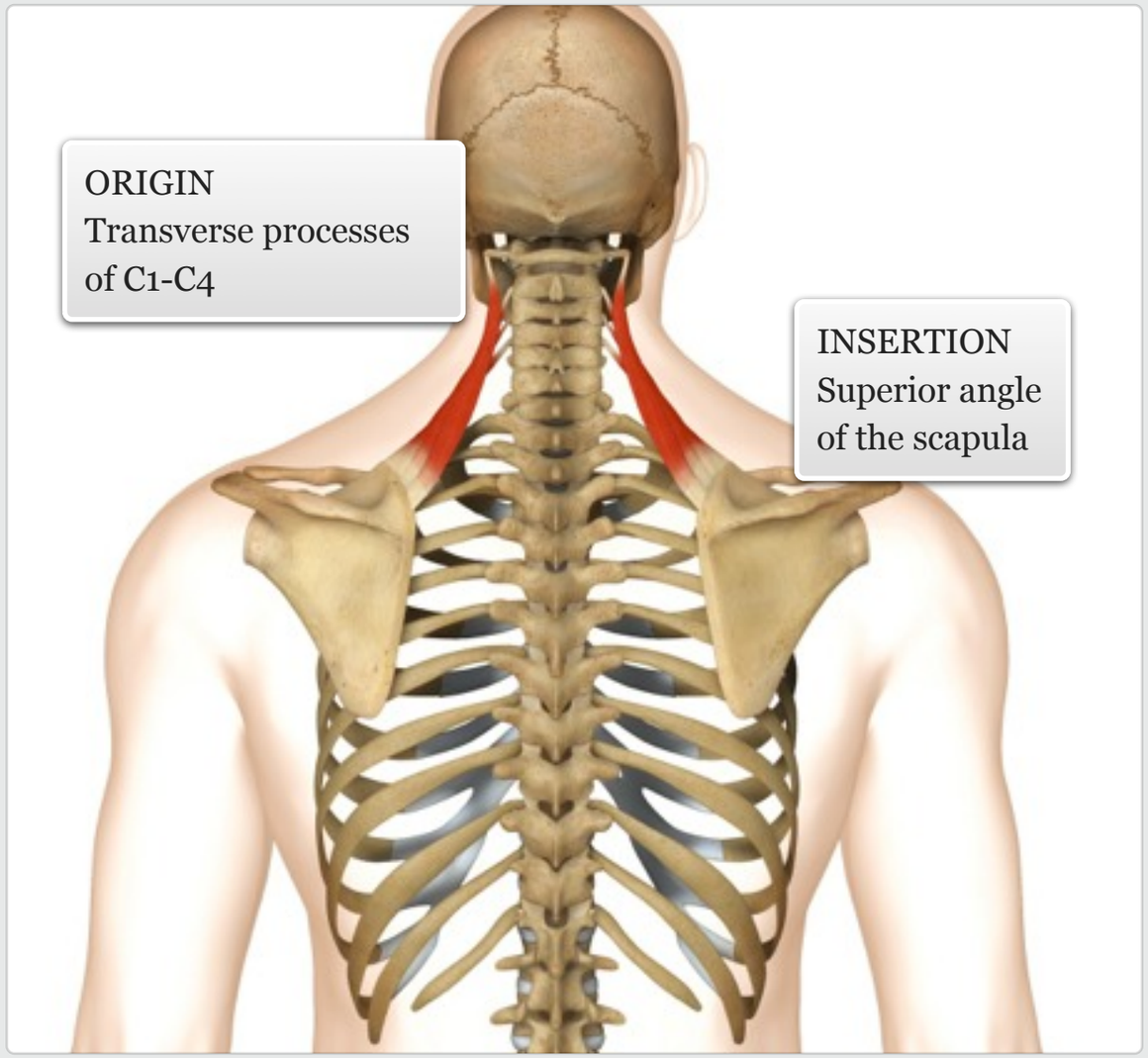
Resistance: barbell/dumbbell shrugs

Power: 'clean' portion of clean and jerk

Gym

The levator scapulae is positioned along the lateral and posterior side of the neck, and is easy to palpate through the fibres of the upper trapezius, as well as from the side of the neck.

MUSCLE ACTIONS: Elevation of the shoulder girdle, lateral flexion and extension of the neck



level || knowledge

facts

muscle

Latissimus dorsi

Audio: Latissimus dorsi

Walking with crutches
Rope climbing
Paddling a canoe

Daily Use

Cardio: swimming (front crawl), Nordic walking

Resistance: lat pull down, chin ups, pullover

Power: front somersault (gymnastics), throwing a ball

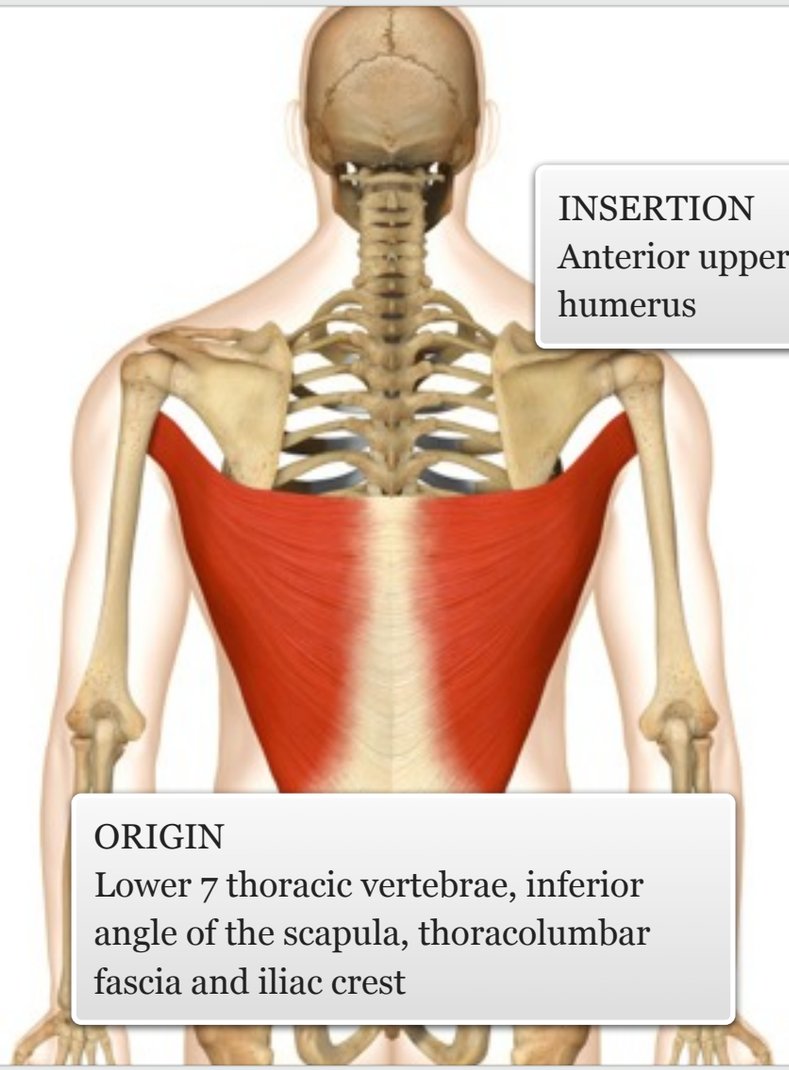
Gym

level || knowledge

The latissimus dorsi is the largest muscle of the back, and a powerful extensor of the shoulder. Both ends of the muscle are difficult to isolate, but the middle portion is relatively easy to palpate.

MUSCLE ACTIONS: Extension, adduction and internal rotation of the shoulder

facts



muscle

Teres major

Audio: Teres major

Daily Use

Walking with crutches
Rope climbing
Paddling a canoe

Gym

Cardio: swimming (front crawl), Nordic walking

Resistance: lat pull down, chin ups, shoulder medial rotation

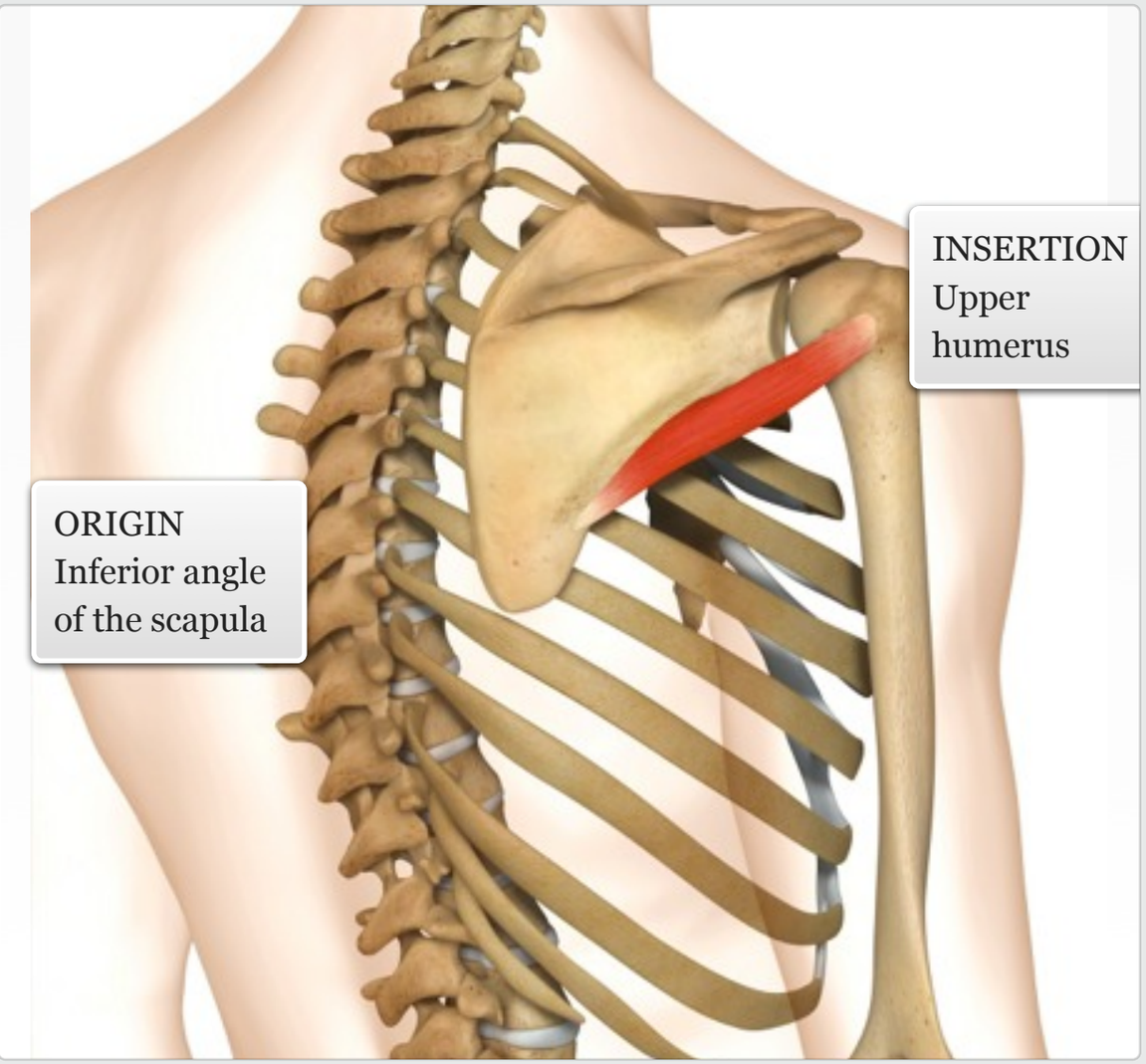
Power: front somersault (gymnastics), throwing a ball

level || knowledge

The teres major is regarded as the 'little brother' of the latissimus dorsi, because it functions as a complete synergist. Being a superficial muscle along the lateral border of the scapula, it is easy to palpate.

MUSCLE ACTIONS: Extension, adduction and internal rotation of the shoulder

facts



muscle

Rotator cuff group Part 1

Audio: Rotator cuff group Part 1

Reaching up to touch the ceiling (supraspinatus)

Fanning your face when hot (infraspinatus/teres minor)

Reaching round to scratch your back (subscapularis)

Daily Use

N/A

Gym

level || knowledge

Supraspinatus

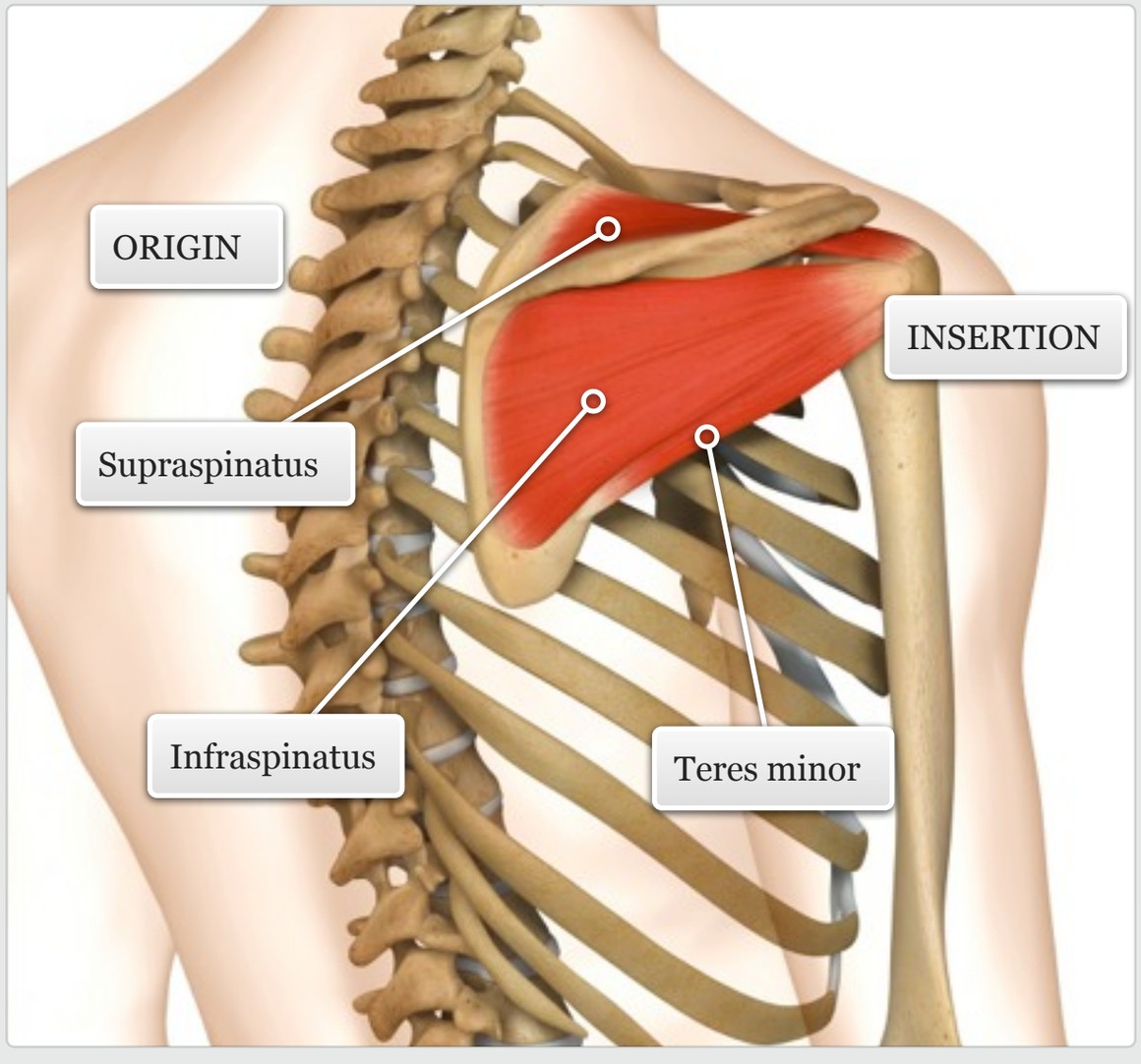
Infraspinatus

Teres minor

Subscapularis

The supraspinatus, infraspinatus, teres minor and subscapularis (rotator cuff) encompass and stabilise the glenohumeral joint. The supraspinatus is a chunky muscle lying in the supraspinous fossa deep to the upper trapezius. The flatter infraspinatus is located in the infraspinous fossa, with most of its belly being superficial. The teres minor is a smaller muscle positioned between the infraspinatus and teres major. The deeply positioned subscapularis is located on the anterior surface of the scapula.

facts



muscle

Rotator cuff group Part 2

Audio: Rotator cuff group Part 2

Reaching up to touch the ceiling (supraspinatus)

Fanning your face when hot (infraspinatus/teres minor)

Reaching round to scratch your back (subscapularis)

Daily Use

N/A

Gym

level ||| knowledge

Supraspinatus

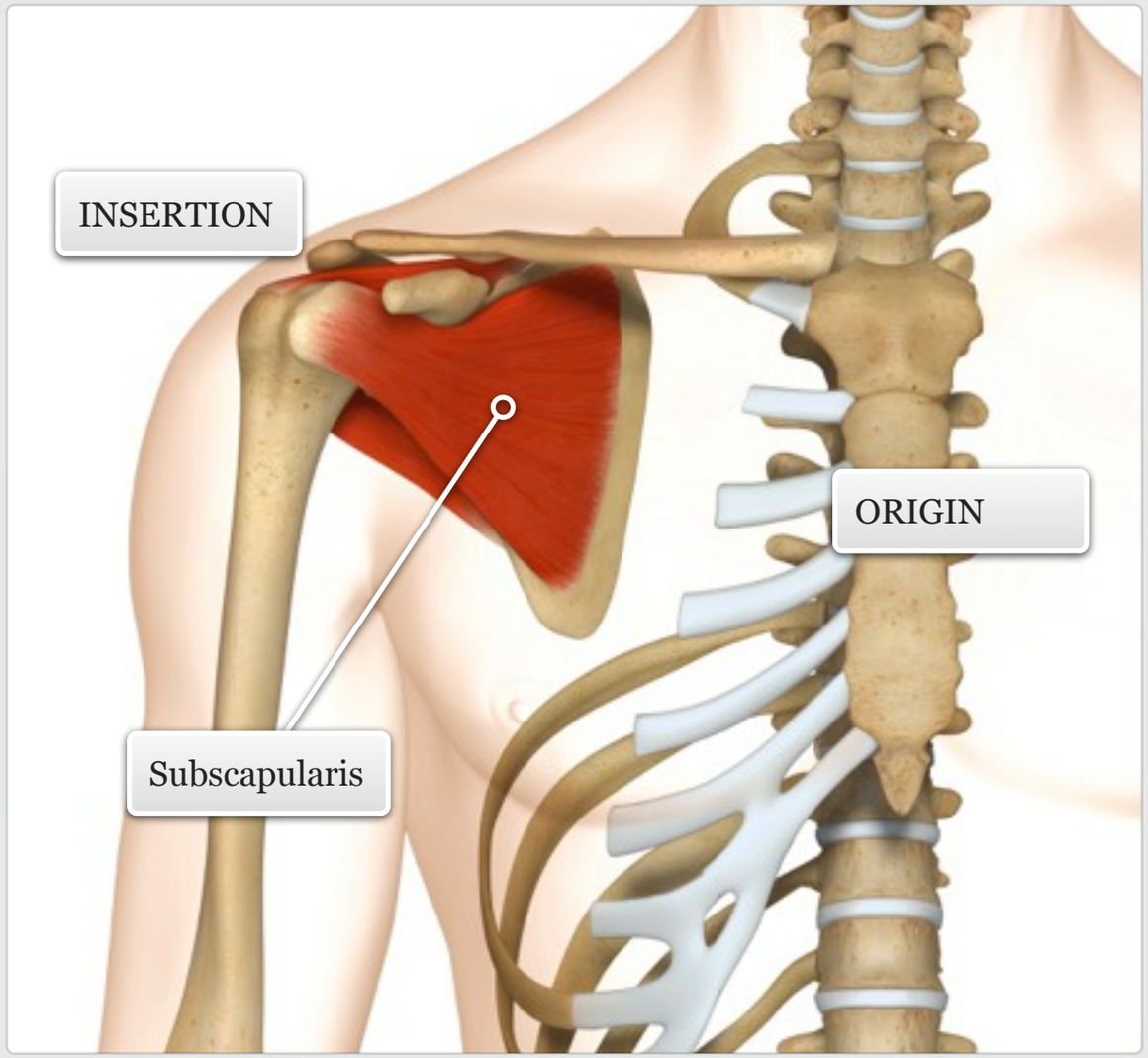
Infraspinatus

Teres minor

Subscapularis

The supraspinatus, infraspinatus, teres minor and subscapularis (rotator cuff) encompass and stabilise the glenohumeral joint. The supraspinatus is a chunky muscle lying in the supraspinous fossa deep to the upper trapezius. The flatter infraspinatus is located in the infraspinous fossa, with most of its belly being superficial. The teres minor is a smaller muscle positioned between the infraspinatus and teres major. The deeply positioned subscapularis is located on the anterior surface of the scapula.

facts



muscle

Supraspinatus

Audio: Supraspinatus

Reaching up to touch the ceiling (supraspinatus)

Fanning your face when hot (infraspinatus/teres minor)

Reaching round to scratch your back (subscapularis)

Daily Use

Cardio: swimming

Resistance: shoulder external rotation, lateral raise

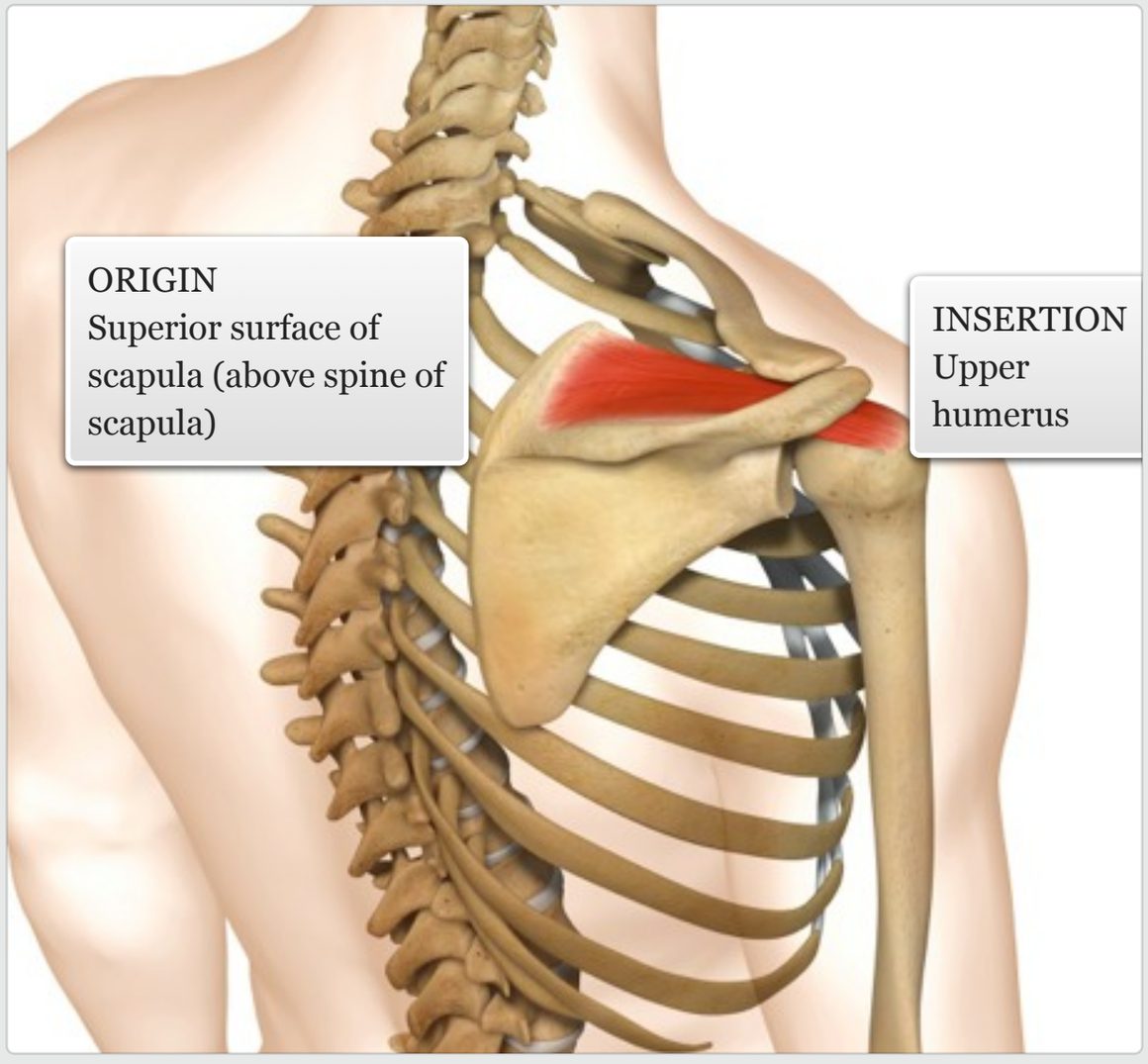
Power: throwing movements

Gym

level ||| knowledge

MUSCLE ACTIONS: Abduction and stabilisation of the shoulder joint

facts



muscle

Infraspinatus

Audio: Infraspinatus

Reaching up to touch the ceiling (supraspinatus)

Fanning your face when hot (infraspinatus/teres minor)

Reaching round to scratch your back (subscapularis)

Daily Use

Cardio: swimming, rowing

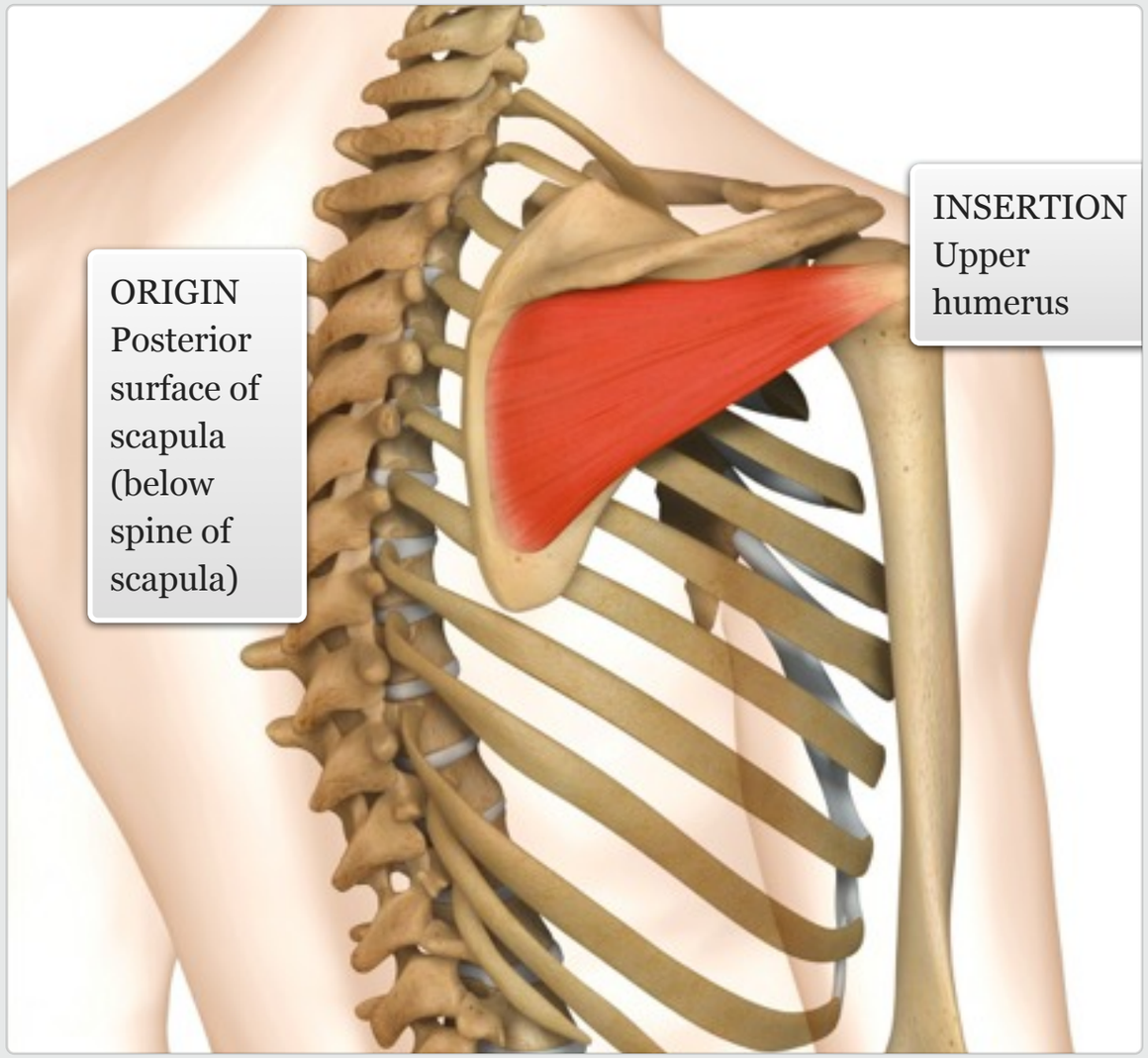
Resistance: shoulder external rotation, lateral raise

Power: throwing movements

Gym

level ||| knowledge

MUSCLE ACTIONS: External rotation, abduction, horizontal extension and stabilisation of the shoulder joint



facts

muscle

Teres minor

Audio: Teres minor

Reaching up to touch the ceiling (supraspinatus)

Fanning your face when hot (infraspinatus/teres minor)

Reaching round to scratch your back (subscapularis)

Daily Use

Cardio: swimming, rowing

Resistance: shoulder external rotation, lateral raise

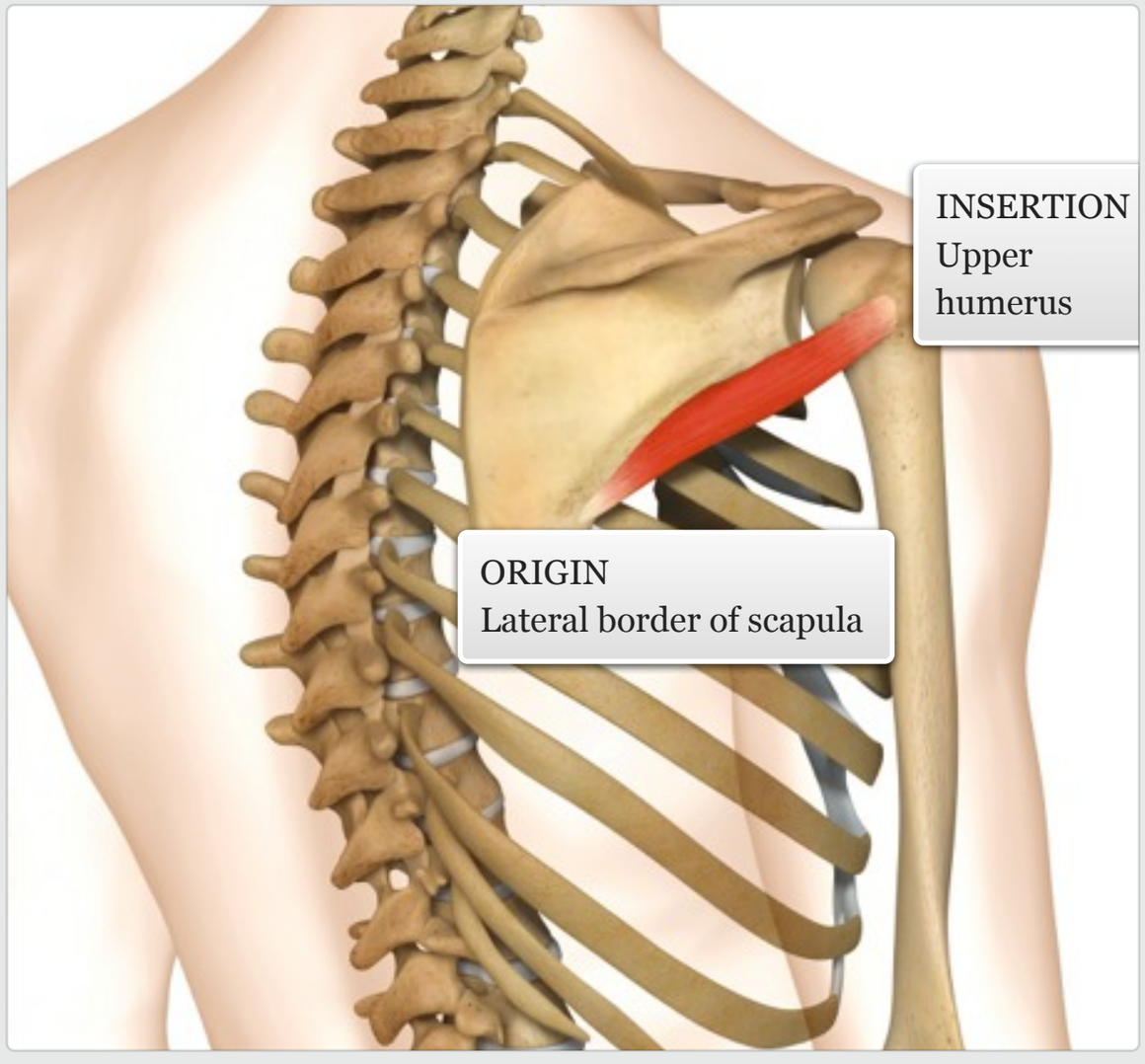
Power: throwing movements

Gym

level ||| knowledge

MUSCLE ACTIONS: External rotation, abduction and stabilisation of the shoulder joint

facts



muscle

Subscapularis

Audio: Subscapularis

Reaching up to touch the ceiling (supraspinatus)

Fanning your face when hot (infraspinatus/teres minor)

Reaching round to scratch your back (subscapularis)

Daily Use

Cardio: swimming, rowing

Resistance: shoulder internal rotation, diagonal extension

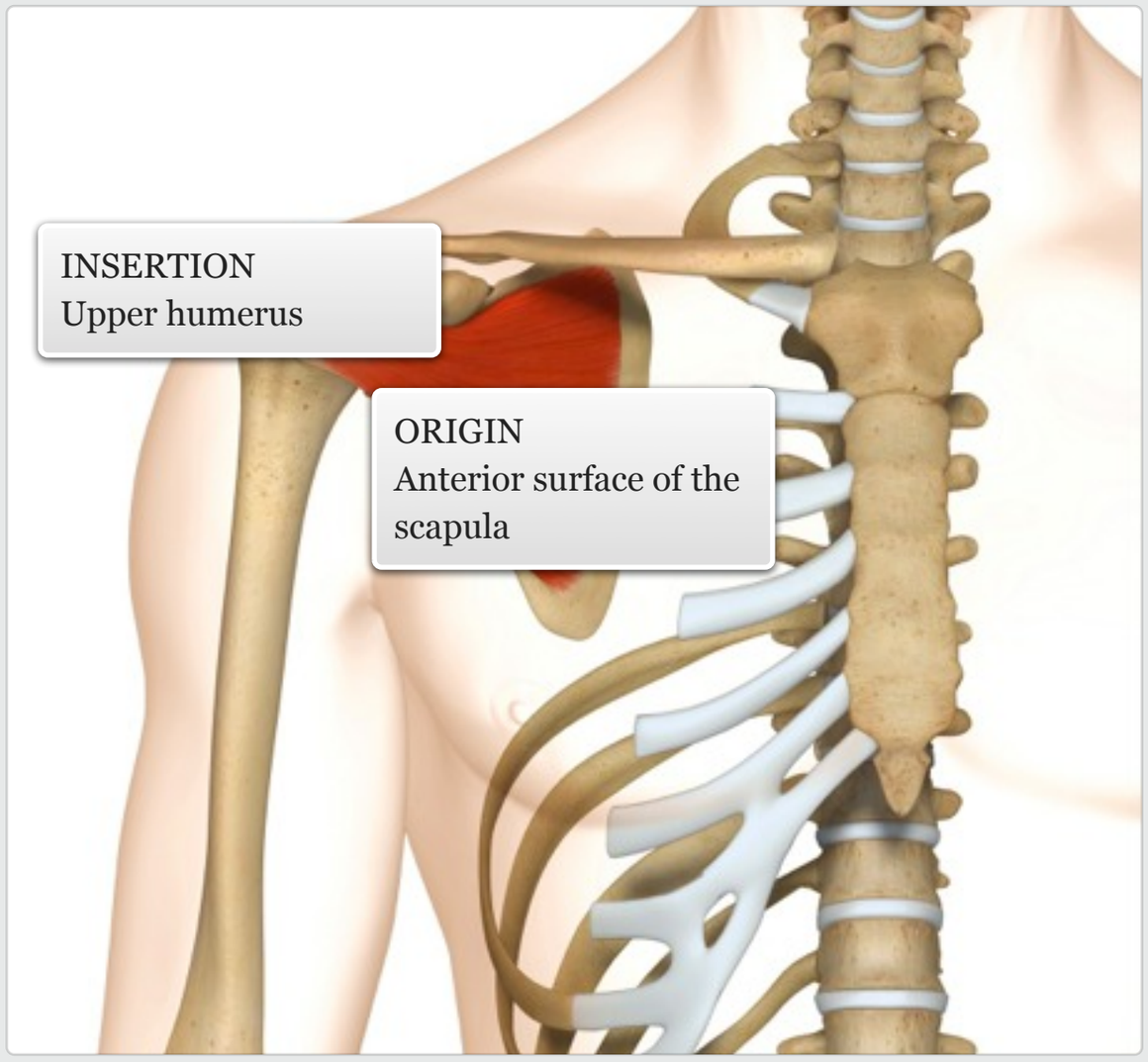
Power: throwing movements

Gym

level ||| knowledge

MUSCLE ACTIONS: Internal rotation, adduction and stabilisation of the shoulder joint

facts



muscle

Deltoid

Audio: Deltoid

Almost any movement that involves the shoulder

Reaching out to shake someone's hand

Lifting a drink to your mouth

Daily Use

Cardio: rowing, swimming, cycling, running, cross-trainer

Resistance: lateral raise, shoulder press, push up

Power: throwing, punching, cartwheel, clean and jerk

Balance: side bridge, handstand, Crane pose in yoga

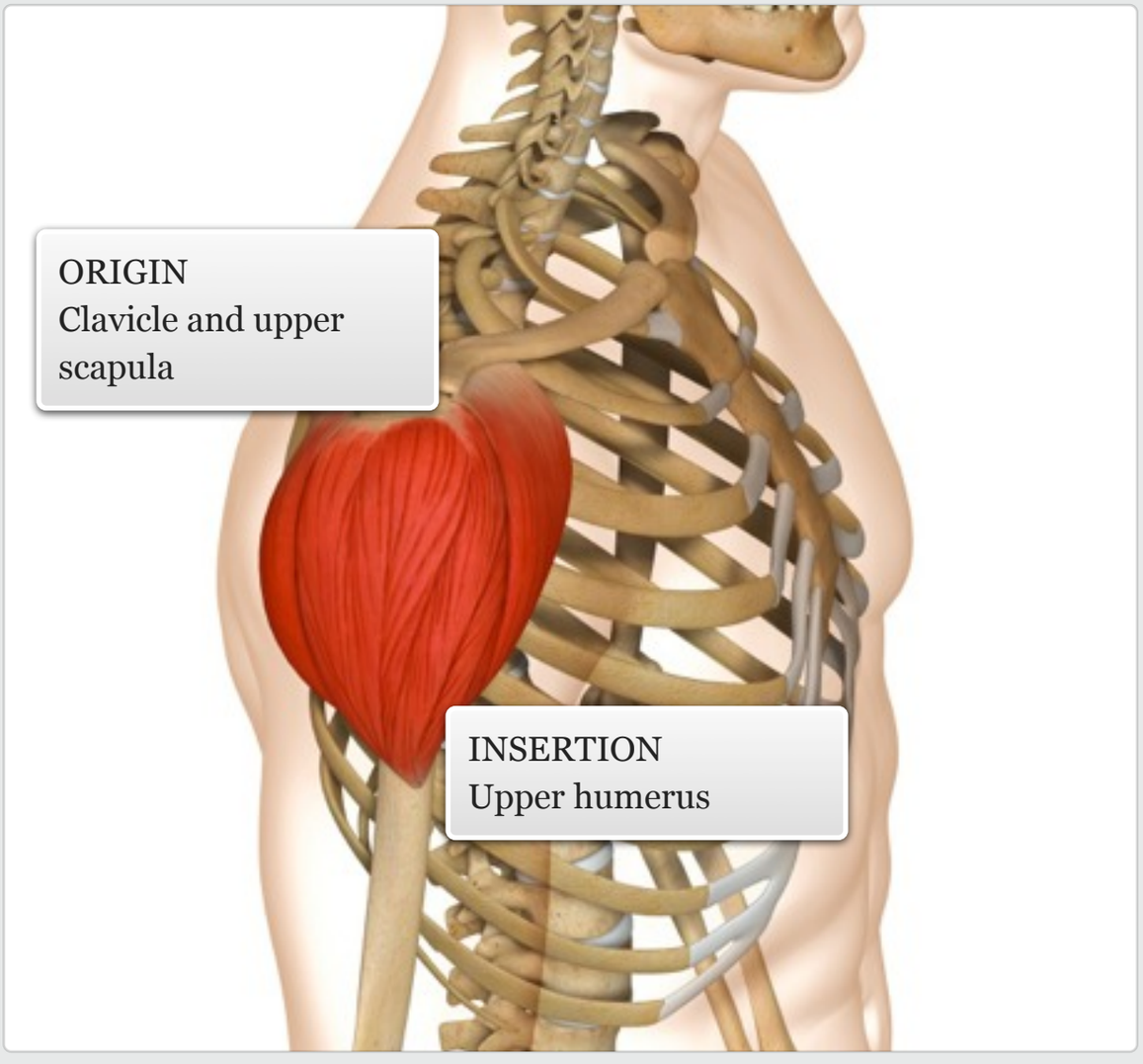
Gym

level || knowledge

The deltoid is a triangular-shaped muscle that surrounds the shoulder joint. Its fibres can be divided into three groups – anterior, middle and posterior fibres – all of which are easy to palpate.

MUSCLE ACTIONS: Abduction, flexion and extension, horizontal flexion and extension, internal and external rotation of the shoulder.

facts



muscle

Serratus anterior

Audio: Serratus anterior

Pushing open a door

Reaching to open a window

Daily Use

Cardio: swimming

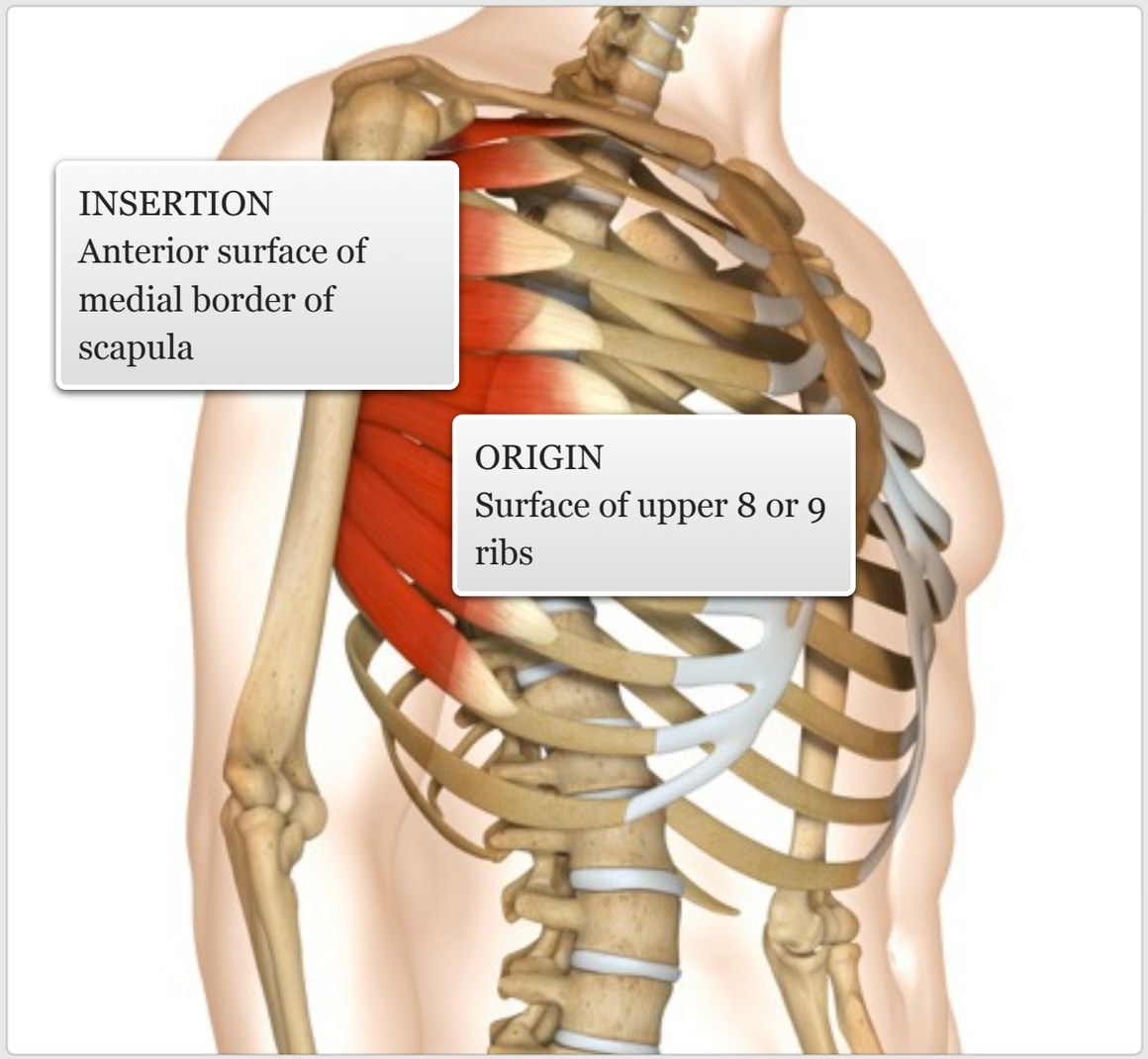
Resistance: push up, bench press, pullover

Power: throwing, swinging and punching movements

Gym

The serratus anterior lies along the posterior-lateral ribcage, and is often referred to as the 'superhero' muscle. Its fibres extend from the ribs to the medial border of the scapula. The muscle is unique in its ability to abduct the scapula (antagonistic to the rhomboids).

MUSCLE ACTIONS: Protraction of scapula



level || knowledge

facts

muscle

Pectoralis major

Audio: Pectoralis major

Pushing open a door
Sawing a piece of wood
Using a roll-on deodorant

Daily
Use

Cardio: swimming
Resistance: push up, bench press, pec flye
Power: throwing and punching movements

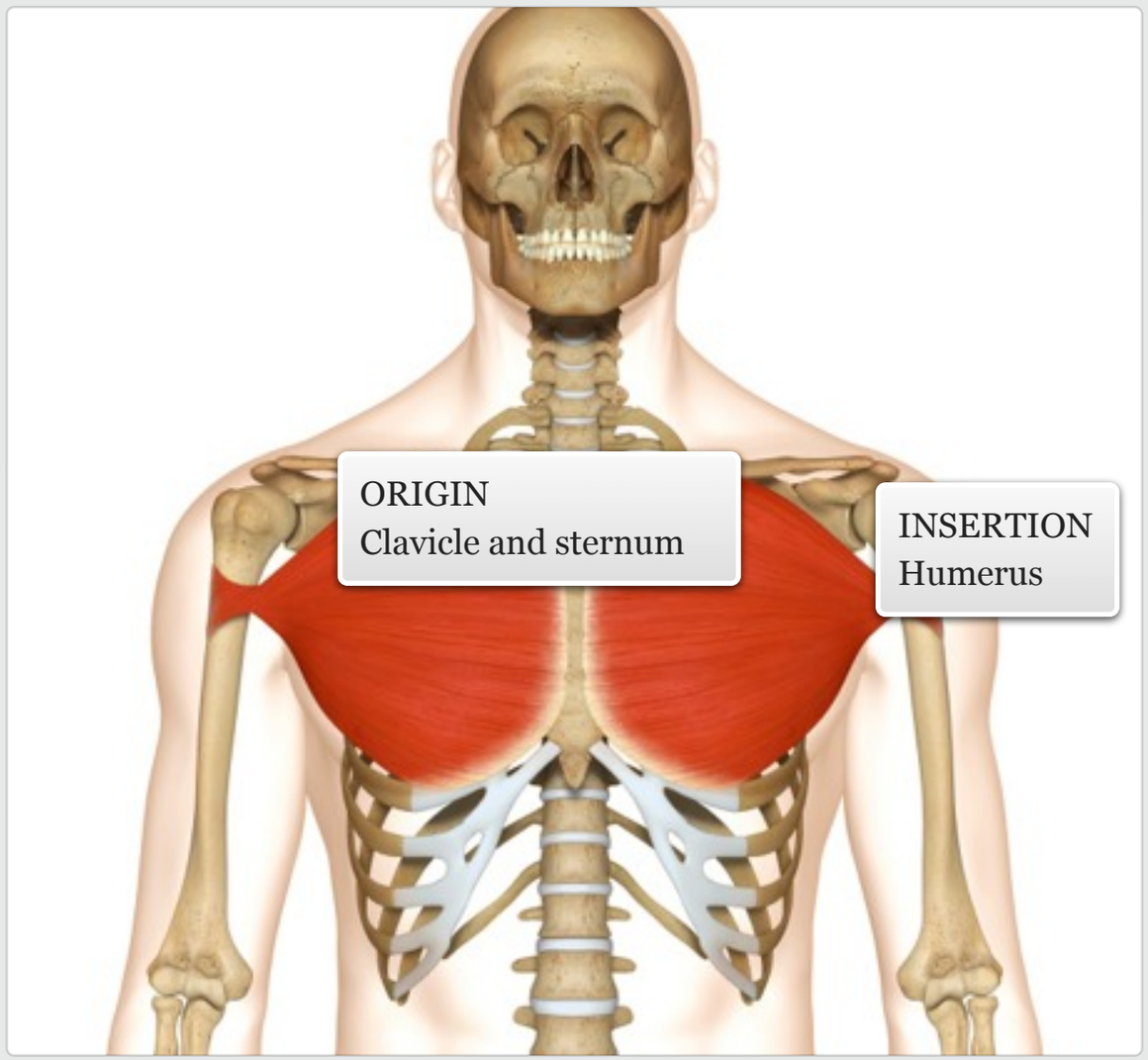
Gym

level || knowledge

The pectoralis major is a large powerful muscle that fans across the chest. Its fibres are easily accessible and are divided into three segments – the clavicular, sternal and costal fibres.

MUSCLE ACTIONS: Flexion, horizontal flexion, adduction and internal rotation of the shoulder.

facts



muscle

Pectoralis minor

Audio: Pectoralis minor

Pushing open a door

Reaching into a deep front pocket

Taking a deep breath

Daily Use

Cardio: swimming; elevates rib cage during any aerobic activity

Resistance: push up, bench press, pec flye

Power: throwing and punching movements

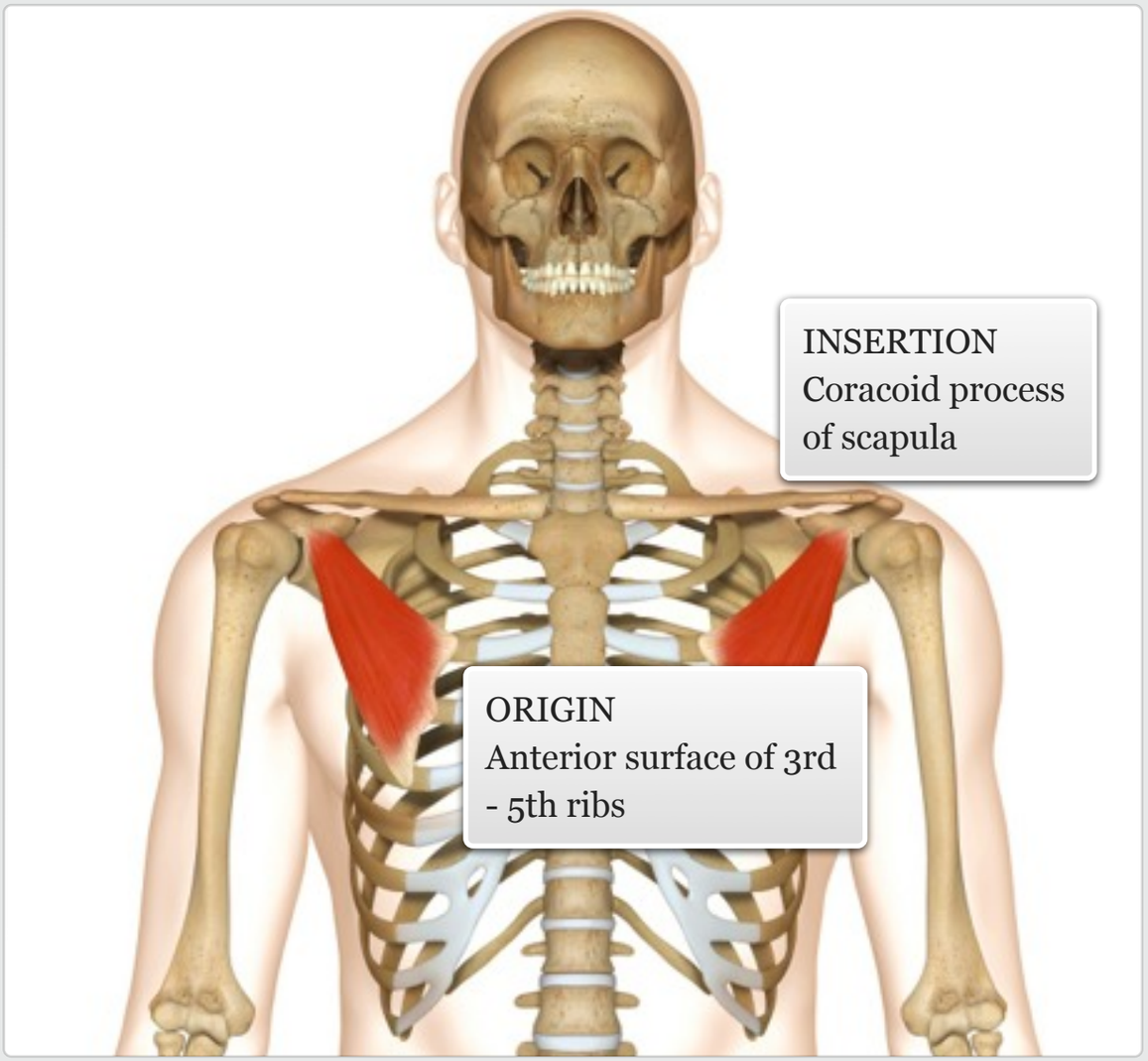
Gym

level || knowledge

The pectoralis minor is the smaller of the two pectoral muscles and lies deep to the pectoralis major. It works with the serratus anterior to abduct the scapula. The muscle is best accessed by sliding underneath the thick pectoralis major.

MUSCLE ACTIONS: Depression and protraction of the scapula.

facts



muscle

Biceps brachii

Audio: Biceps brachii

Picking up a shopping bag
Using a screwdriver
Carrying a child

Daily
Use

Cardio: rowing
Resistance: biceps curl, chin up
Power: throwing, swinging and punching movements

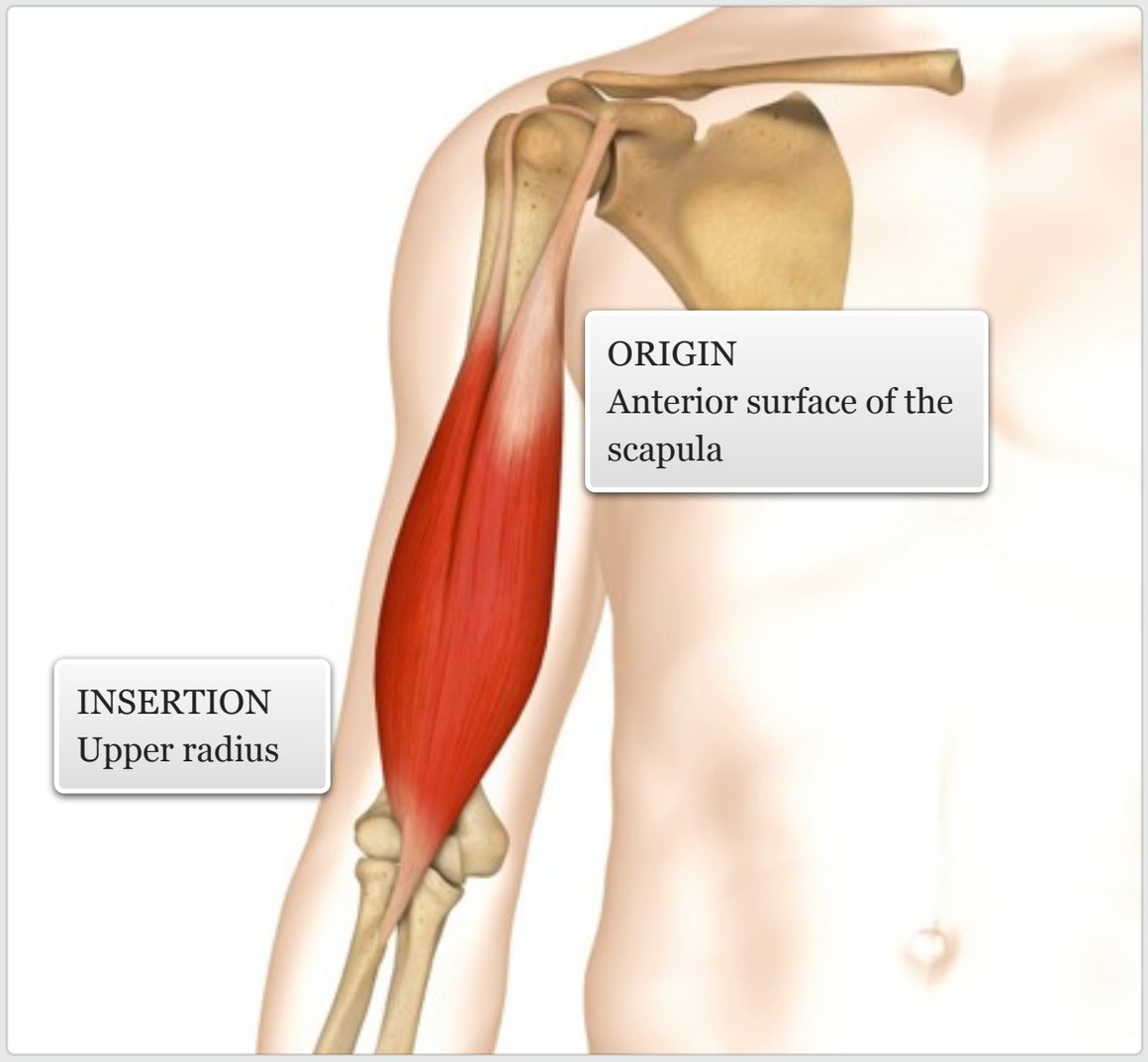
Gym

level || knowledge

The biceps brachii is a superficial muscle on the anterior surface of the arm. It has a short head and a long head which merge to form a prominent belly.

MUSCLE ACTIONS: Flexion of the elbow, supination of the forearm, flexion of the shoulder.

facts



muscle

Coracobrachialis

Audio: Coracobrachialis

Reaching round to scratch your opposite ear

Protecting your face

Daily Use

Cardio: swimming, running

Resistance: push up, bench press

Power: throwing, swinging, punching and blocking movements

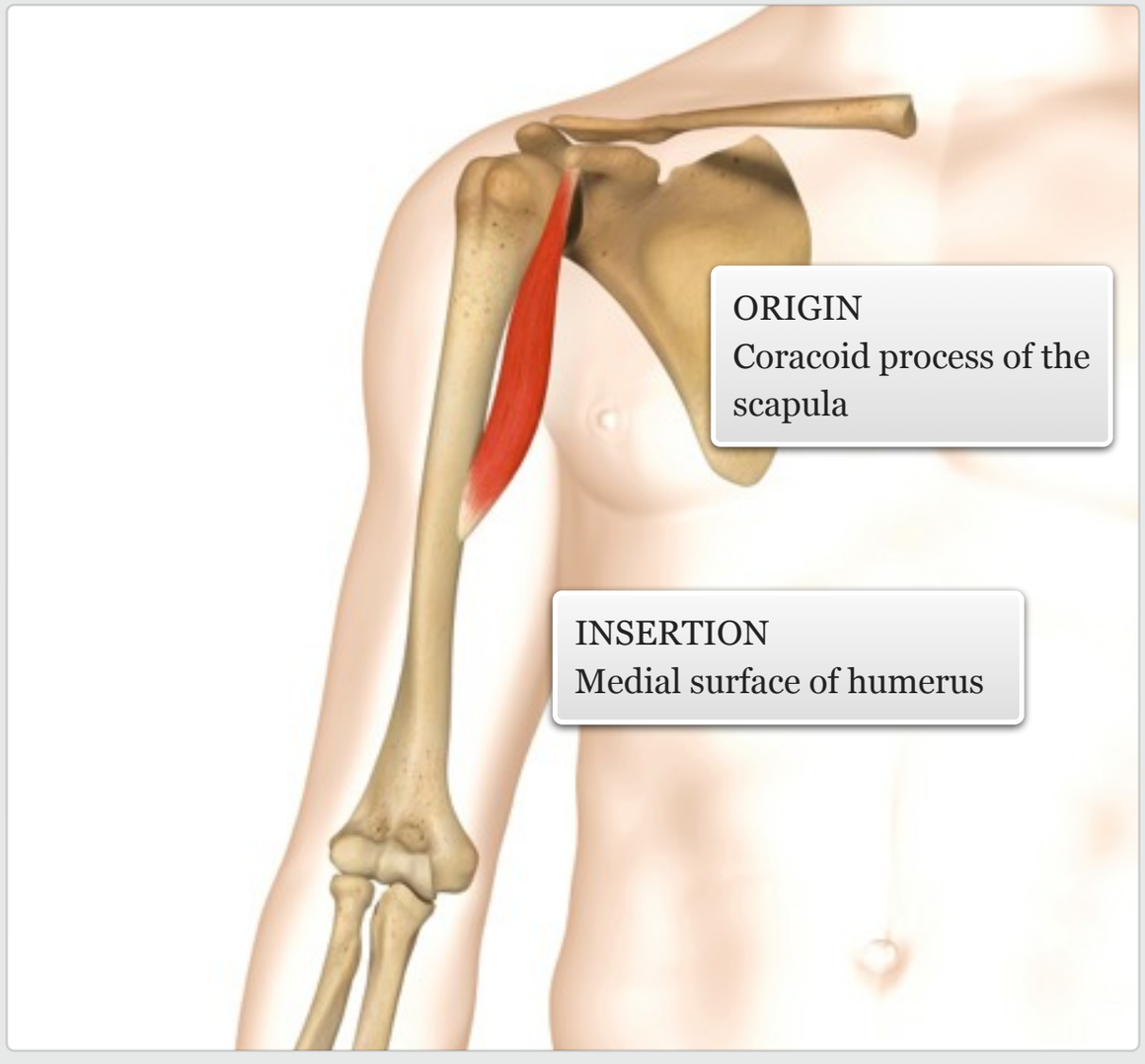
Gym

additional + knowledge

The coracobrachialis is a small slender muscle located at the upper medial part of the arm. It is deep to the pectoralis major and anterior deltoid, but becomes palpable when the shoulder is abducted.

MUSCLE ACTIONS: Flexes and adducts the shoulder

facts



muscle

Brachialis

Audio: Brachialis

Picking up a box
Carrying a child's car seat
Bringing food to your mouth

Daily Use

Cardio: swimming (breast stroke), rowing

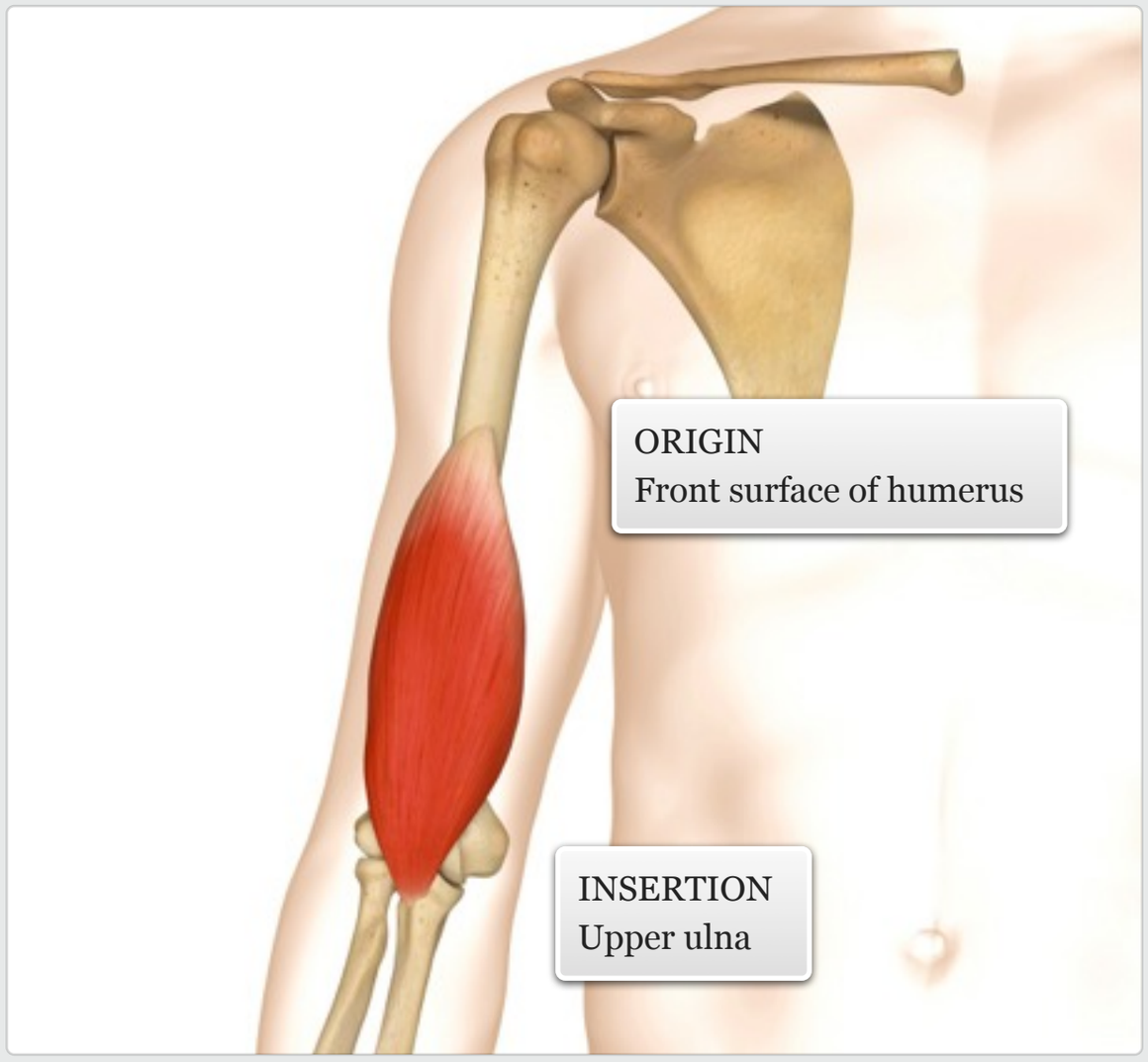
Resistance: biceps curl, chin up

Power: throwing, tennis strokes, grappling

Gym

The brachialis is the only true flexor of the elbow, and lies deep to the biceps brachii. Its lateral fibres, between the biceps and triceps, are easy to palpate.

MUSCLE ACTIONS: Flexes the elbow



additional + knowledge

facts

muscle

Brachioradialis

Audio: Brachioradialis

Using a screwdriver or corkscrew

Whisking eggs

Daily Use

Cardio: swimming (breast stroke), rowing

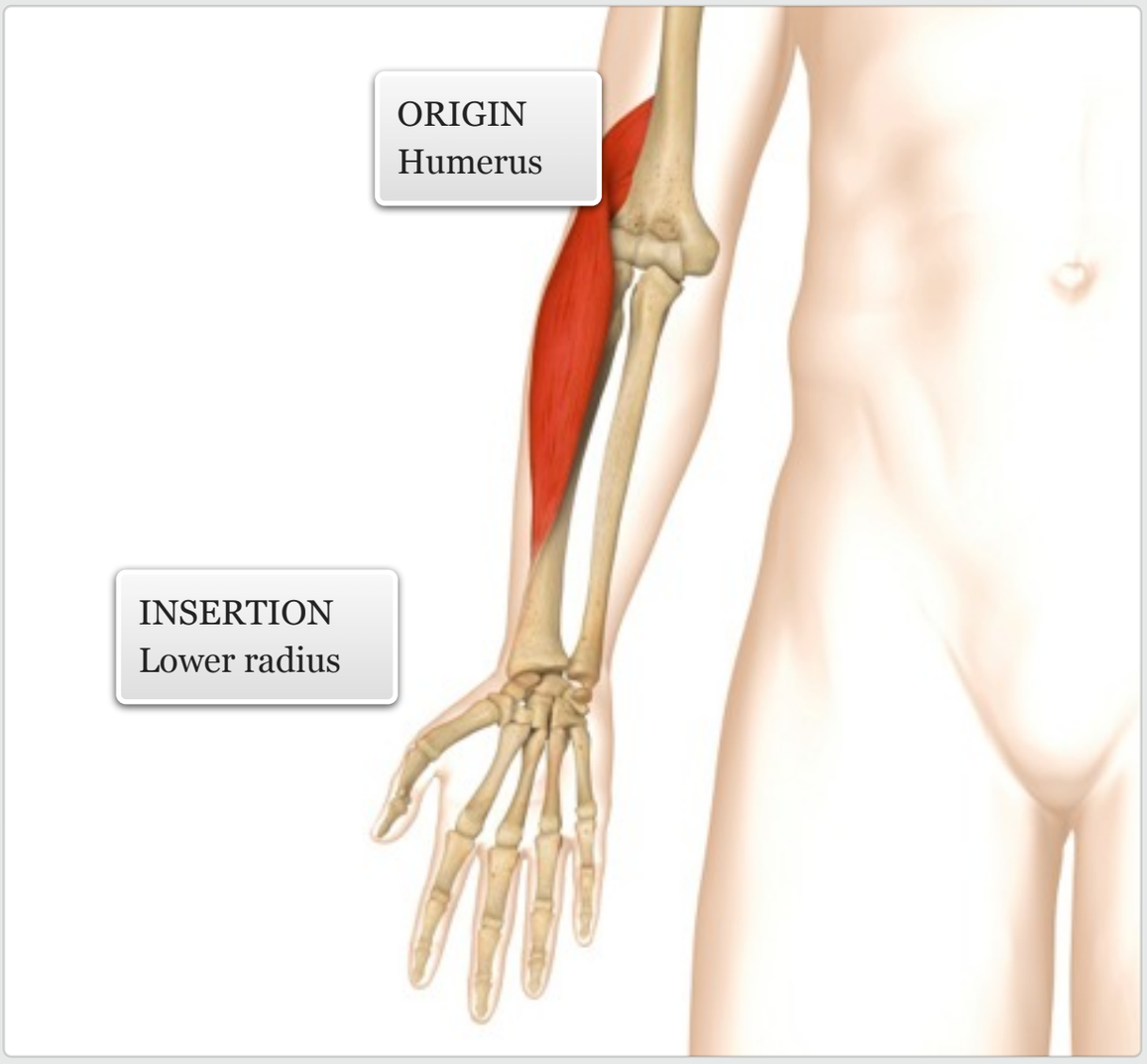
Resistance: biceps curl (reverse grip), chin up

Power: throwing, tennis strokes, grappling

Gym

The brachioradialis is a long superficial muscle on the lateral side of the forearm. It runs the entire length of the forearm and its fibres visibly protrude when contracted.

MUSCLE ACTIONS: Flexes the elbow; assists to pronate and supinate the forearms.



additional + knowledge

facts

muscle

Triceps brachii

Audio: Triceps brachii

Pushing a door closed
Closing the boot of a car
Hammering nails

Daily
Use

Cardio: swimming, cycling (out of seat)

Resistance: triceps extension, push up, dips

Power: throwing and punching movements

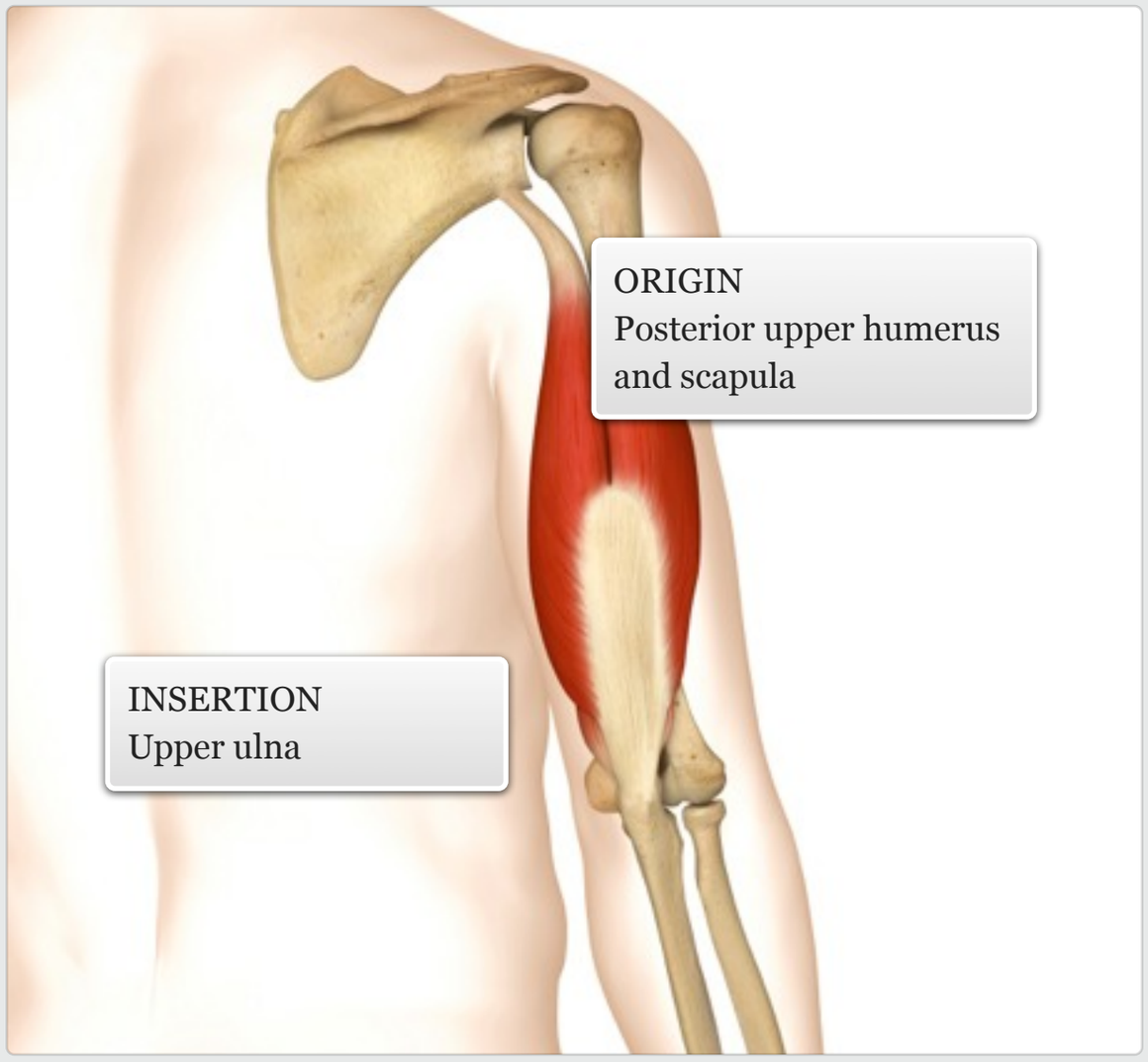
Gym

level || knowledge

The triceps brachii is the only muscle located on the posterior side of the arm. It is made up of three superficial heads – long, lateral and medial – all of which are easily accessible.

MUSCLE ACTIONS: Extension of elbow, extension and abduction of shoulder.

facts



muscle