



base-line to enlightenment - the physical route to better

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Body Alignment & Balance. Our Midline Anatomy & the Median Plane.

Alignment & Balance of the Human Body.

Epistemic status: An introduction post for my Base-Line Theory of Human Health and Movement. Facts and definitions first ...

Introduction.

When referring to the human body, What do balance and alignment mean?

Two (*of the many*) definitions for balanced:

1. Different parts of something that exist in equal or correct amounts.
2. A state of equilibrium, being in harmonious arrangement.

Alignment has many definitions, the two most relevant to 'body alignment' are:

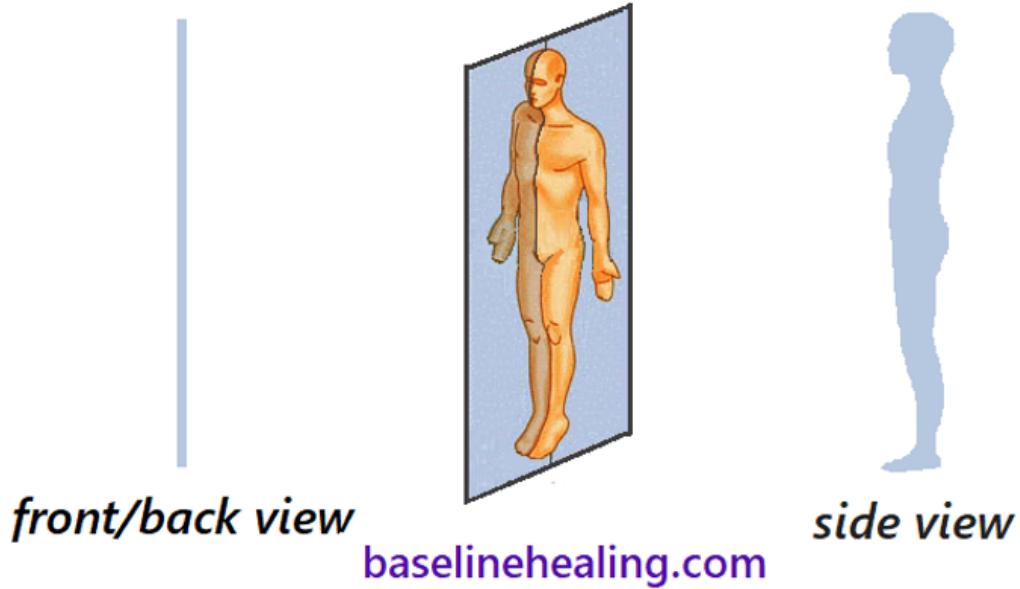
1. Arrangement in a straight line.
2. Arranged in the correct relative positions.

Alignment, Balance & The Median Plane.

The median plane (*a.k.a. midsagittal plane*) is the plane that splits the body into left and right halves.

A **straight line** when viewed from the front or back. A 2-D shape from the side.

The Median Plane (the slice)



The body must be "correctly arranged" to create the median plane, where:

- *The body is aligned.*
 - All midline anatomy is arranged on the straight line of the median plane.
- *The body is balanced.*
 - Left and right sides in equilibrium either side of the median plane.

The position of the rest of the body should be considered relative to the midline anatomy and the median plane.

Midline Anatomy.

Palpable Anatomical Structures.

Some easy to find midline anatomical structures include the:

- Anus. (asshole)
- Pubic symphysis of the pelvis. (*bone between the legs, front midline*)
- Navel. (*belly button*)
- Xiphoid process of the sternum. (*inverted "V" bottom of rib cage, front midline*)
- Jugular notch of the sternum. (*"V" top of rib cage, front midline*)
- External occipital protuberance. (*back of head - midline bump at the base of the skull*).

Feel for the relative positioning of these midline markers to increase your awareness of your body's midline.

Midline Linear Structures.

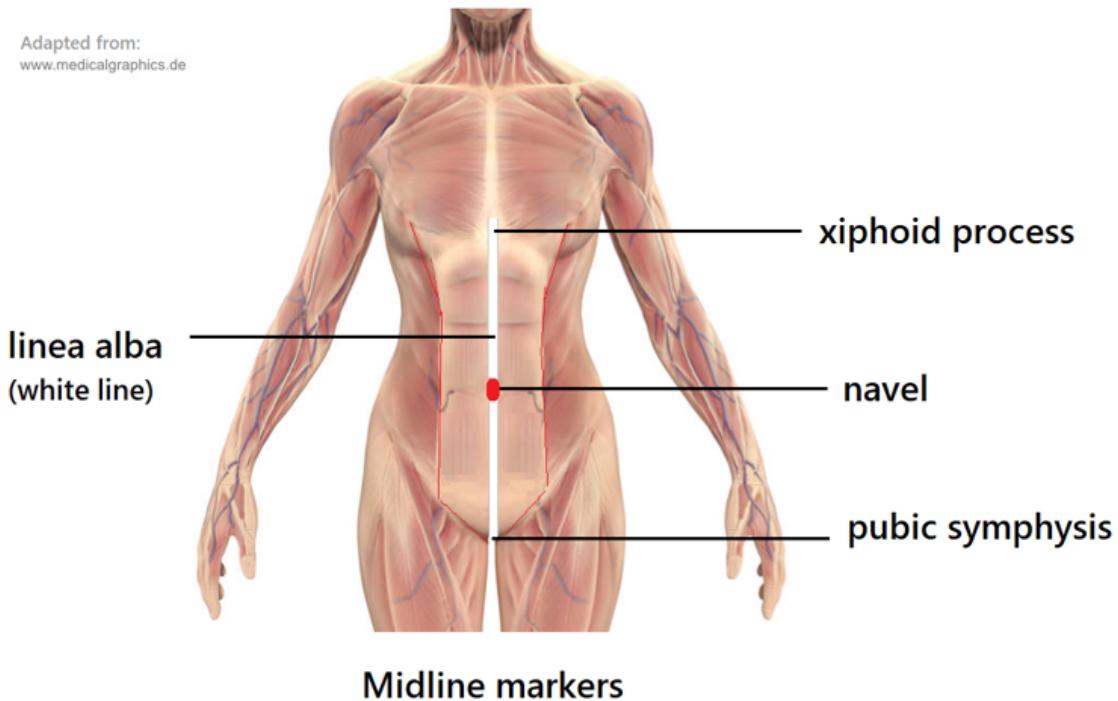
The linear anatomical structures on our midline need to be at full extension to be truly aligned - straight, smooth, no kinks or tensions so they can line up on the median plane.

The main linear structures we should focus on for body alignment are:

- The **linea alba**. Midline at the anterior (*front*) of the body.
 - Our primary anatomical guide for body alignment.
- The **nuchal ligament & supraspinous ligament**. Forming a continuous structure midline at the posterior (*back*) of the body.
 - Our secondary anatomical guides for body alignment.

Linea Alba.

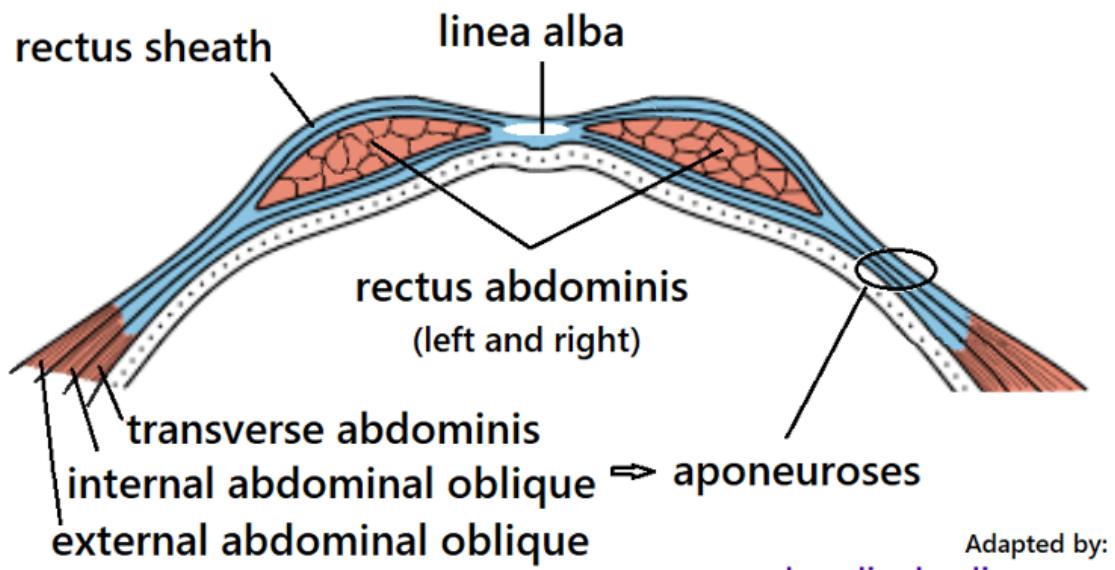
The linea alba (*Latin for 'white line'*) is a strip of strong [connective tissue](#) midline at the front of the abdomen.



The linea alba, midline at the front of the abdomen. Connecting 3 easy to find midline markers - the pubic symphysis of the pelvis, the navel and the xiphoid process sternum

One end of the linea alba attaches to the pubic symphysis of the pelvis and the other end to the xiphoid process of the sternum with the navel situated in the middle.

The **linea alba** is formed from the aponeuroses (*tough, thin sheets of connective tissue*) of the three lateral abdominal muscles (*the muscles that wrap around the sides of the abdomen - the external abdominal oblique, internal abdominal oblique and transversus abdominis*) as left and right sides fuse at the front of the abdomen.



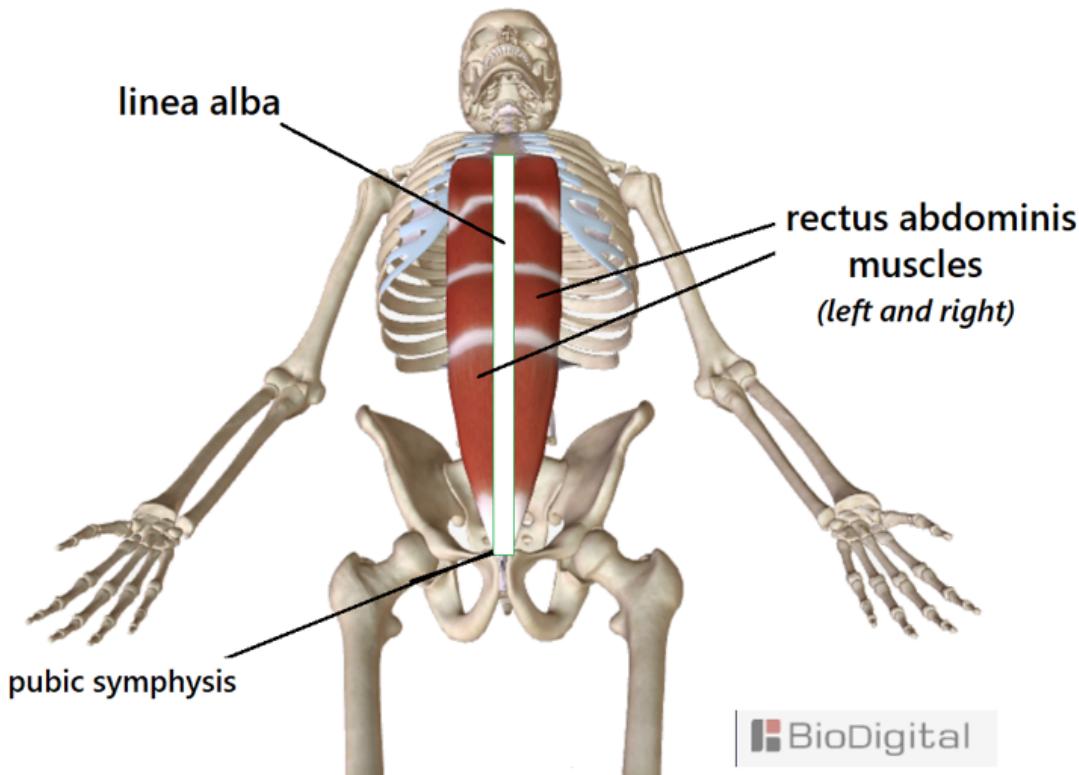
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Cross section of the anterior (front) abdomen showing the lateral abdominal muscles turn into aponeuroses that form the rectus sheaths before meeting midline to form the linea alba.

Before the aponeuroses of the lateral abdominal muscles merge at the linea alba they form the left and right rectus sheaths (*tunnels of connective tissue*) in which the corresponding left and right rectus abdominis muscles lie (*like a ribbon in a sheath either side of midline*).

The [rectus abdominis](#) muscles are the closest muscular tissue to the linea alba, lying either side from pelvis to chest and are the key muscles to focus on to become aware of the relative alignment of the linea alba.

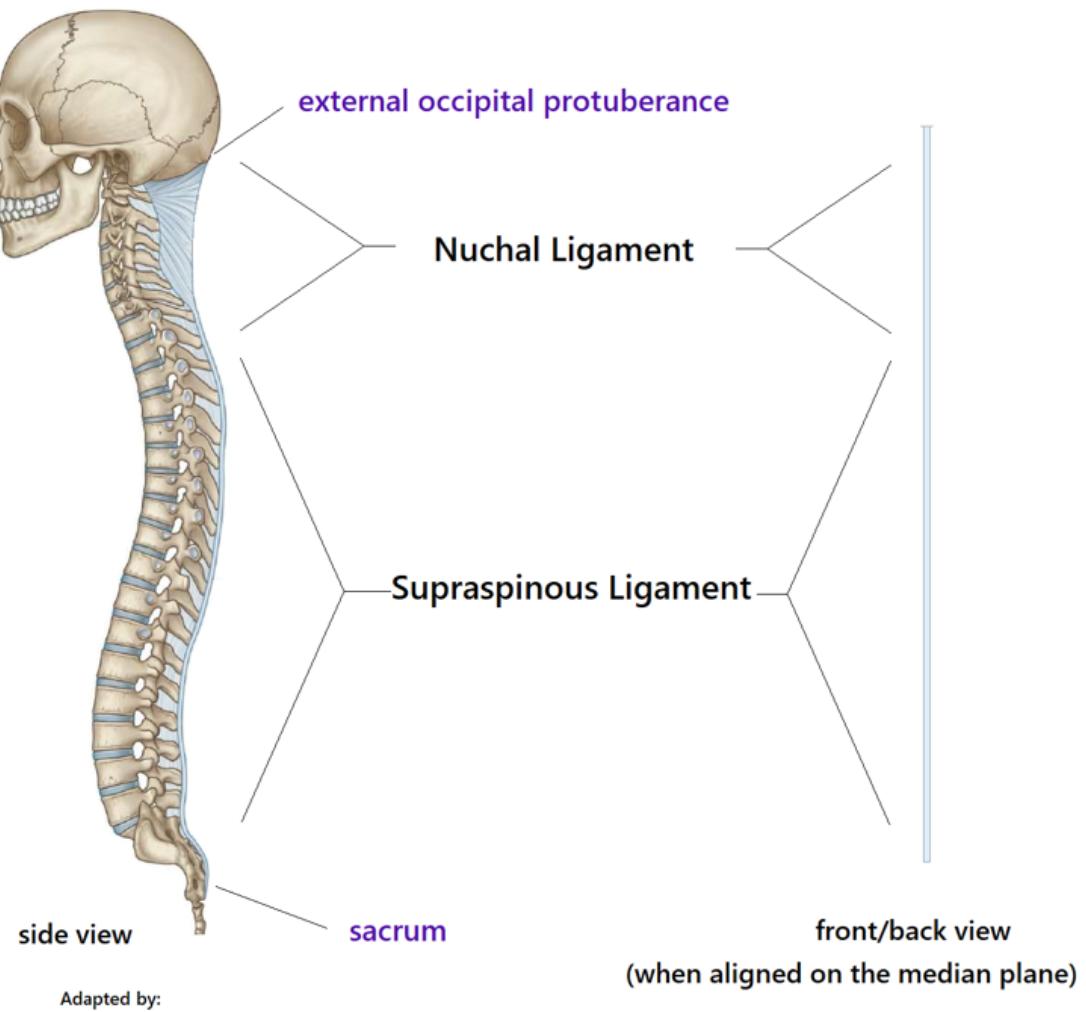


The linea alba between the rectus abdominis muscles.

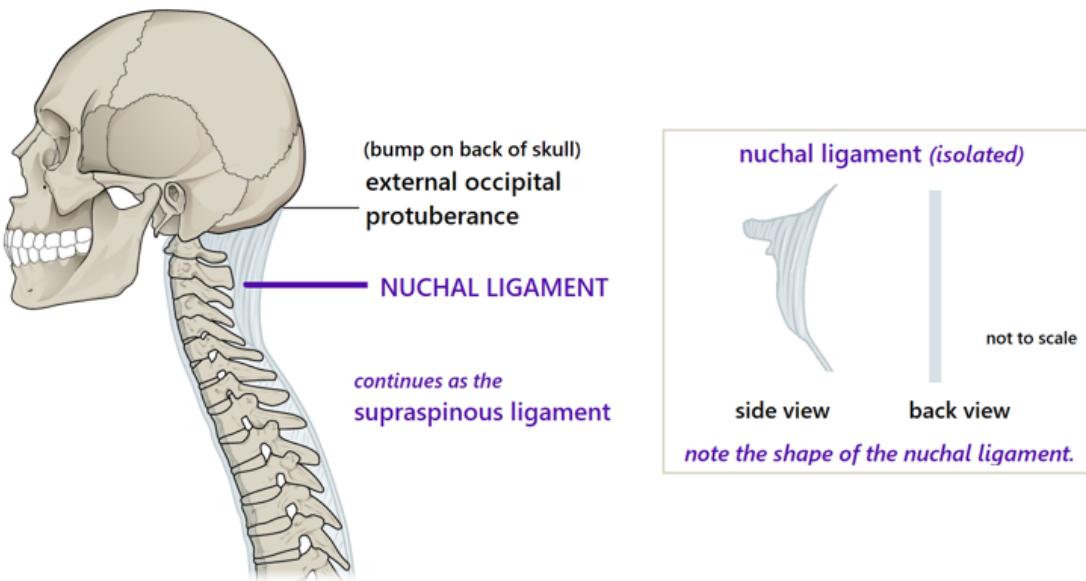
The linea alba and rectus abdominis muscles all originate from the **pubic symphysis**.

Nuchal and Supraspinous Ligaments.

The nuchal ligament (*ligamentum nuchae*) and supraspinous ligament are one continuous structure at the posterior of the spine, a long strip of tough connective tissue from "**head to tail**".



The **nuchal ligament** is a septum (*dividing wall*) midline in the back of the neck. It consists of fibro-elastic connective tissue i.e. it is strong with elastic properties.

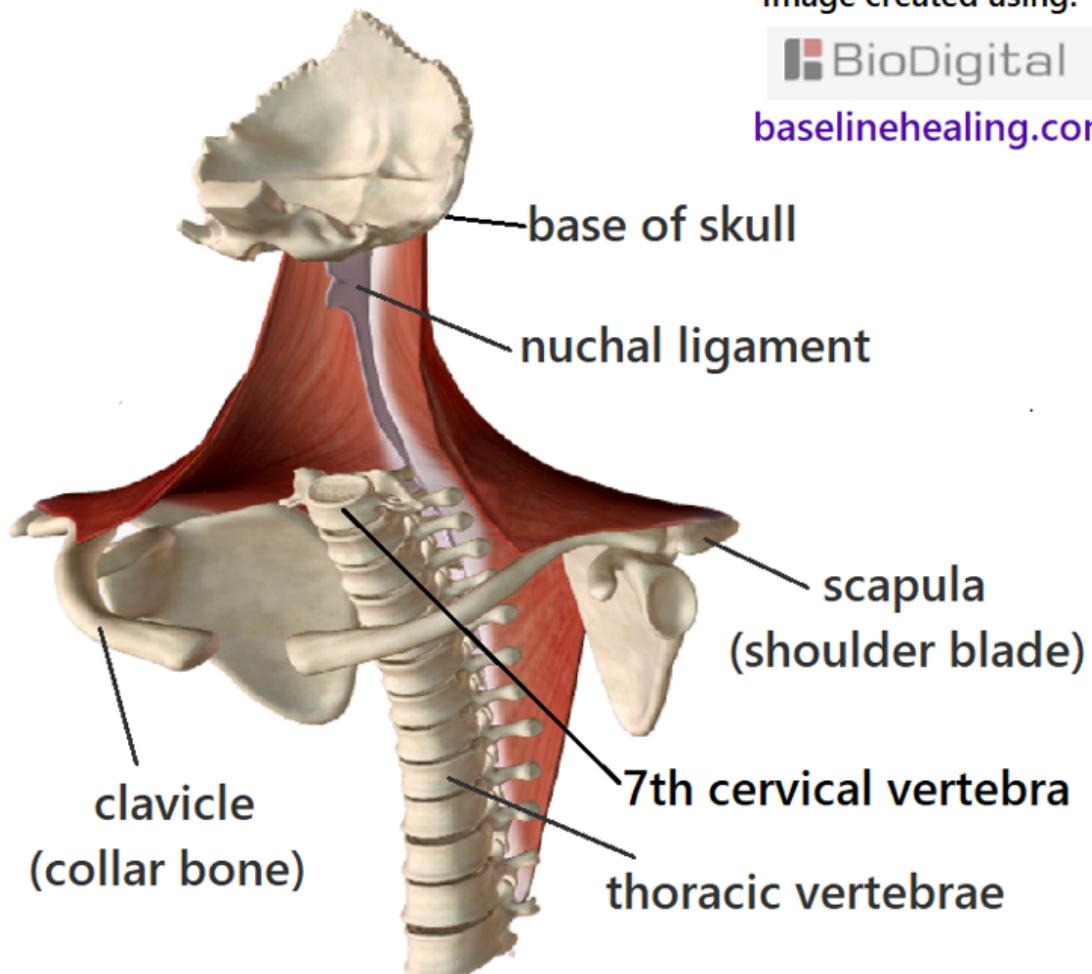


The nuchal ligament, a "leaf" of connective tissue in the back of the neck.

The nuchal ligament attaches to the base of the skull at the external occipital protuberance (*feel for the midline bump at the back of the skull*) and the medial nuchal line (*a.k.a. the external occipital crest*).

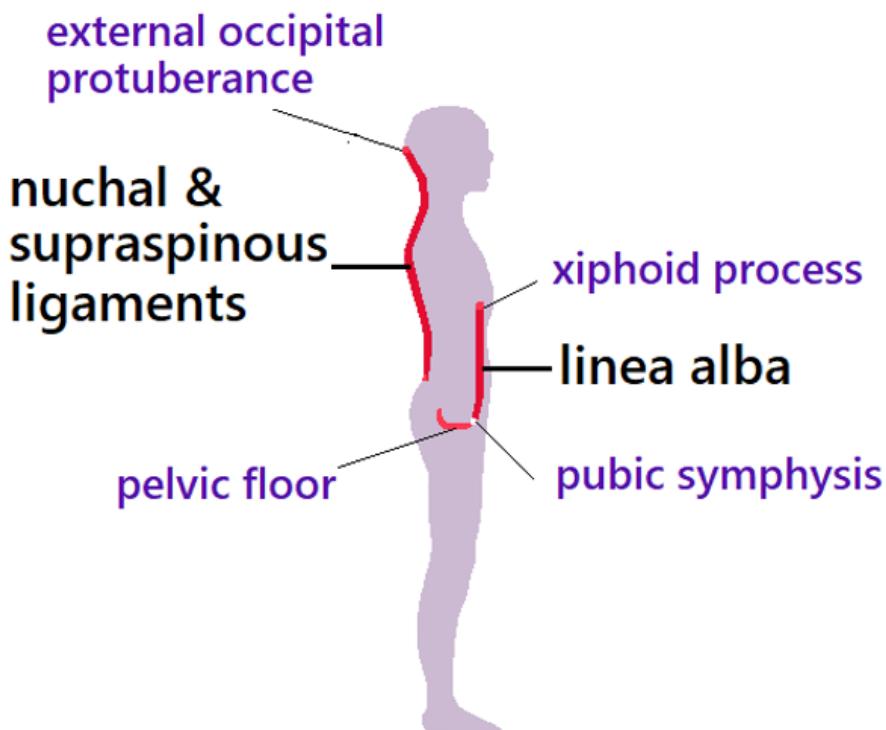
The nuchal ligament then attaches to the spinous processes of all the cervical vertebrae. At the 7th (*last*) cervical vertebra, the nuchal ligament continues as the **supraspinous ligament**, a strong, fibrous cord attaching to the spinous processes of the seventh cervical vertebra, all twelve thoracic vertebrae and the upper lumbar vertebrae, usually terminating at the 4th lumbar vertebra (but possibly L3 or L5).

The left and right [trapezius](#) muscles attach to the nuchal and supraspinous ligaments from the base of the skull to the last thoracic vertebra. The trapezius muscles are key to feeling and controlling the positioning of the nuchal and supraspinous ligaments.



The nuchal ligament, midline at the back of the neck.
Between the trapezius muscles.

Unimportant to my theory, I mention it now to be complete: The anterior longitudinal ligament is the longest anatomical structure on the midline. Running the entire length of the spine and attaching to the anterior (front) of each vertebrae, it cannot be 'felt', either by palpation or by focusing on adjacent muscles.



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Side view of the **median plane** showing the **midline linear** structures of the **linea alba** at the anterior (front) of the body and the **nuchal & supraspinous ligaments** at the posterior (back) of the body.

Increasing Conscious Awareness of Midline.

To increase conscious awareness of our midline we can tap into the proprioceptive feedback (*sensory information regarding positioning, motion and balance*) generated by various structures by actively focusing on them.

Muscles and other structures that are on, or either side of, midline include:

- The [pelvic floor](#) muscles. A group of muscles forming a 'basket' at the base of the linea alba.
- Perineal muscles. Anal sphincter.
- The clitoris/suspensory ligament of the penis located at the pubic symphysis.
- The [rectus abdominis](#) muscles either side of the linea alba.
- The [trapezius](#) muscles attaching to the nuchal and supraspinous ligaments.

Much information about the relative positioning the head can be gained from:

- Nostrils. Feel the air flow in each nostril, aiming for balance.

- Movement of the mouth, lips and jaw.
- The tongue. Positioning the tongue behind the central incisors and on the hard palate provides sensory feedback about midline.

Dynamic Alignment and Balance.

The body is not static. We are constantly on the move and thus true balance and alignment are dynamic states.

The body is aligned when:

- Our midline anatomy can be at maximal extension on the median plane.
- The body balanced either side of the median plane.
- Midline anatomical structures are positioned in the correct relative positions to allow a full range of natural movement.
- The body is stable.
- Movement is fluid.
- The body is free of physical restrictions that would otherwise apply tensions and restrict range of movement.

The linea alba, nuchal and supraspinous ligaments are like a ribbon/ rope/band that can bend and twist at every level, supporting the rest of the body when we have a full range of natural movement.

Think about where your midline anatomy is in relation to the median plane.

Feel for your state of balance and alignment.

BaseLineHealing.com [the median plane.](#) [linea alba.](#) [nuchal & supraspinous ligaments.](#)

The Five Main Muscles for a Full Range of Natural Movement, Dynamic Alignment & Balance.

Epistemic status. Full confidence. The anatomy is easily verifiable. Working towards fully utilising these muscles has changed my life. [My story here.](#)

For a less wordy introduction to the anatomy try here: [The 5 Main Muscles Made Easy.](#)

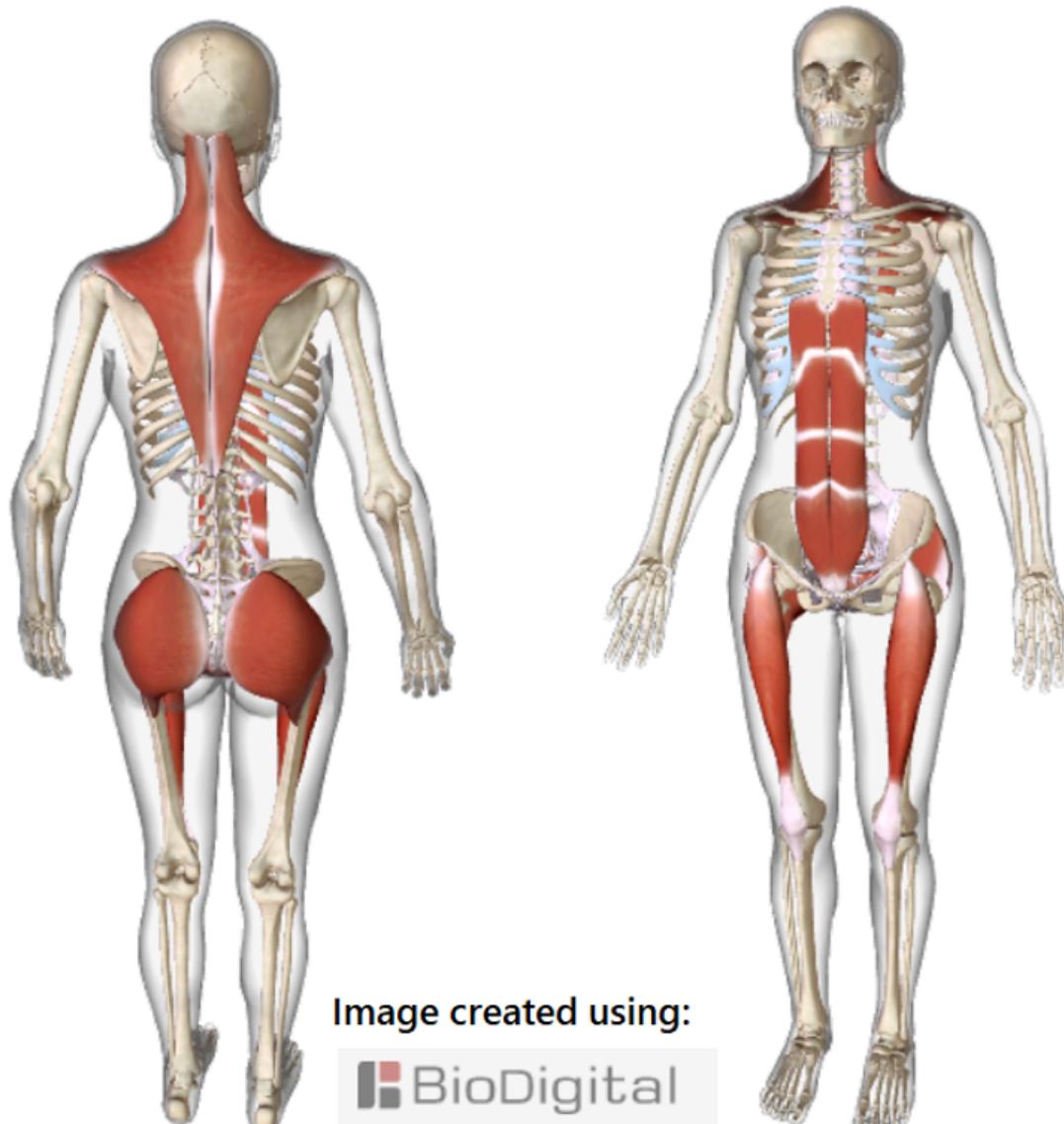


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Introduction

Following an introduction to our [midline anatomy](#) and the [median plane](#) as the references for alignment and balance of the human body, think about how you move.

Do you move well?

Our System For Movement.

The main components of our 'system for movement' are:

- **Muscles** (The movers - tissue of action - [background notes on muscles](#).)
- **Bones** (Solid frame, attachment points for muscles.)
- **Brain** (HQ. Receiving and processing sensory information and sending commands to body.)
- **Mind** (Observer and controller.)
- **Nerves** (Communication network.)
- **Connective tissues** (Just about everything else). We are physically interconnected from head to fingers to toes by the body-wide web of [connective tissues](#) (*various forms of fibrous tissue*) .

Do you have a full range of natural movement?

A Full Range of Natural Movement.

A full range of natural movement is what your body **should** be able to do. Your full potential. Not what you are currently able to do.

When the body is balanced, movement can flow through **all potential** positions. The head, arms and legs can all be moved independently, through their full range of motion, in a smooth and controlled manner, without effort or strain.



Examples of some of the body's capabilities.

To give some idea of what the body is capable, consider the number of moving joints of the body (*I'm not happy to provide a figure but various suggestions appear [here on Quora](#).*) and the [range of motion](#) of those joints (*not an exhaustive list e.g. there's no data for the spinal column*). The slightest movement in any joint - flexion, extension, adduction, abduction, rotation depending on the joint's capabilities - creates a novel pose. The body has innumerable positions - our [posture](#)/positioning/movement is a flow.

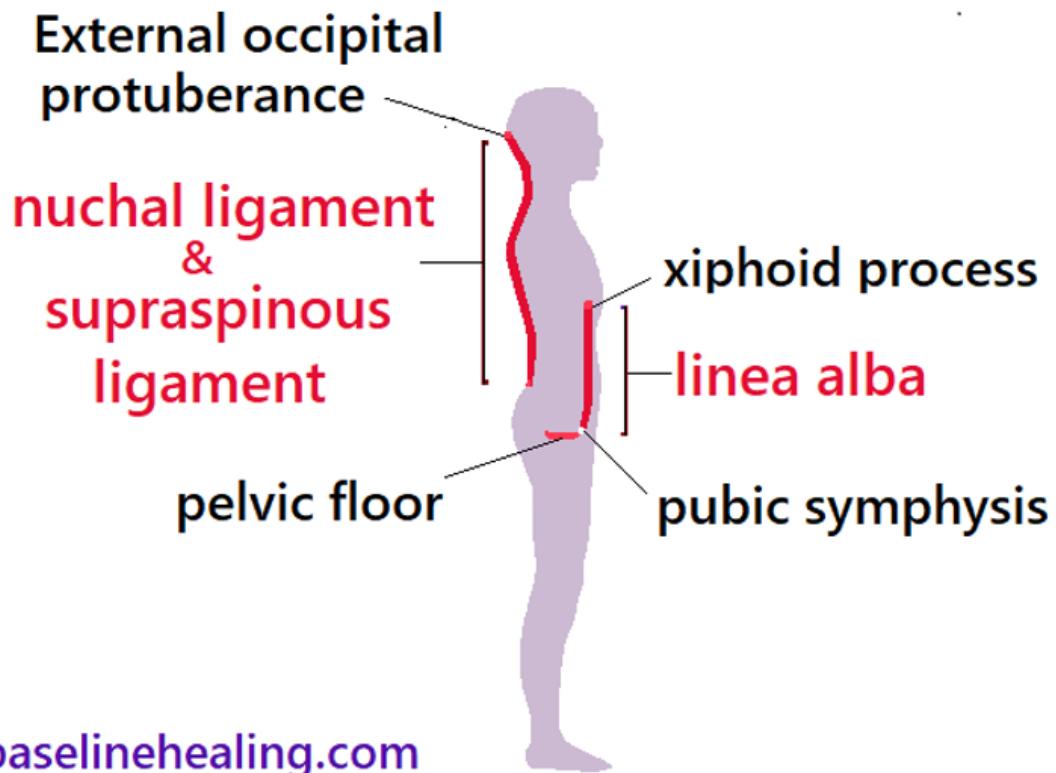
A full range of natural movement is possible when the body is functioning at [optimal](#), [dynamically balanced and aligned](#). ([baselinehealing.com what does alignment mean?](#))

Anatomy of alignment and balance (recap):

The [linea alba](#) and [nuchal & supraspinous ligaments](#) are our main anatomical guides for body alignment.

THE MEDIAN PLANE

A 2D shape when viewed from the side.



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Midline anatomy of the linea alba and nuchal and supraspinous ligaments aligned on the median plane.

These midline structures are strips of tough connective tissue that we have no direct control over, we can however influence 2 of our components of movement - **muscles and mind** - and learn to work with the adjacent muscles (see below for some background notes on muscles) to:

- **Increase awareness of the sensory feedback from adjacent muscles to feel the relative positioning of our midline anatomy.** Developing conscious awareness of our sense of proprioception.
- **Increase voluntary control** of the relevant muscles. Focusing on activating the adjacent muscles allows us to work towards physically aligning the linea alba and nuchal & supraspinous ligaments and regaining a full range of natural movement.

Whatever exercise you do, routines, sports etc... be more aware of the positioning of your body ([posture](#)) and your state of alignment by working with your "5 main muscles of movement".

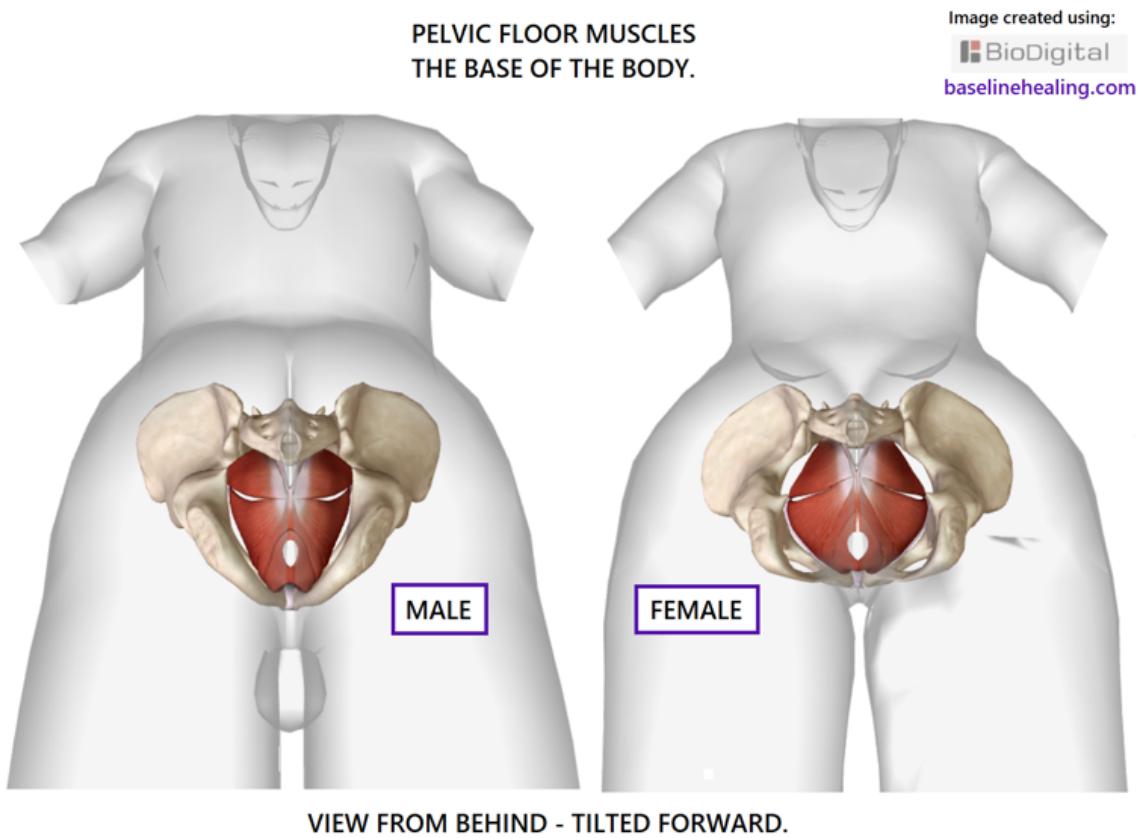
According to Base-Line Theory of Health and Movement:

The 5 Main Muscles of Movement are:

1. Pelvic Floor.

(The pelvic floor consists of several muscles that can be thought of one unit.)

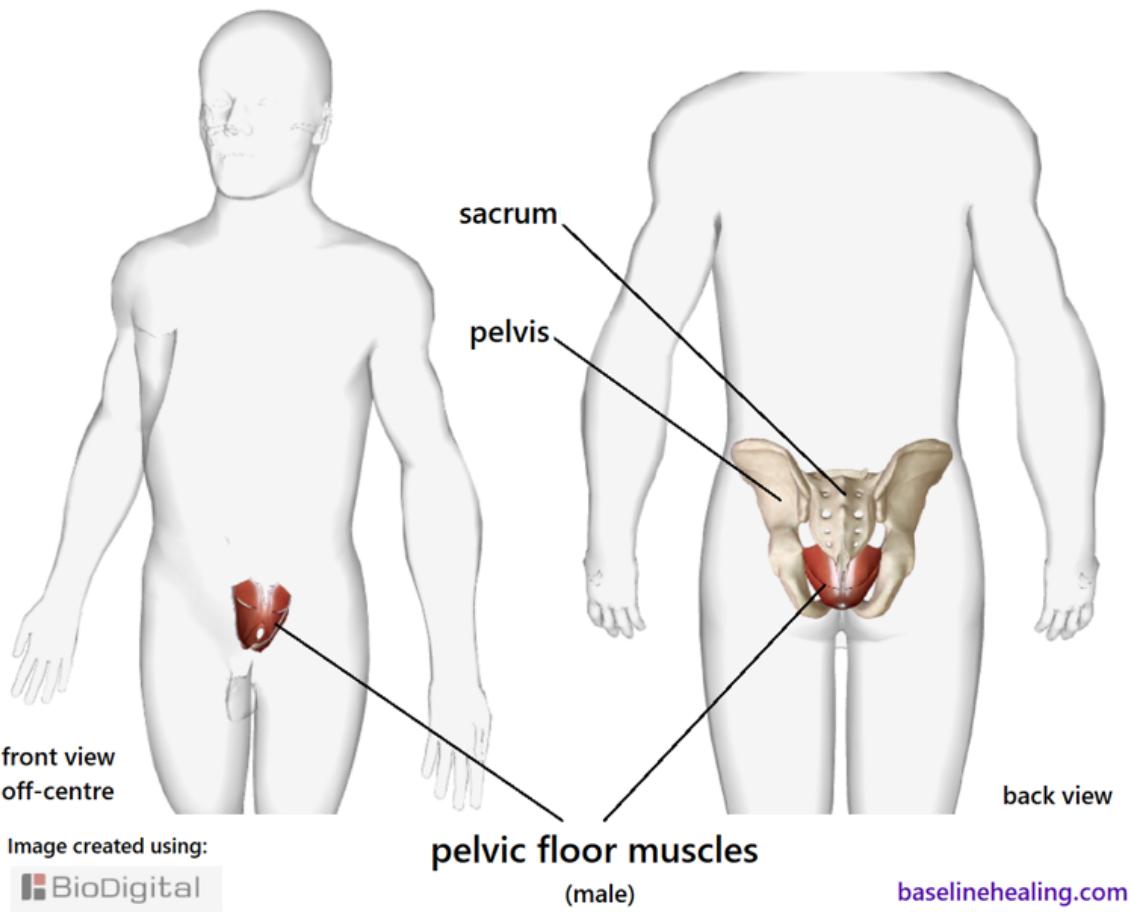
The "pelvic floor" are the muscles that span the pelvic canal. Also known as the pelvic diaphragm.

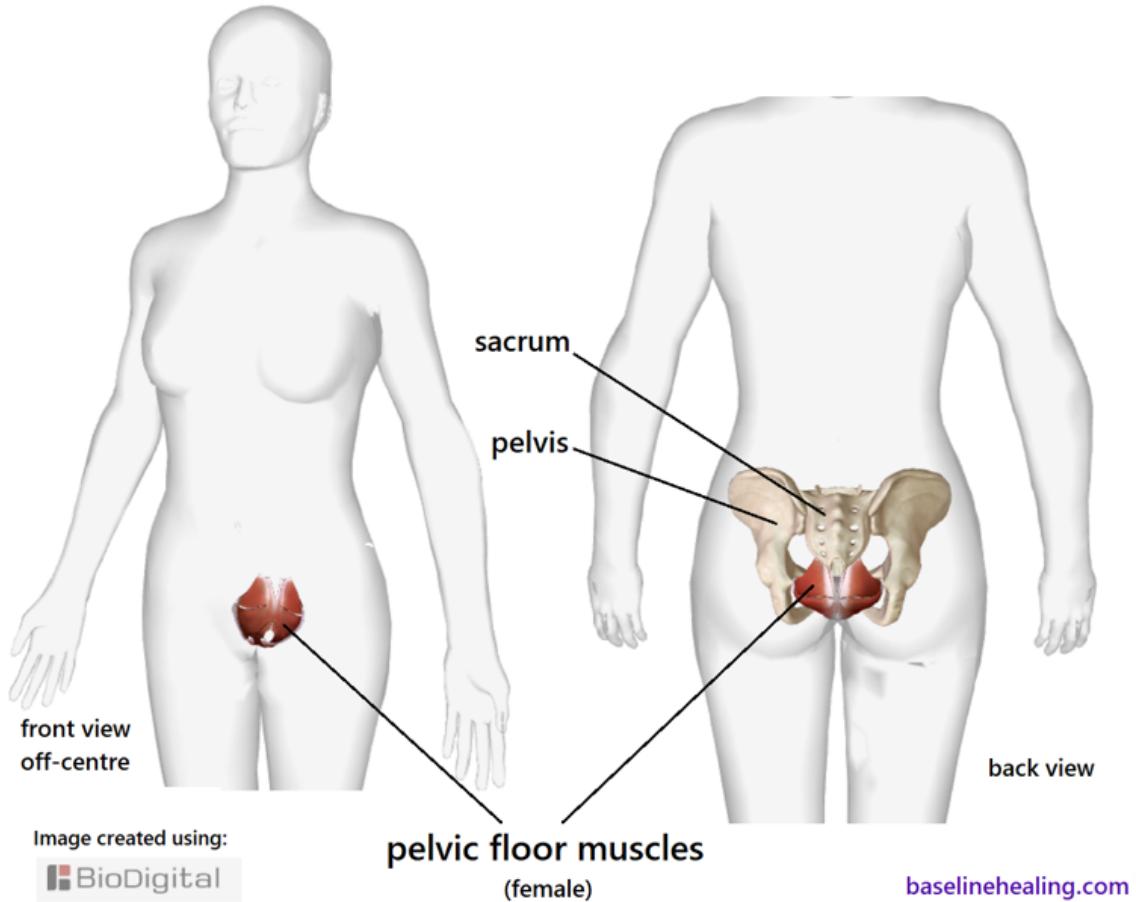


Left and right sides of the pelvic floor are a mirror image, the line of symmetry the body's midline.

The pubic symphysis (*where the linea alba and rectus abdominis muscles attach to the pelvis*) is located on the midline of the anterior border of the pelvic canal.

To describe the pelvic floor in detail would be time-consuming - and frustrating. The anatomy is complicated with some controversy with regards to nomenclature, and is unimportant to this process. Think of the pelvic floor muscles as one unit of two halves.





My comments.

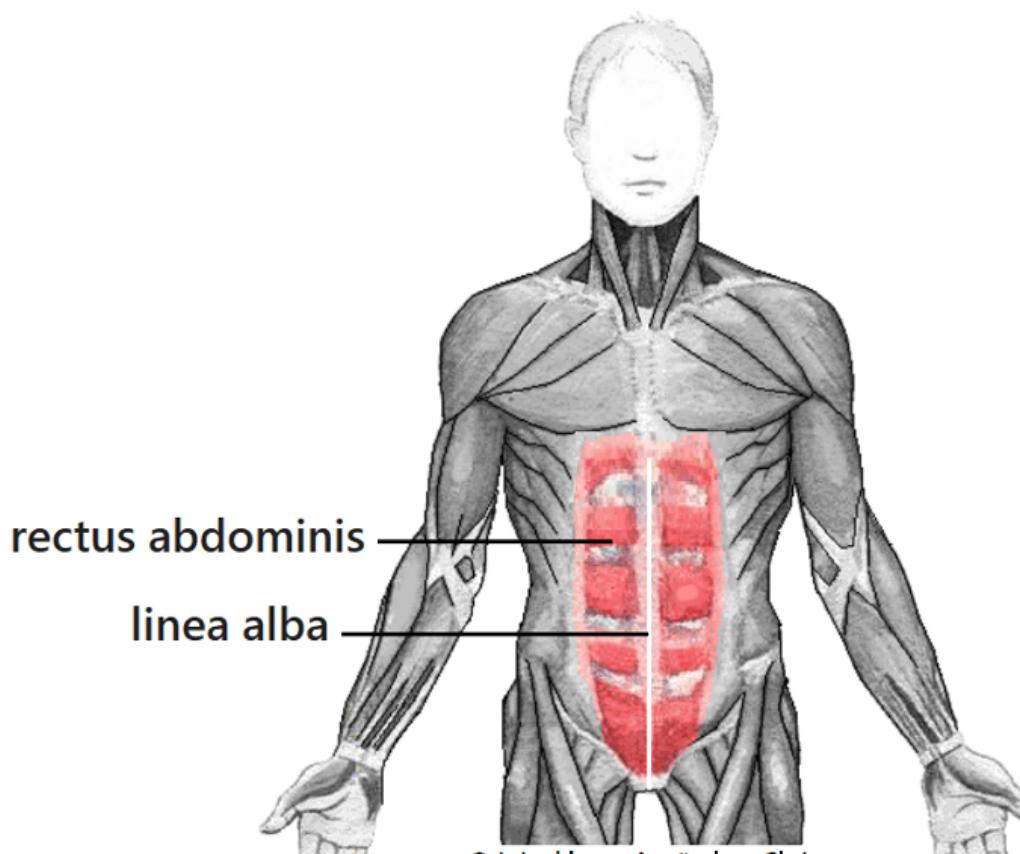
The pelvic floor muscles - a basket of muscles that should be tight and secure.

Activate your pelvic floor muscles and think of them at the root of all movement.

The solid Base for the the rest of the body.

2. Rectus Abdominis.

The left and right rectus abdominis muscles run parallel to each other, either side of the linea alba, up the front of the abdomen from pelvis to thorax.



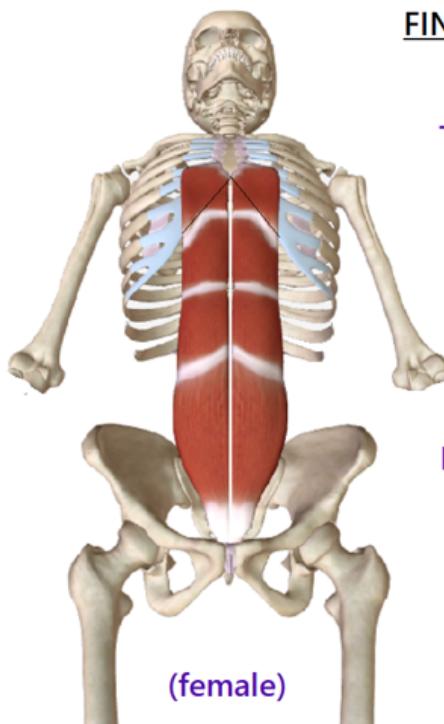
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The rectus abdominis muscles attach to:

- Pubic symphysis and pubic crest of the pelvis.
- Costal cartilages of the 5th, 6th and 7th ribs (on the medial inferior costal margins).
- Posterior aspect of xiphoid process of the sternum.

FIND YOUR RECTUS ABDOMINIS MUSCLES



TOP:

*Hands over the front of your rib-cage,
fingers meeting at the "Λ" on your midline*

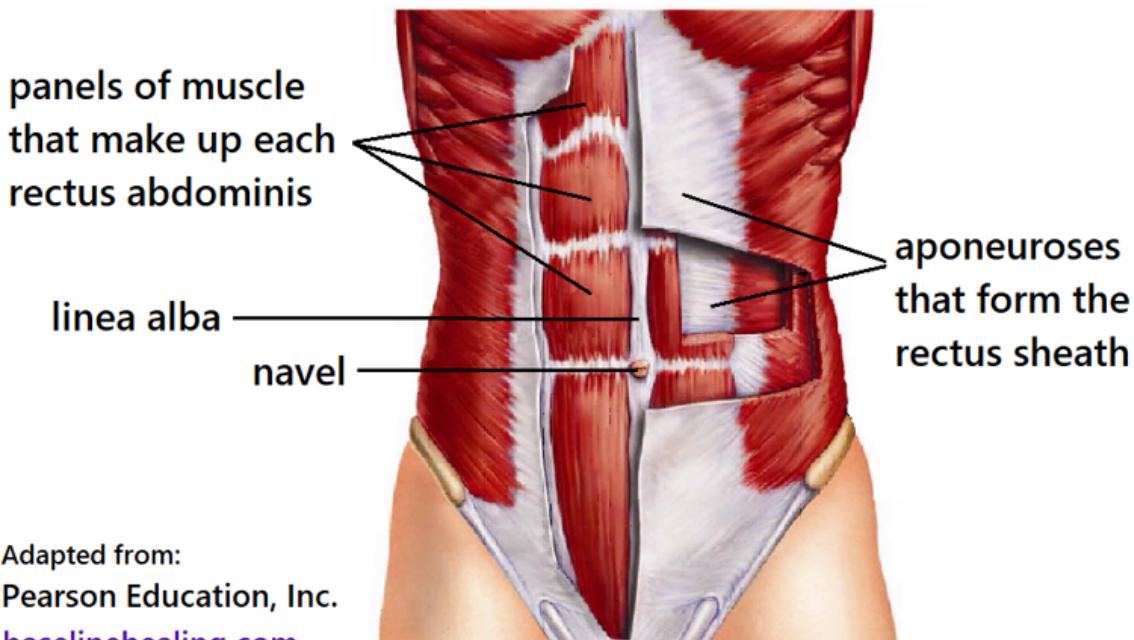
BOTTOM:

*Midline, between your legs at the front
where your pubic bones meet.*

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The rectus abdominis muscles consists of several 'panels' of muscle between strips of connective tissue known as tendinous intersections. These sections of muscle are what gives the rectus abdominis the "6-pack" look, but the number of panels can vary between individuals - 4, 8, and 10 packs can occur.

The rectus abdominis muscles sit within their respective rectus sheath formed by the aponeuroses of the lateral abdominal muscles before they merge to form the linea alba.



My comments.

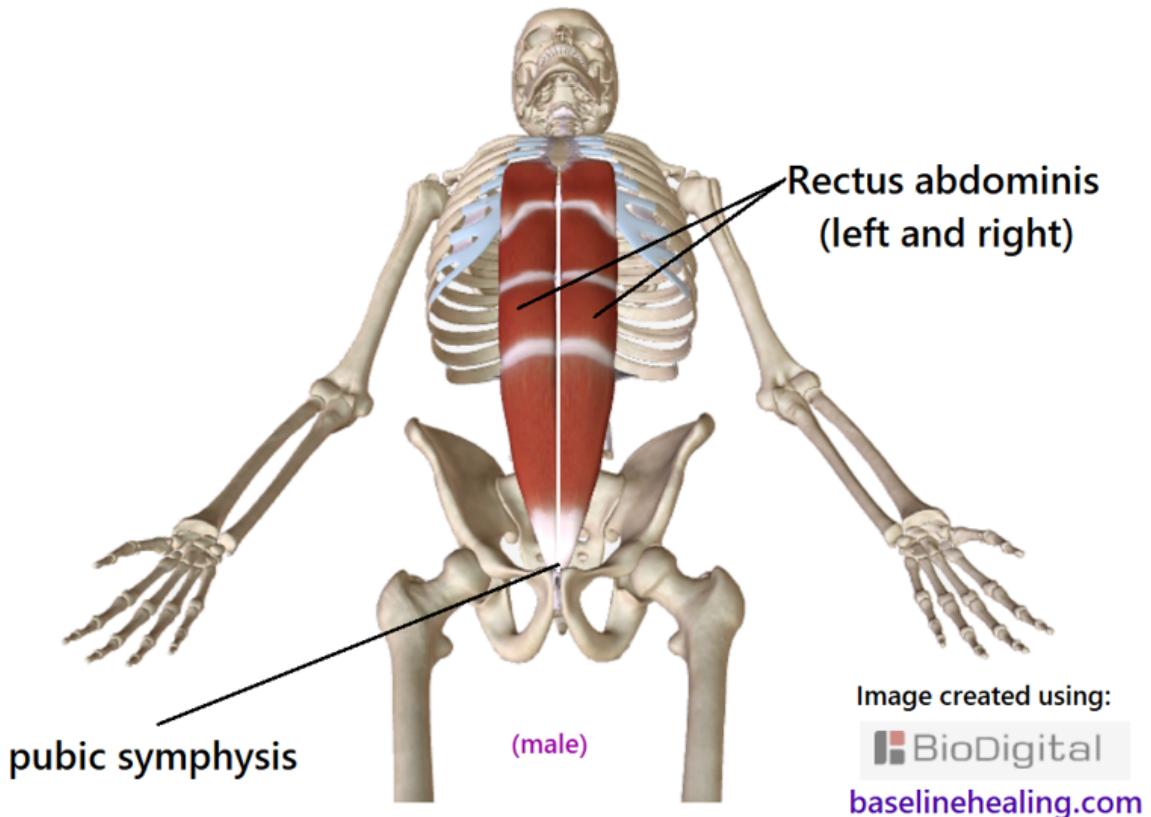
The rectus abdominis muscles - Our core pillar of strength. Our central Line. Strong and flexible, able to support the rest of the body through a full range of movement when fully utilised. Ribbons of muscle that can bend and rotate at every level.

Like two stacks of blocks to be activated in sequence from pelvis to chest.

Think longer and stronger with every in breath.

Fully engaging and elongating the rectus abdominis muscles extends the linea alba (our primary guide for alignment) to its full potential.

RECTUS ABDOMINIS MUSCLES. Our central Line.



3. Gluteus Maximus.

Situated at the posterior of the pelvic region, the left and right gluteus maximus muscles are the **largest skeletal muscles** in the body. From pelvis to femur, the gluteus maximus provide stability to the hip joint when fully active.

The **superficial muscle layer of the buttocks**, covering and surrounded by a lot of complicated anatomy that is prone to various strains and syndromes when the gluteus maximus are not adequately functioning.



The gluteus maximus muscles attach to multiple structures, many more than the current standard description covers.

Attachments of the gluteus maximus:

- **The ilium of the pelvis** (posterior to the posterior gluteal line {attaching to a narrow, semilunar area with a rough surface}, and the posterior superior iliac crest).
- **The sacrum** (posterior inferior edge).
- The coccyx (lateral sides of the posterior surface).
- The aponeurotic fascia of the gluteus medius muscle.
- The sacrotuberous ligament (posterior surface).
- The tubero-iliac ligament (part of the long posterior {dorsal} sacroiliac ligament).
- The thoracolumbar fascia. (Through its attachment to the raphe of the thoracolumbar fascia, the gluteus maximus is coupled to the ipsilateral multifidus muscle and to the contralateral latissimus dorsi muscle.)
- **The iliotibial tract.** Three-quarters of the fibres form a superficial lamina (*layer*) which narrows and attaches between the two layers of the tensor fascia latae, forming part of the iliotibial tract. (a.k.a. iliotibial band.)
- **Gluteal tuberosity of the femur.** Via an aponeurosis formed from the deeper muscle fibres. (The gluteus maximus attaches between the vastus lateralis and adductor magnus).

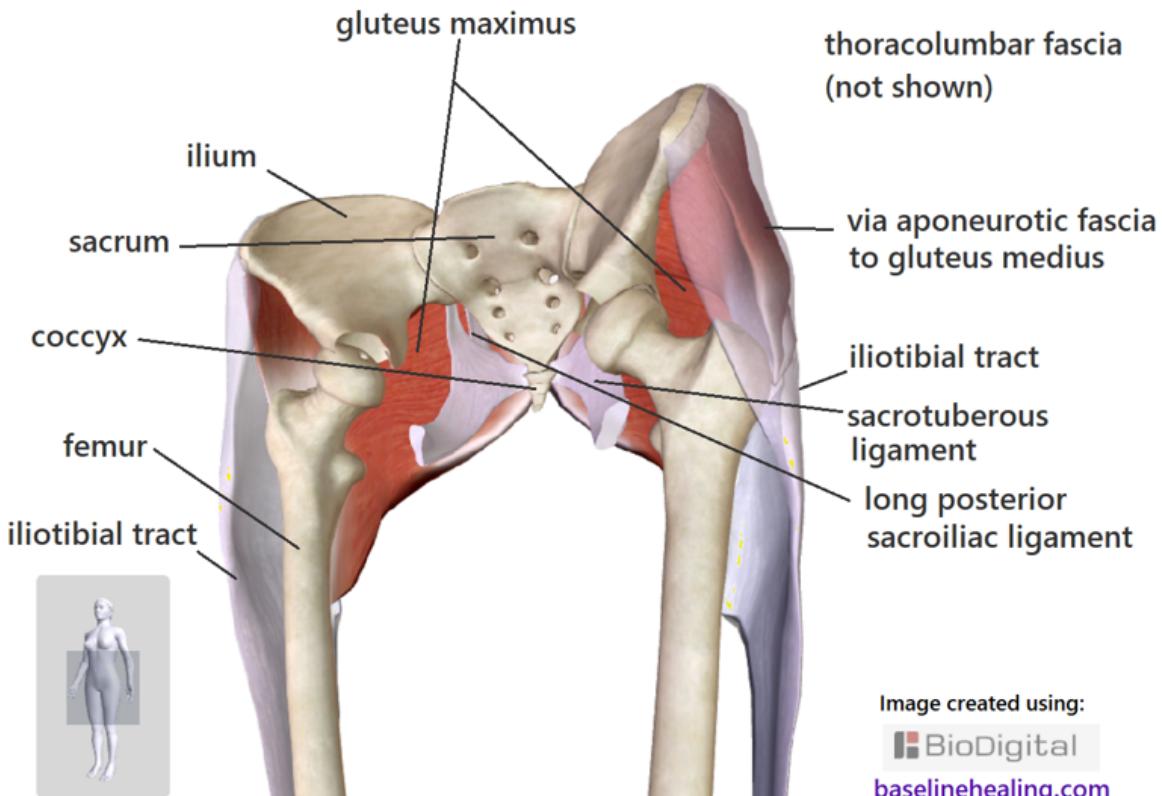


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My comments.

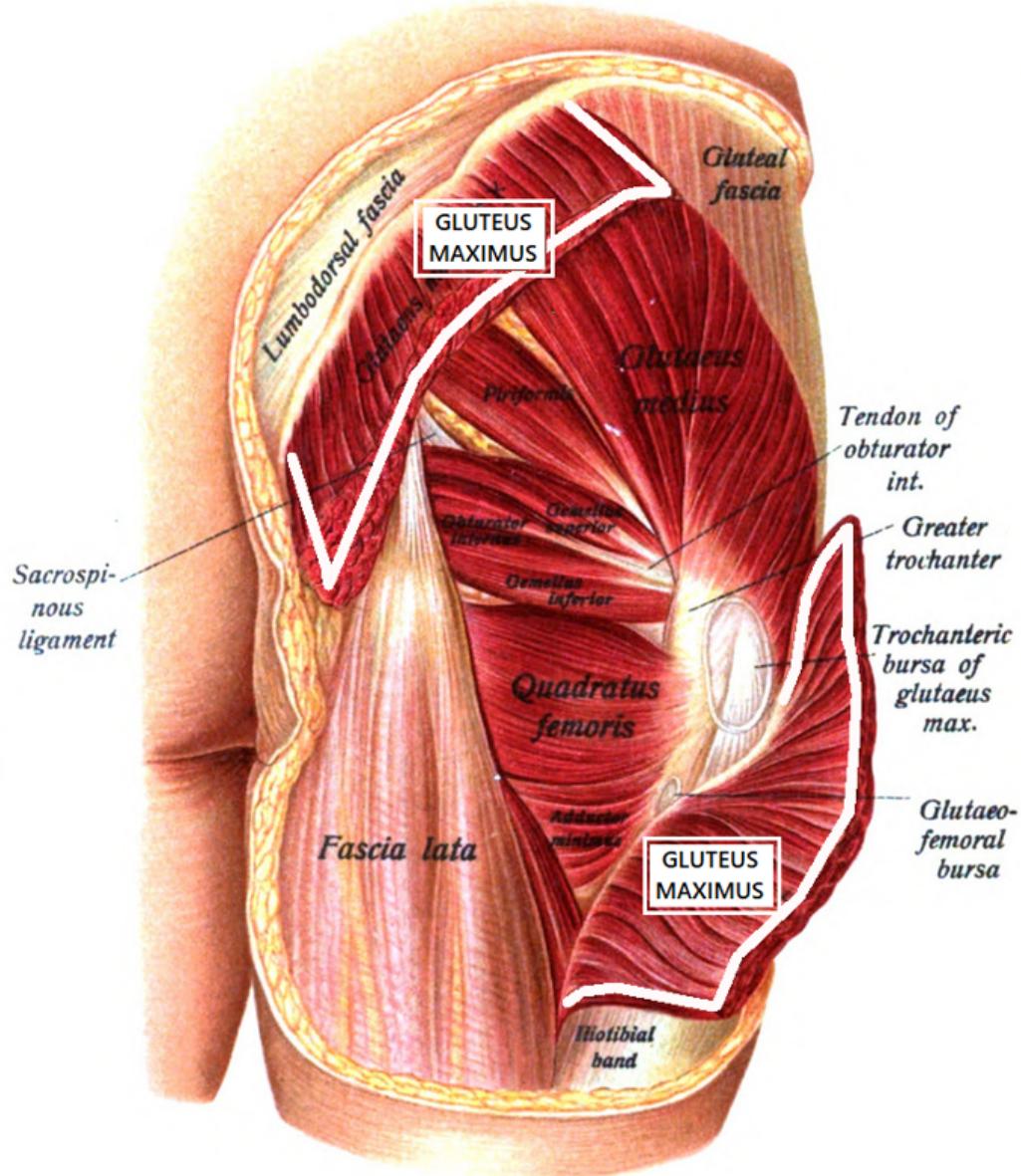
The gluteus maximus muscles work in tandem with the rectus femoris muscles, stabilising the leg through a full range of movement.

The largest muscles of the body that position the leg to torso when fully engaged.

"Buns of steel" - Hands on buttocks. Feel these muscles contract and tighten.

The gluteus maximus muscles are superficial to, and surrounded by, a lot of anatomy prone to pain syndromes (caused by these main muscles not being adequately utilised?).

Right buttock. The gluteus maximus muscle has been cut to expose the underlying muscles.



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4. Rectus Femoris.

The rectus femoris muscles are situated at the front of each thigh, extending from pelvis to tibia.



The rectus femoris is traditionally described as part of the quadriceps femoris muscle group, along with the 3 vasti muscles (*the vastus lateralis, vastus intermedius and vastus medialis*).

The distal tendons of the 4 quadriceps muscles merge to form the common quadriceps tendon, which attaches to the patella (kneecap) and then continues as the patellar ligament to the tibial tuberosity of the tibia. i.e. the quadricep muscles share a common insertion but **rectus femoris attaches to the pelvis**, whilst the 3 vasti muscles attach to the femur. The rectus femoris is the only muscle of the quadriceps that crosses both the hip and knee joints

The pelvic attachments of the rectus femoris muscles are commonly described as "to the ilium of the pelvis via two heads - the straight head and the reflected head" but it is not that simple - variations in the pelvic attachments have been observed.

- The tendon of the straight head attaches to the anterior inferior iliac spine.
- The rectus femoris may also arise from the anterior superior iliac spine.
- The tendon of the reflected head attaches in a groove above the superior rim of the acetabulum and the fibrous capsule of the hip joint. The reflected head may be absent.
- A 3rd head may be present, attaching to the iliofemoral ligament deeply, and superficially to the gluteus minimus tendon as it attaches to femur.

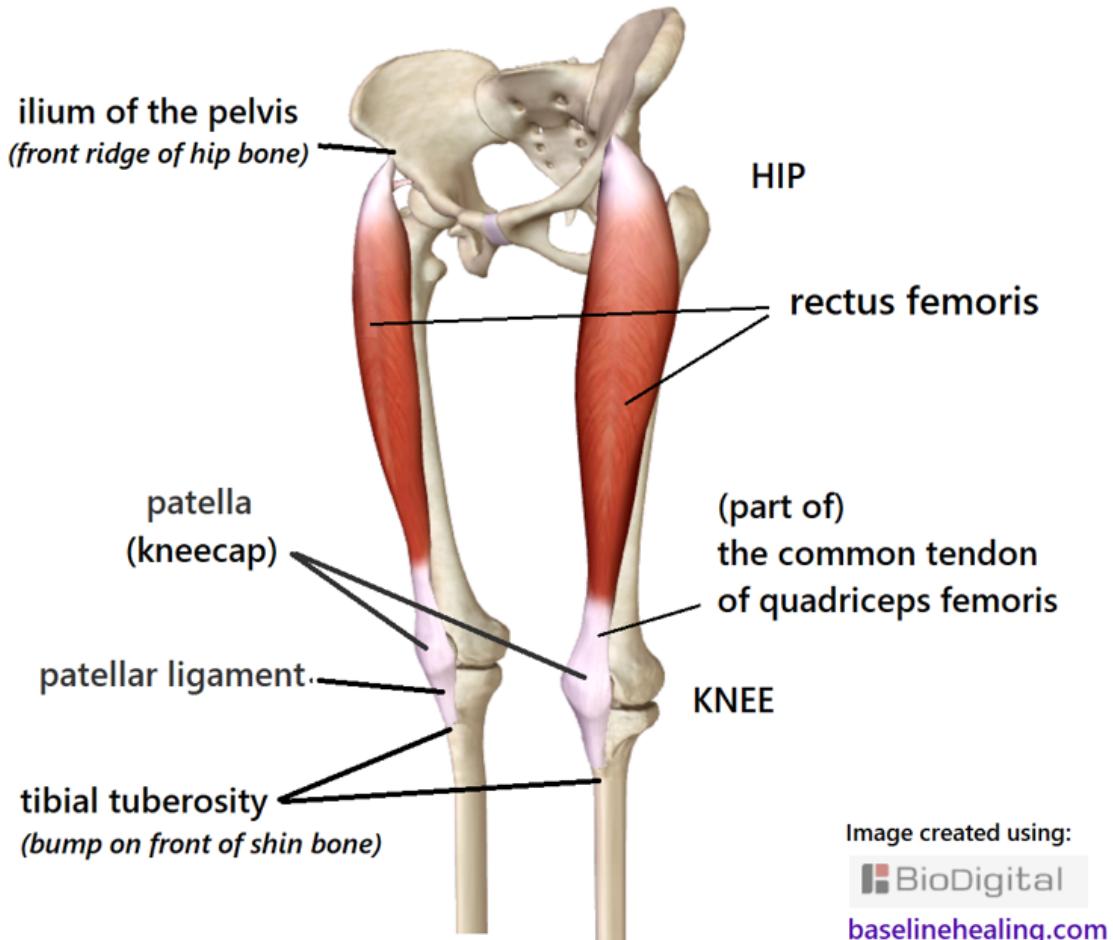


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The heads of the rectus femoris merge into an aponeurosis (*a tough, thin sheet of connective tissue*), from which the muscle fibres arise as the aponeurosis continues distally on the anterior surface of the muscle.

The lower two-thirds of the posterior surface of the rectus femoris consists of a thick, broad aponeurosis that becomes narrowed into a flattened tendon attached to the patella. This forms the superficial, central part of the common quadriceps tendon.

My comments.

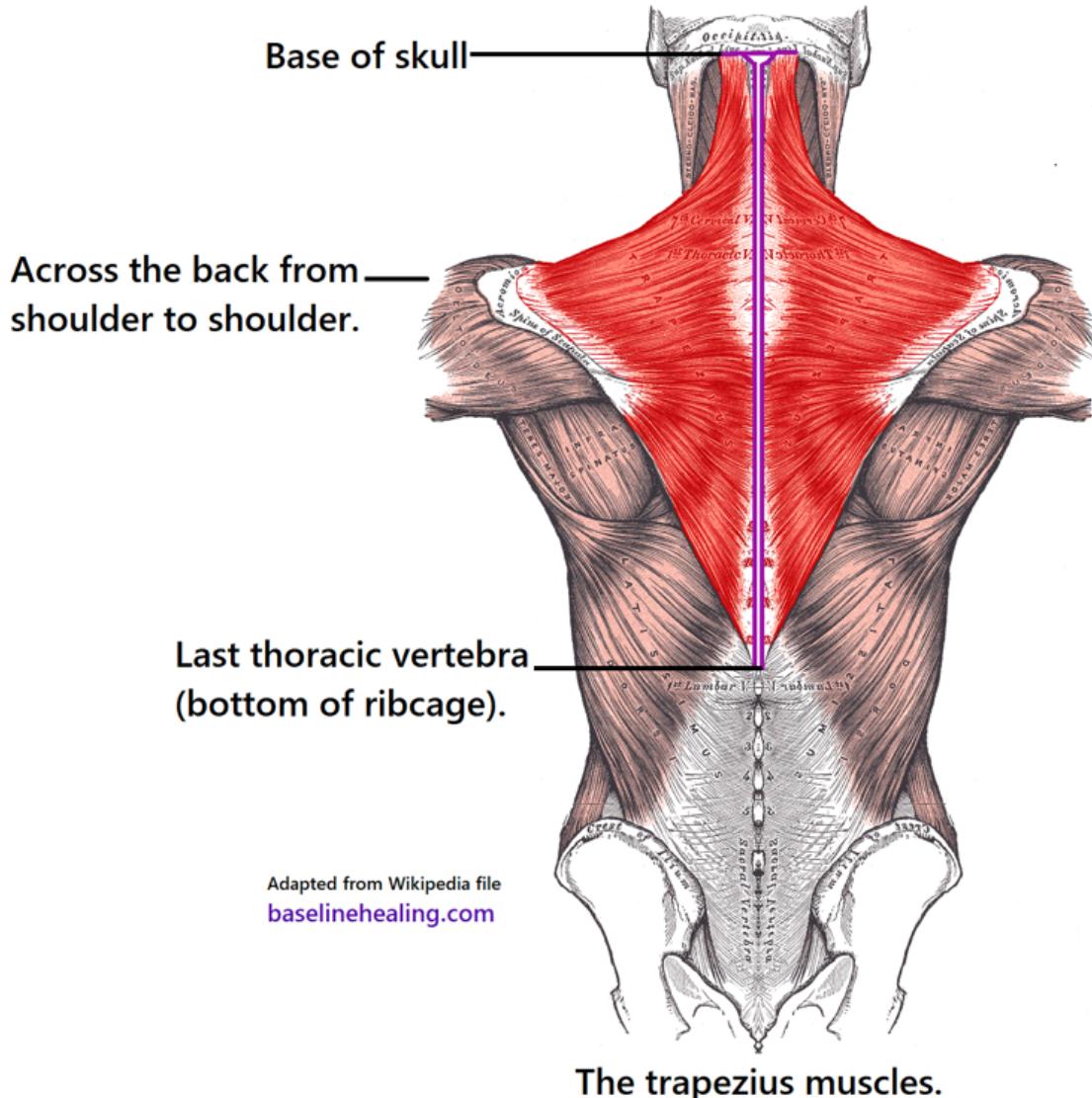
The rectus femoris muscles - a strong pole down the front of the thigh when engaged along their full length. Positioning the leg to the pelvis and aligning the hip and knee joints.

Feel each muscle contract between its aponeuroses - think of pulling your kneecaps up and pushing down from your hip bone.

5. Trapezius.

- from mid-back (last thoracic vertebra - level with last rib)
- to the base of the skull
- extending out towards each shoulder

The left and right trapezius muscles are the most superficial muscle layer. Thin sheets of muscle that should be free to fully extend.



The trapezius muscles.

A kite-shaped sheet of muscle from mid back to the back of the head, extending out towards each shoulder.

The trapezii should be able to fully extend, without pain or tension supporting the head and arms through a full range of natural movement.

The trapezii (*plural*) meet midline, attaching to the nuchal ligament and supraspinous ligament.

The trapezii are sculpted down the neck and towards the shoulders, attaching to both scapula (*shoulder blade*) and clavicle (*collar bone*) of each arm - look at the shape.

Based on the direction of the muscle fibres, current descriptions split each trapezius muscle into 3 functional sections.



1. Upper trapezius. (a.k.a. *superior trapezius, descending trapezius*)

Attaches to:

- Base of the skull. External occipital protuberance and medial third of the superior nuchal line of the occipital bone via a thin fibrous lamina.
- Nuchal ligament.
- Lateral third of the clavicle.
- Spinal process of the 7th (*last*) cervical vertebra.
- Supraspinous ligament.

2. Middle trapezius. (a.k.a. *transverse trapezius*)

Attaches to:

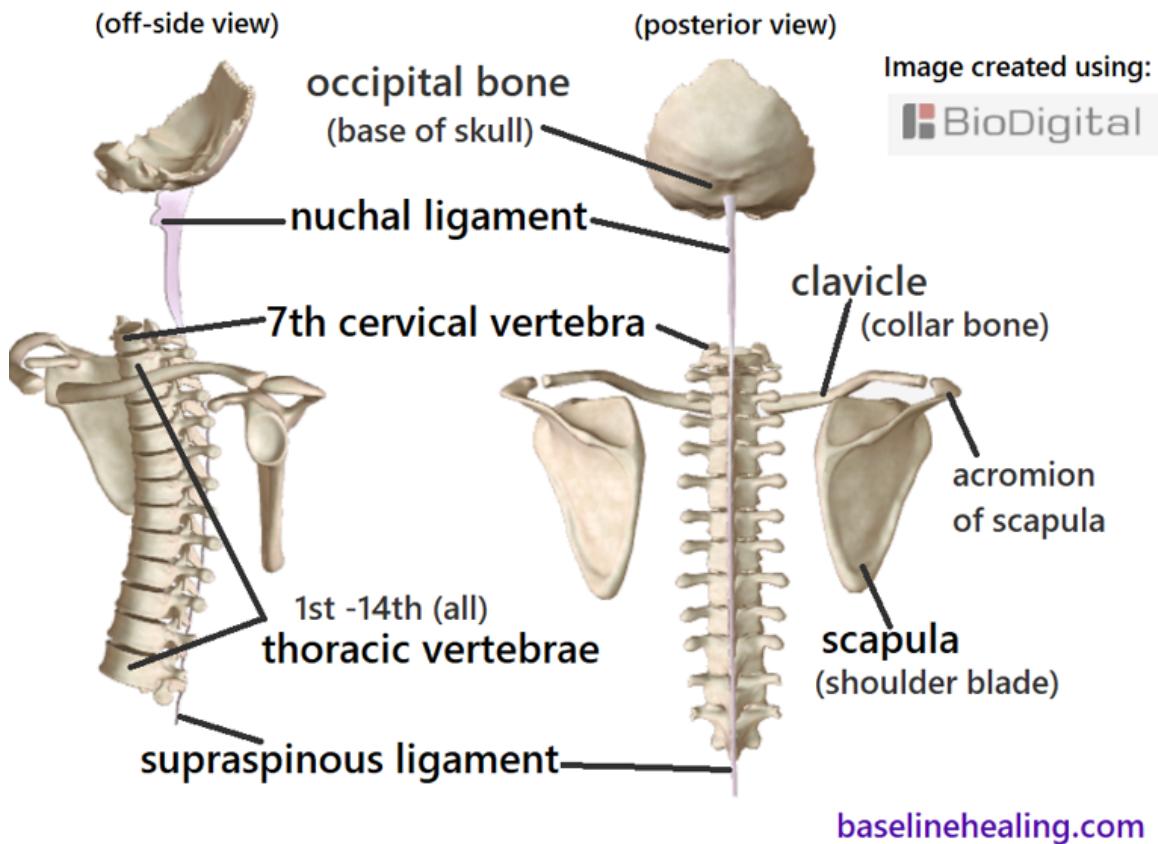
- Spinal processes of the 1st to 4th thoracic vertebrae.
- Supraspinous ligament.
- Medial side of the acromion of the scapula.

3. Lower trapezius. (a.k.a. *inferior trapezius, ascending trapezius*)

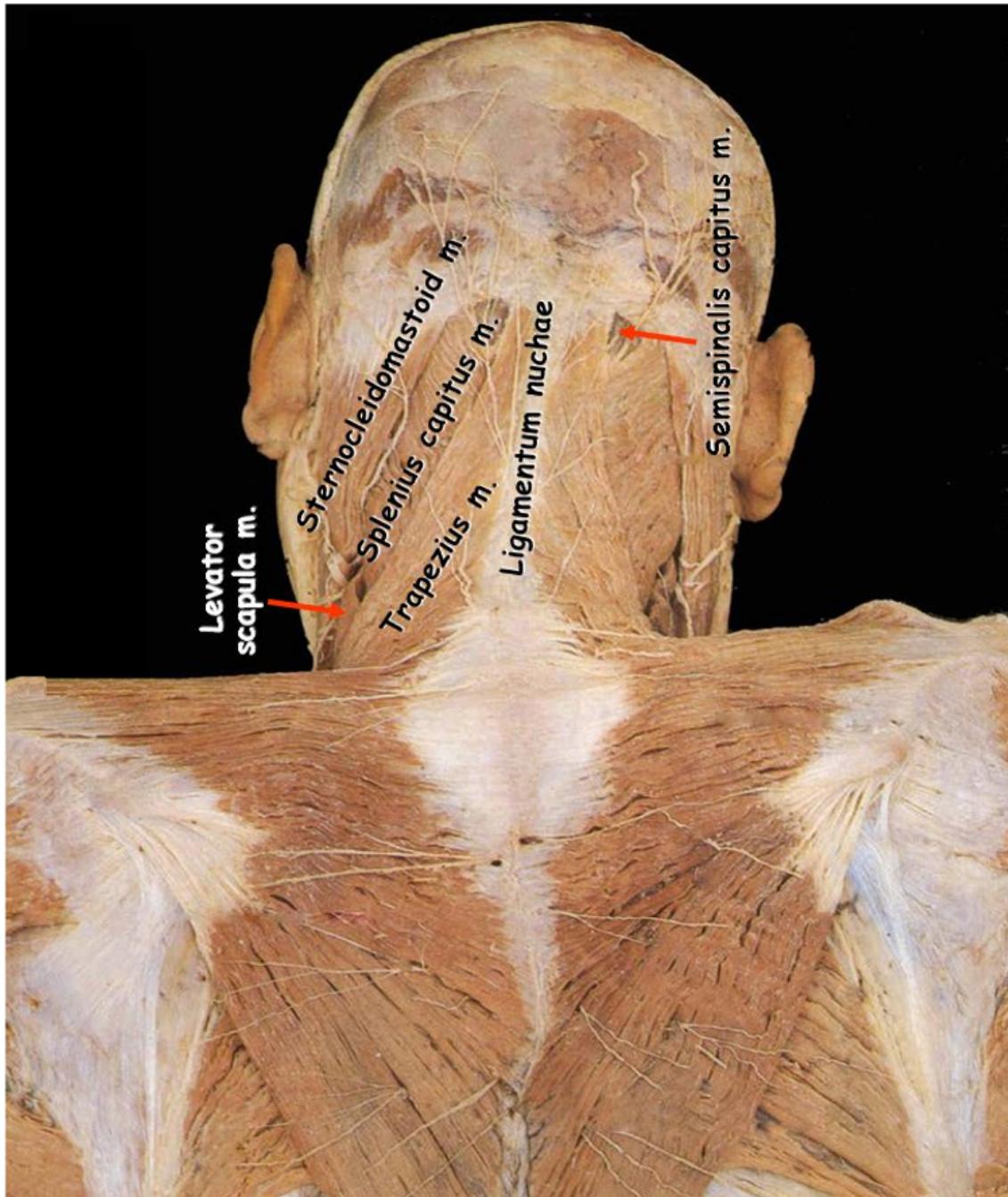
Attaches to:

- The spinal processes of the 5th to 12th (*last*) thoracic vertebrae.
- Supraspinous ligament.
- Posterior crest of spine of the scapula.
- Deltoid tubercle of spine of the scapula.

Attachments of the trapezius muscles - bones and ligaments.



Between the 6th cervical and 3rd thoracic vertebrae (*the base of the nuchal ligament and start of the supraspinous ligament*) the trapezius muscles are connected to the midline by a broad semi-elliptical aponeurosis, forming a tendinous ellipse between the shoulder blades.



Tendinous ellipse of connective tissue between the shoulder blades (scapulae), extending from the trapezius muscles.

My comments.

The trapezius muscles - from the back of the head to mid-back, extending out to each shoulder.

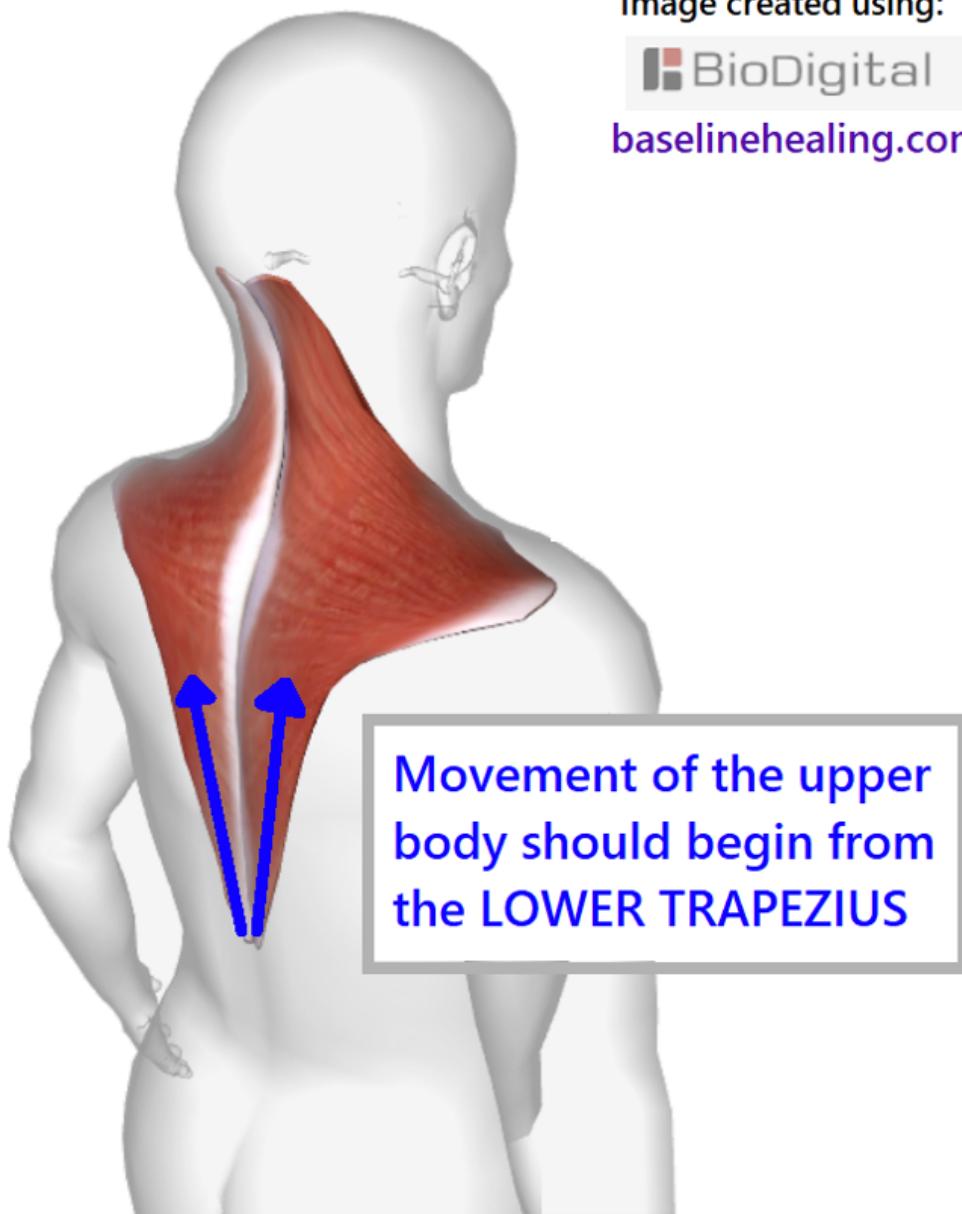
A kite-shaped blanket of muscle that should be smooth and wrinkle-free, supporting the head and arms through a full range of movement.

The trapezius muscles attach to the base of the skull via a thin sheet of connective tissue (lamina) and there is a ellipse of connective tissue at the base of the neck/between the shoulder blades too.

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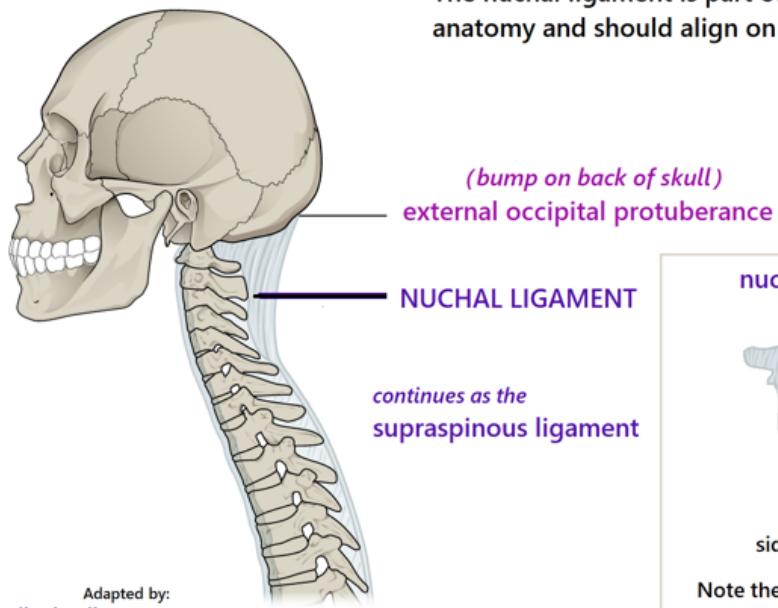


Movement of the upper body should begin from the lower trapezii. Think extension and expansion from midline outwards.

The middle trapezii should spread wide allowing the arms to fully extend. Our upper limb includes the scapula.

The upper trapezii should be free of tensions, allowing the head to move through its full range of movement and alignment of the nuchal ligament.

The nuchal ligament is part of our midline anatomy and should align on the median plane.



nuchal ligament (*isolated*)

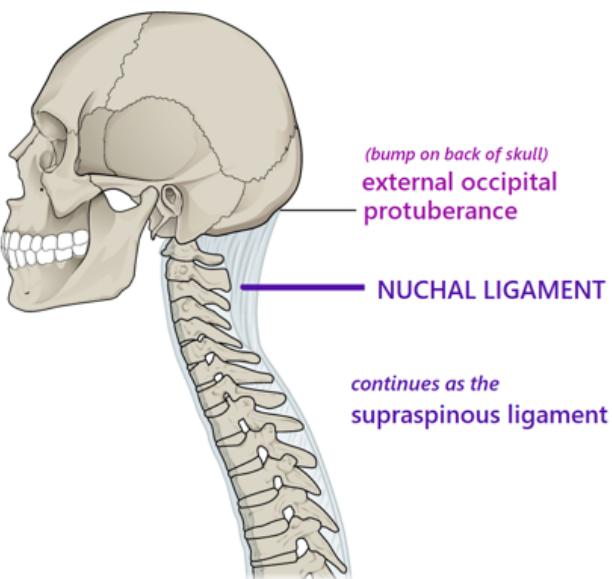


not to scale

side view

back view

Note the shape of the nuchal ligament.



nuchal ligament (*isolated*)



not to scale

side view

back view

note the shape of the nuchal ligament.

the nuchal ligament, midline anatomy aligned by the trapezii.

Base-Line Theory of Health and Movement (part 1).

Learning to use these **5 (paired - left and right) main muscles movement is the key to better health. - Physical and mental.**

Everything starts from your Base-Line muscles:

Pelvic floor - Base.

Rectus abdominis - Line.

The Body's BASE-LINE muscles.

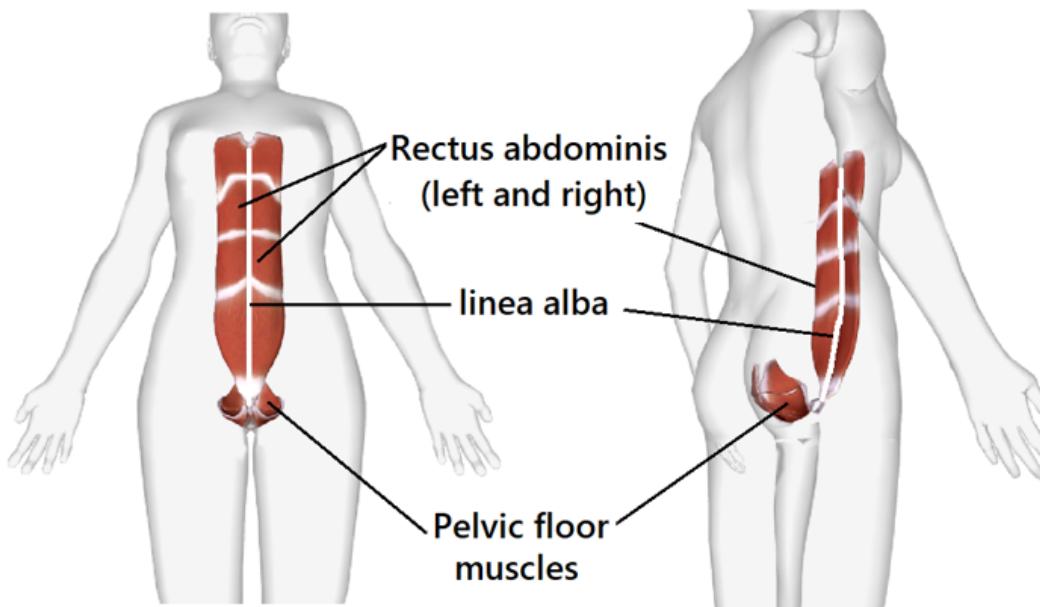


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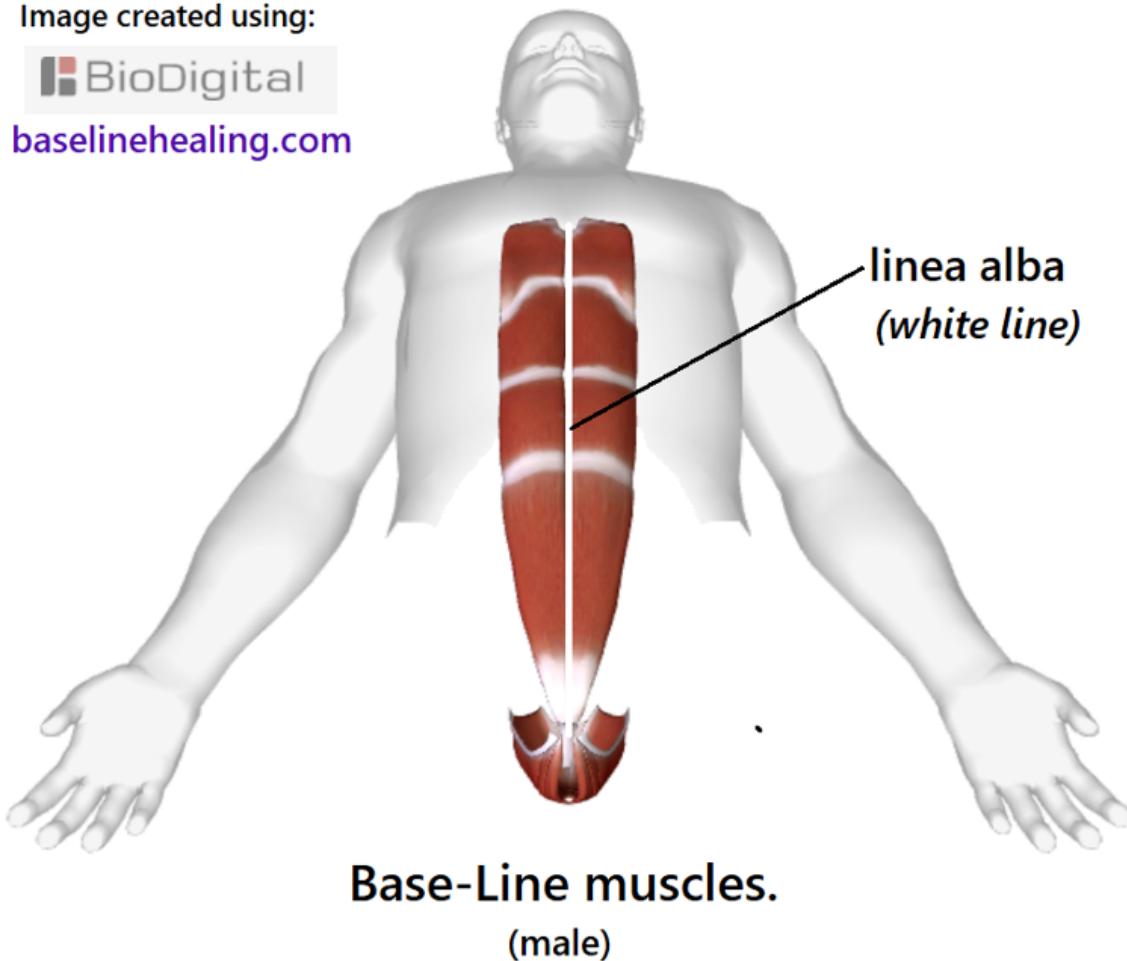
The body's Base-Line muscles are:

- From where the rest of the body extends. The rest of the body is positioned relative to Base-Line.
- Our muscular link to our 'primary guide for body alignment - the [linea alba](#).
- *Our core pillar of strength.*
- Key to increasing our conscious [proprioception](#) i.e. increased awareness of our sense of position, movement and balance.
- *The main muscles to connect body and mind.*

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The Base-Line muscles should:

- Fully extend, aligning the linea alba.
- Flex and rotate at every level.
- Support the rest of the body through a full range of natural movement.
-

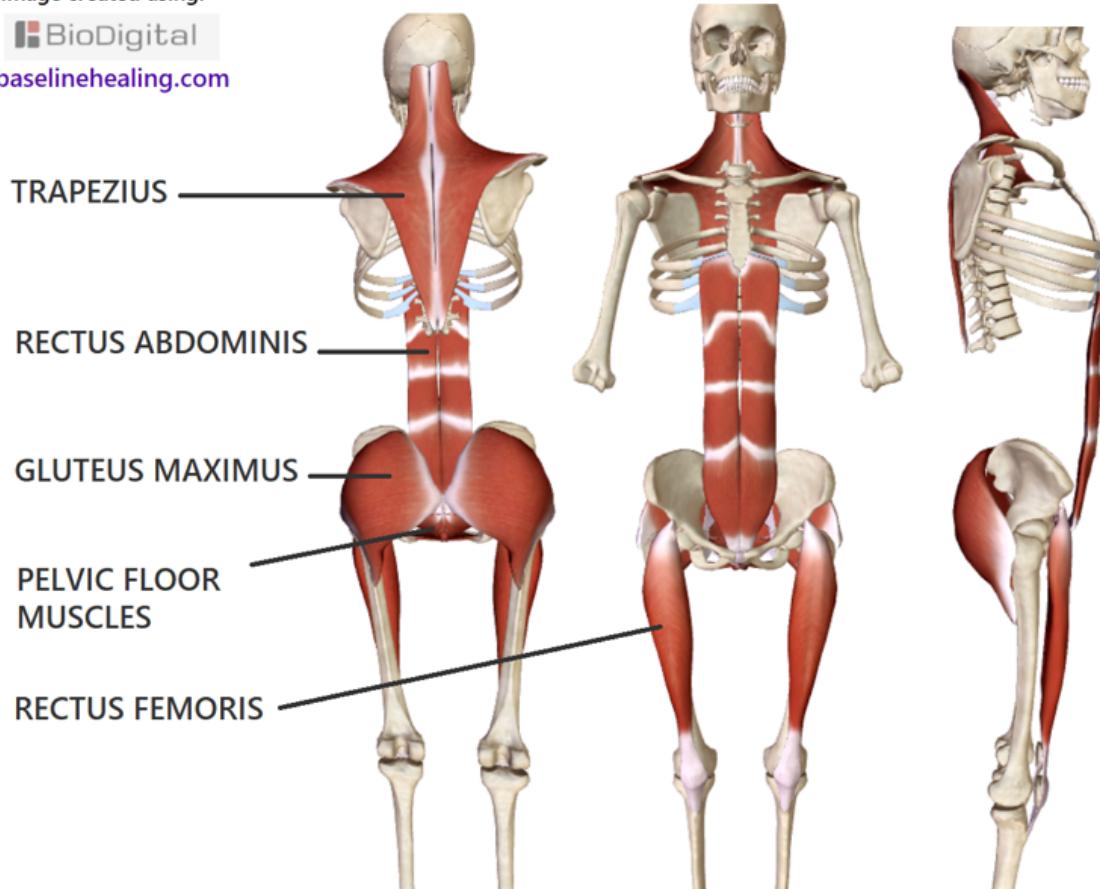
Think solid Base and strong, flexible Line. (see below for how to start 'breathing with your Base-Line').

- - -

Our Base-Line muscles are two of the '**5 main muscles of movement**' which, when fully utilised, provide the central framework for [optimal](#) functioning of the body.

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THE 5 PAIRED MUSCLES THAT ARE THE MAIN MUSCLES OF MOVEMENT
Back, front and side views.

Connect Your Base-Line to Your Legs.

Gluteus maximus & rectus femoris.

It should be possible to move each leg through a full range of movement in a smooth and controlled manner, without effort or strain, possible when the gluteus maximus and rectus femoris muscles of each leg work **in tandem**.

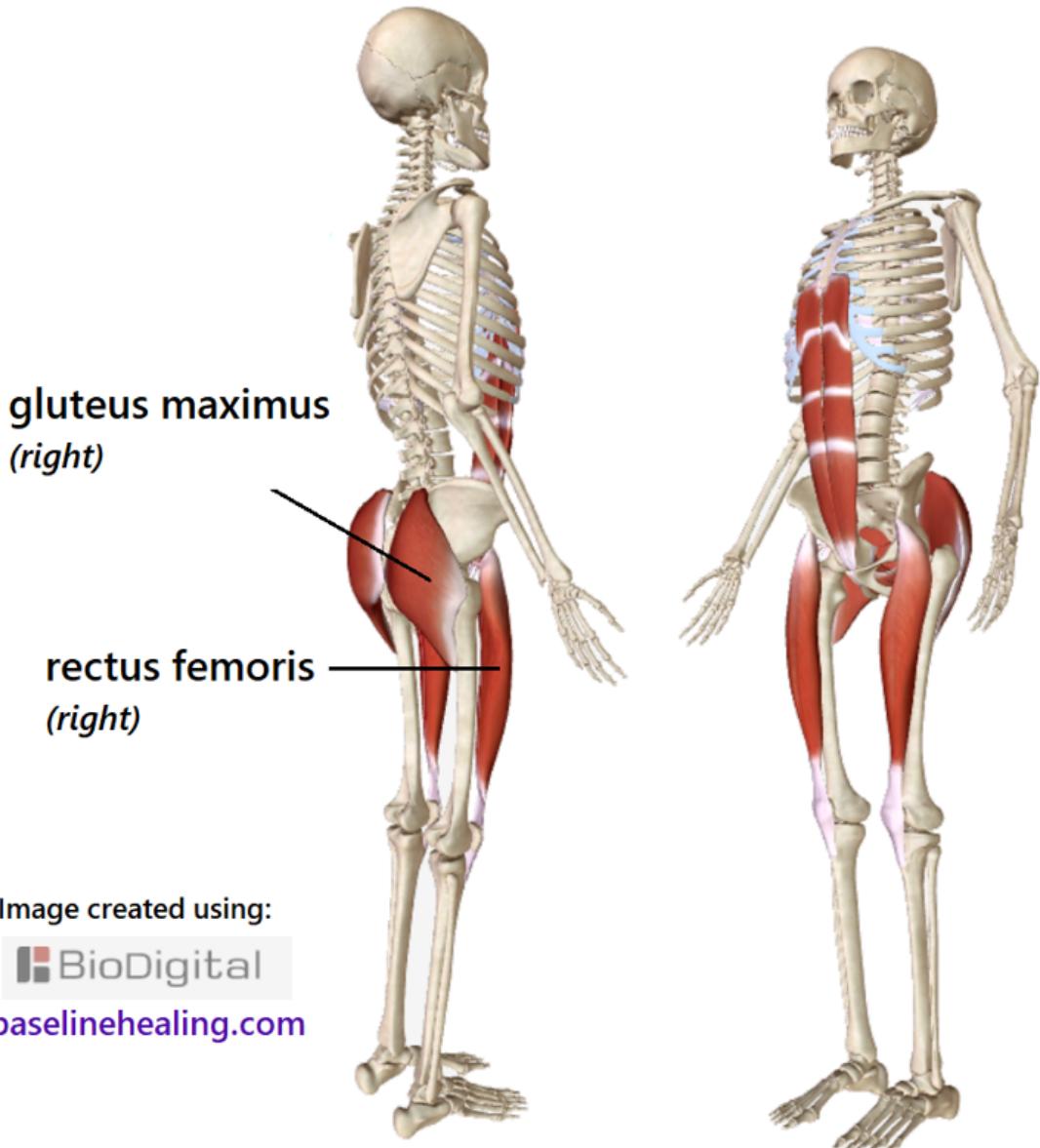


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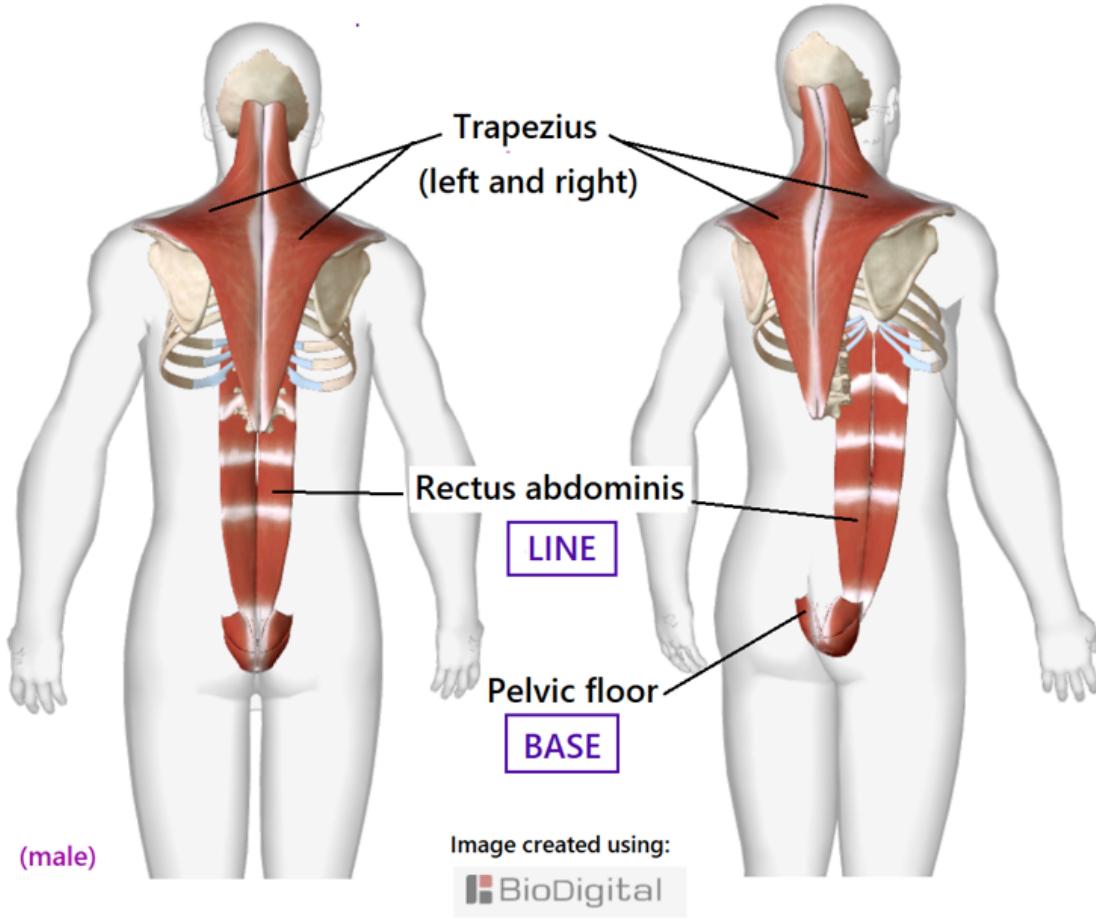
The gluteus maximus and rectus femoris of each leg should work together.

Engagement of these leg muscles is about feeling them contract and strengthen. The rectus femoris a solid pole from shin to hip bone, aligning the hip and knee joints. The gluteus maximus the stabilising the legs to Base-Line support.

Aim for a full engagement of both muscles, left and right sides, balanced in all positions.

Connect Your Base-Line to Your Upper Body.

Trapezius.



- Do you have any connection to your trapezius muscles?
- Can you activate them from mid-back up? Pushing your shoulders up from under, not pulling them up from above?
- Can you feel your arms extend out from midline? Your shoulders free to move and rotate?
- Can you let your head relax forwards? Fully, without tension?

The whole of both trapezius muscles should be free to fully extend in all directions, without pain or tension, supporting the head and arms through a full range of movement.

The **trapezius muscles align the nuchal & supraspinous ligaments** when they are fully utilised. Our secondary references for body alignment.

A Simple Technique - Breathing with your Base-Line.

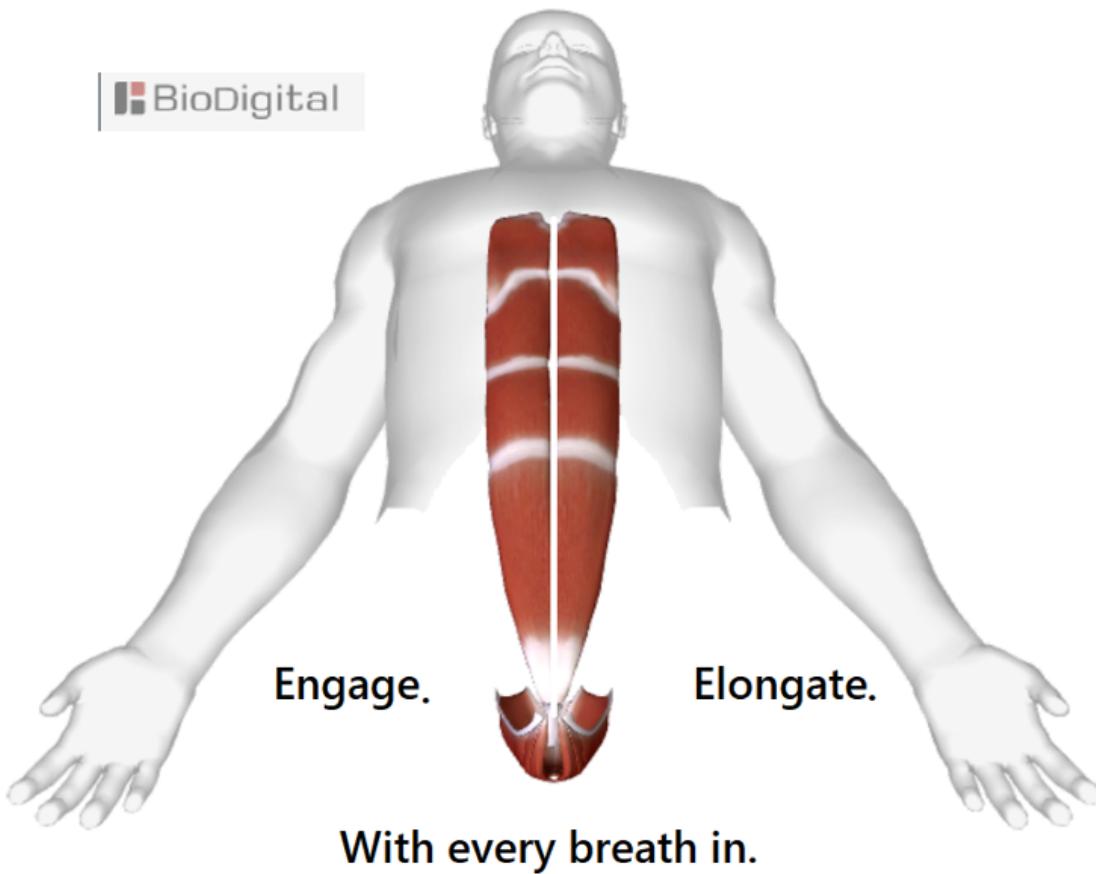
- Breathe in and up through your nostrils.
- Breathe out through your mouth.
- Engage your Base-Line muscles as you inhale.
- Begin with your Base pelvic floor.

Take as many breaths as you need to feel your pelvic floor muscles engaging. The base of the physical body and starting point of the body map in the mind.

- Then activate your central Line - rectus abdominis muscles.

Think of engaging and elongating your rectus abdominis muscles section by section, in sequence from **pelvis to chest**.

Base-Line muscles.



Stronger and longer with every in breath, extending the **linea alba**, our primary guide for body alignment.

Don't rush, just breathe. Wherever you are!

Be aware of when '[the wrong' areas of muscle](#) activate. When you feel this happening - relax, breathe and focus on your Base-Line muscles once more.

I used the [roll-down](#) action a lot - my go-to move. Feeling my Base-Line supporting the rest of my body.

Don't worry about where your feet are to start, everything stems from your Base-Line.

Maintaining the body is not about doing specific exercises or reaching certain poses.

Work towards a full range of movement by focusing on these five main muscles, starting with your Base-Line.

Pelvic floor Base, rectus abdominis Line.

When these main muscles of movement are free to be fully utilised the rest 'falls into place'. The body is strong and movement flows when we can achieve dynamic alignment and balance. At least that's what I've found. I just need a few others to find out for themselves how lesswrong I am!

Part 3: [Conscious Proprioception - Your Sense of Position, Movement & Balance.](#)

Background Notes on Muscles:

Muscle Engagement & Activation.

An 'active' muscle is traditionally described as "contracting", but this implies a reduction in length or decrease in size which is often not the case.

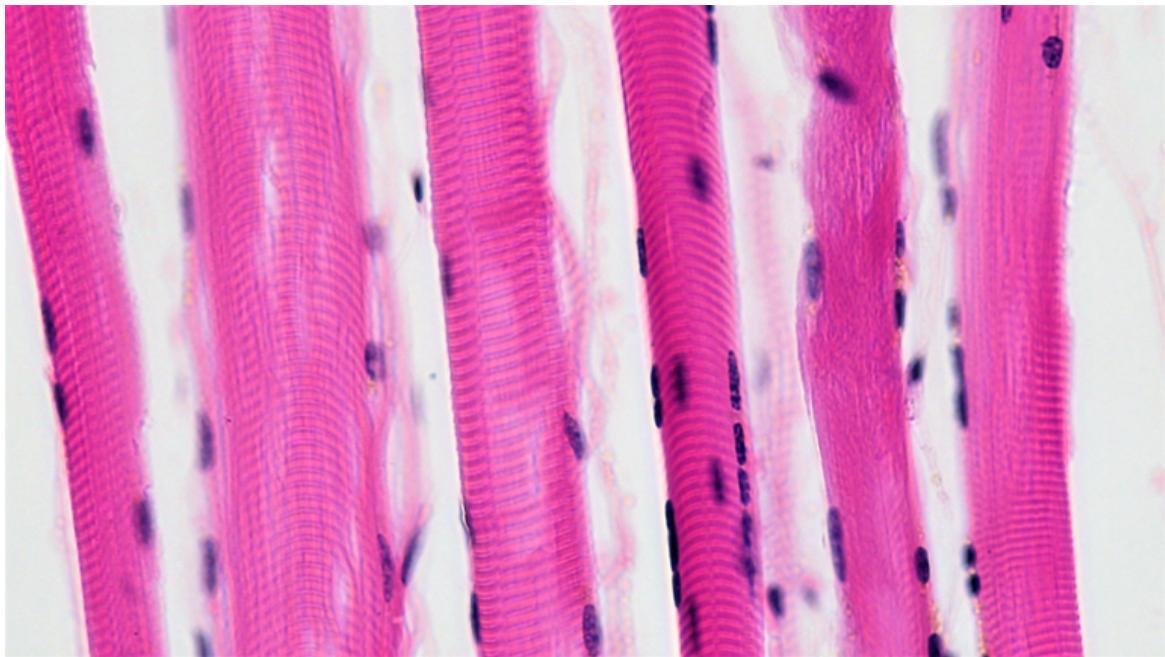
The 3 standard classifications of how a muscle 'contracts' are:

- Concentric contraction - shortening of muscle tissue.
- Eccentric contraction - lengthening of muscle tissue.
- Isometric contraction - muscle length remains the same.

I prefer to use 'activating' and 'engaging' when it comes to discussing the usage of muscles. *I like 'engaging' but I've had poor feedback. I continue my search for the perfect word - suggestions?!*

Muscle Cells = Muscle Fibres.

Muscles consists of 'hundreds of thousands' (*no figures available!*) of elongated muscle cells (*myocytes*) surrounded by connective tissue. These cells are commonly known as muscle fibres.



several muscle fibres (muscle cells)

Cross section of many myocytes. *(muscle cells / muscle fibres)*



connective tissue

cross section of muscle fibres, surrounded
by connective tissue (collagen fibres)

Areas of Muscle.

It is not "all or nothing" when a muscle works.

Muscles consist of **many overlapping areas of potential activity**. Some muscle fibres may be active whilst others are resting, or spasming in an individual muscle.

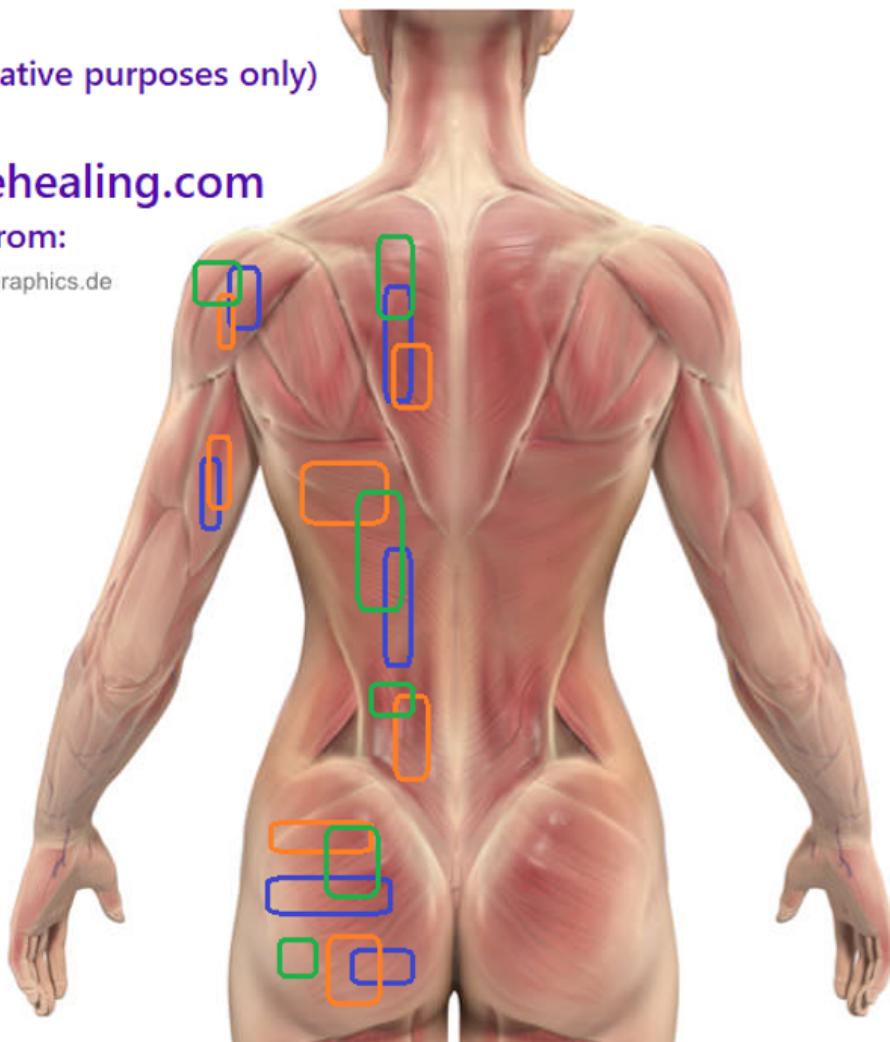
Different areas of a muscle may be active at different times.

(for illustrative purposes only)

baselinehealing.com

adapted from:

www.medicalgraphics.de



Voluntary Muscles.

Voluntary muscles are muscles with "***an action that is under the control of the will***".

All striated muscles (except the heart) are voluntary i.e. ***we can consciously control all our muscles*** if the connection between brain (command center) and muscle is developed.

Test Yourself ...

Are you willing to do a bit of self-experimentation and consider how your body moves?

Find the 5 main muscles of movement - palpate them on your body.

Can you connect with them? Feel them? Activate them?

It may take a while for 'activation signals' to get to the right place, and the ability to fully engage the whole of a muscle comes with practice.

Time and effort.

To balance the body. And mind.

There are many idiopathic (of unknown cause) symptoms and syndromes associated with chronic pain. No known cause means no effective treatment. No relief for those who suffer. I believe that only when the main muscles of movement are being used correctly can their dysfunction be ruled out as the cause of the otherwise mysterious, painful symptoms experienced by so many.

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The '5 Main Muscles of Movement' Made Easy.

A post to help find the 5 main muscles (from my Base-Line Theory of Health and Movement) on your own body.

Anatomy is wordy. It's easy to get lost, but knowing the details isn't important:

- Study the pictures. **See**.
- Palpate your body. **Feel**.

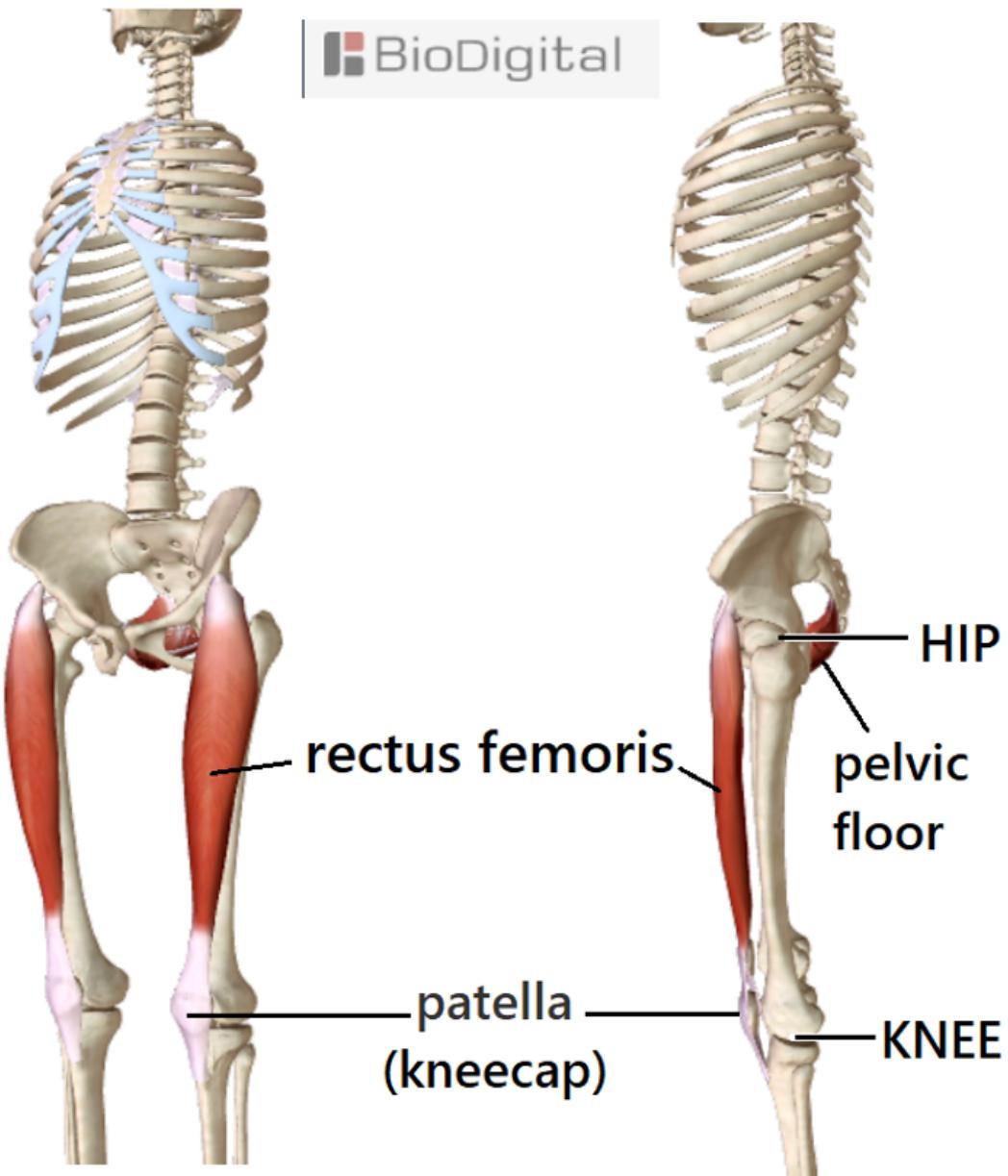
Keep thinking about these 5 (paired - left and right) '**main muscles of moment**' and how you use them as you move through your daily life.

Get to know how your body feels.

Become more aware of your posture (*the position of all of your body, all of the time*).

Keep in mind images and diagrams aren't what the tissues of the body are really like. We are made up of a web of connective tissues, in many forms, within which the cells our organs and muscles are contained. Structures are not isolated parts, our body blends from one named structure to another.

1. Rectus femoris



rectus femoris muscles.

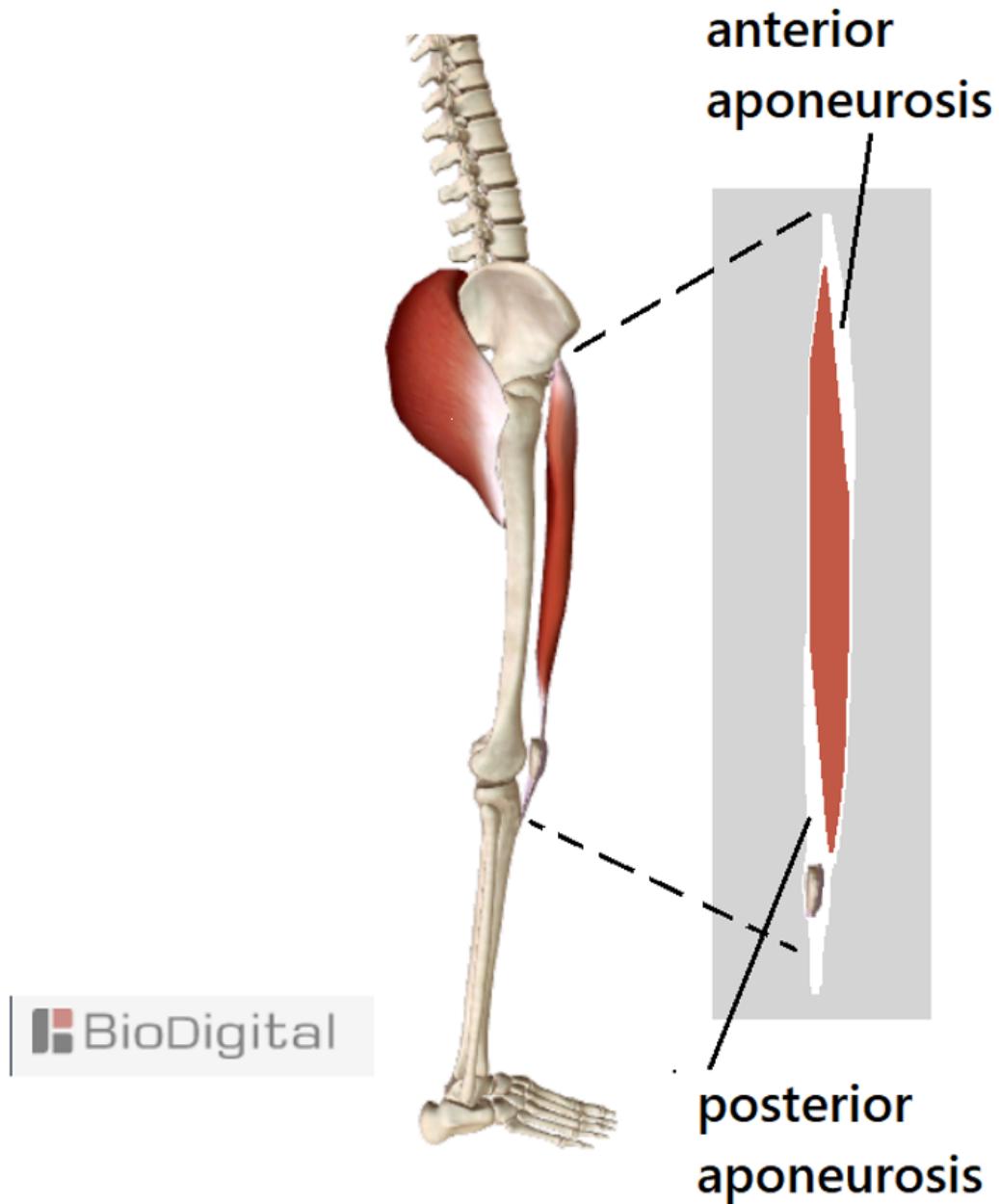
Below the knee, feel for the lump (*tibial tuberosity*) at the front of your shin bone (*tibia*). Run your hands up over your kneecaps and front of your thighs to just below the sticking-out bone at the front of your pelvis (*hip bone*). This is the full extent of the rectus femoris muscle.

- Aim for the whole muscle to be active.
- A **strong, straight pole** at the front of each thigh from hip to shin.
- Think of pulling your kneecaps up to activate the muscle + a downward extension from your hip bone.

From shin - a ligament that contains the kneecap turning into a layer of connective tissue at the back of the muscle.

From hip - short ropes of tendon from the hip bones that turn into a layer of connective tissue down the front of the rectus femoris muscles.

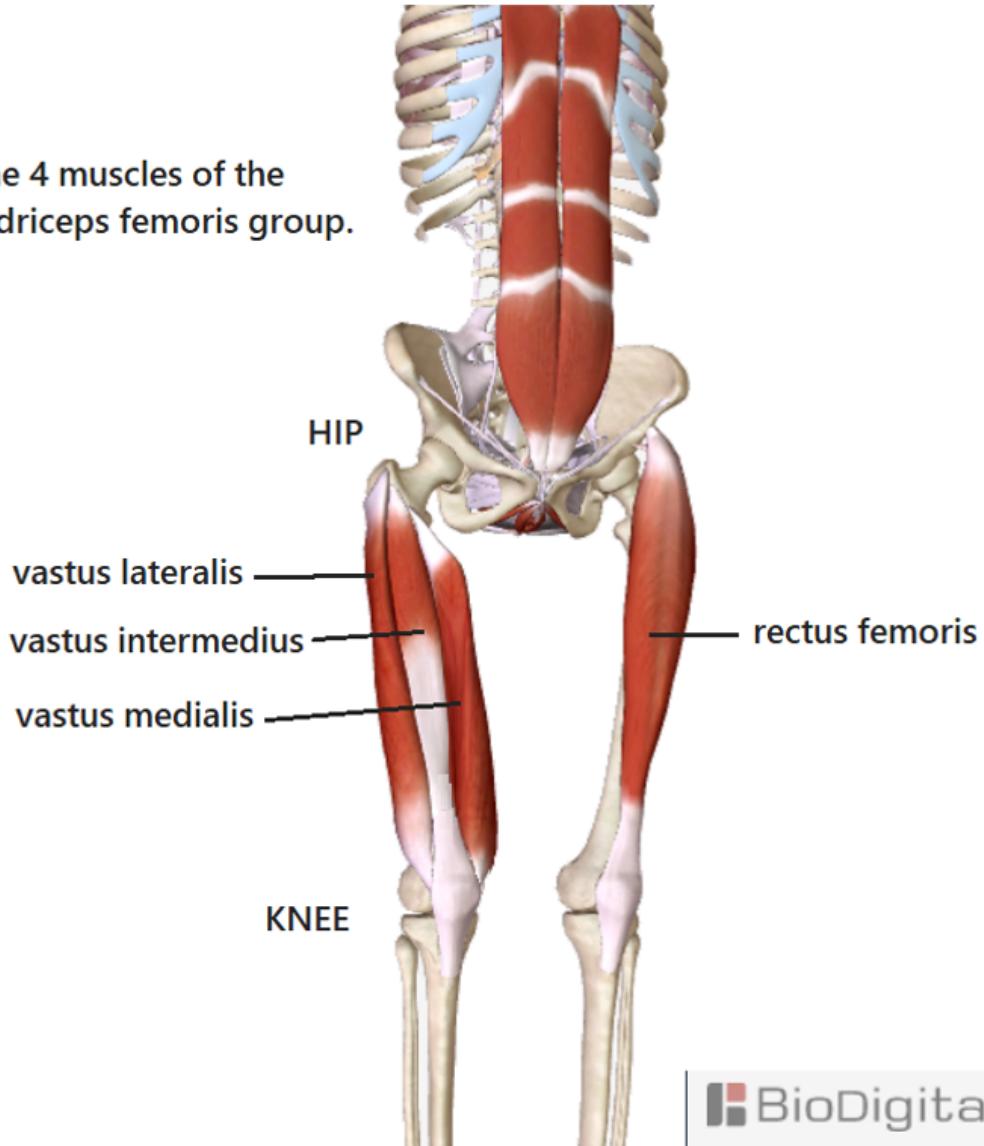
The rectus femoris: Muscle fibres between two aponeuroses.



Muscle tissue of the rectus femoris sandwiched between layers of tough connective tissue (aponeuroses) at the front and back.

The rectus femoris is part of the quadriceps muscle group but it is the only one of the 4 muscles to attach to the pelvis - the other 3 attach to the top of the femur and thus do not cross the hip joint.

The 4 muscles of the quadriceps femoris group.



The muscles of the quadriceps femoris muscle group.
The rectus femoris is the only one to cross the hip and knee joints.

The rectus femoris muscles align the hip and knee joints.



The rectus femoris from hip bone to shin, strong poles that correctly position hip and knee joints.

2. Gluteus maximus.

The largest skeletal muscles of the body (*covering a lot of complicated anatomy prone to pain/injury*).



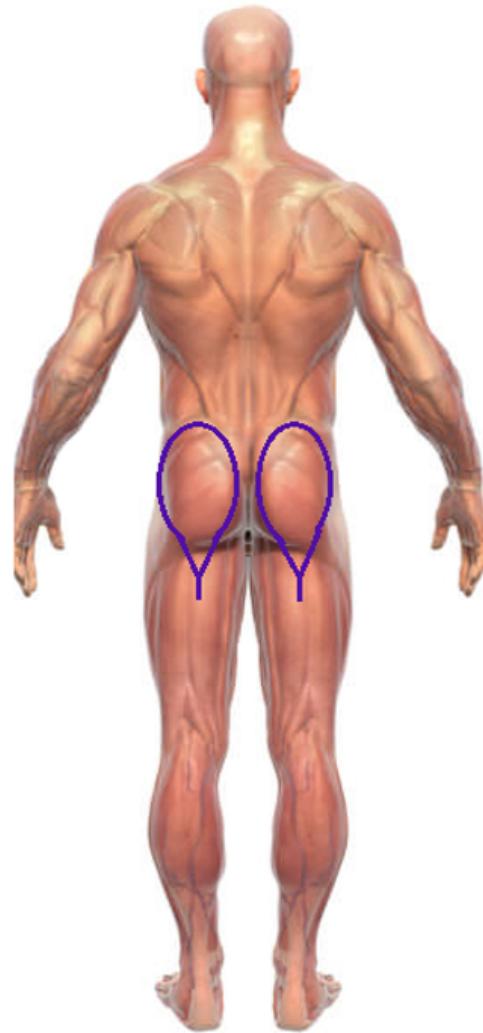
Look at the position of the hip joint in relation to the gluteus maximus. The "ball and socket" joint sits centrally in front of the gluteus maximus.

The gluteus maximus has a linear attachment to the top third of the back of the femur (thigh bone).

Hands on buttocks - feel for the muscles contracting. "Buns of steel", extending to the femur.

gluteus maximus

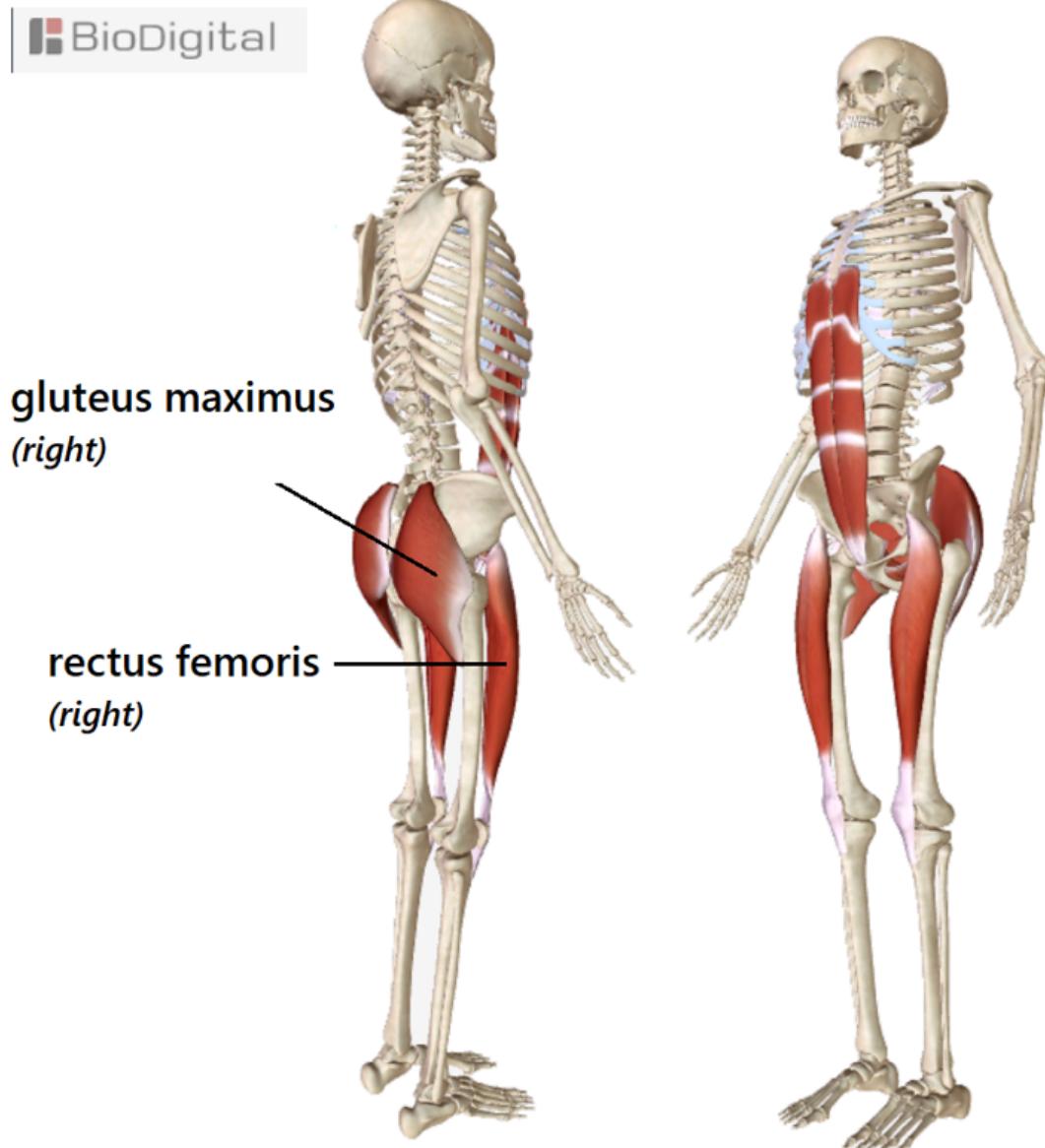
big ass muscles



Adapted from:
www.medicalgraphics.de

baselinehealing.com

The gluteus maximus works in tandem with the rectus femoris, stabilising the legs to the torso (hip, pelvis to femur) and leading the legs through a full range of natural movement - when connected to Base-Line support.

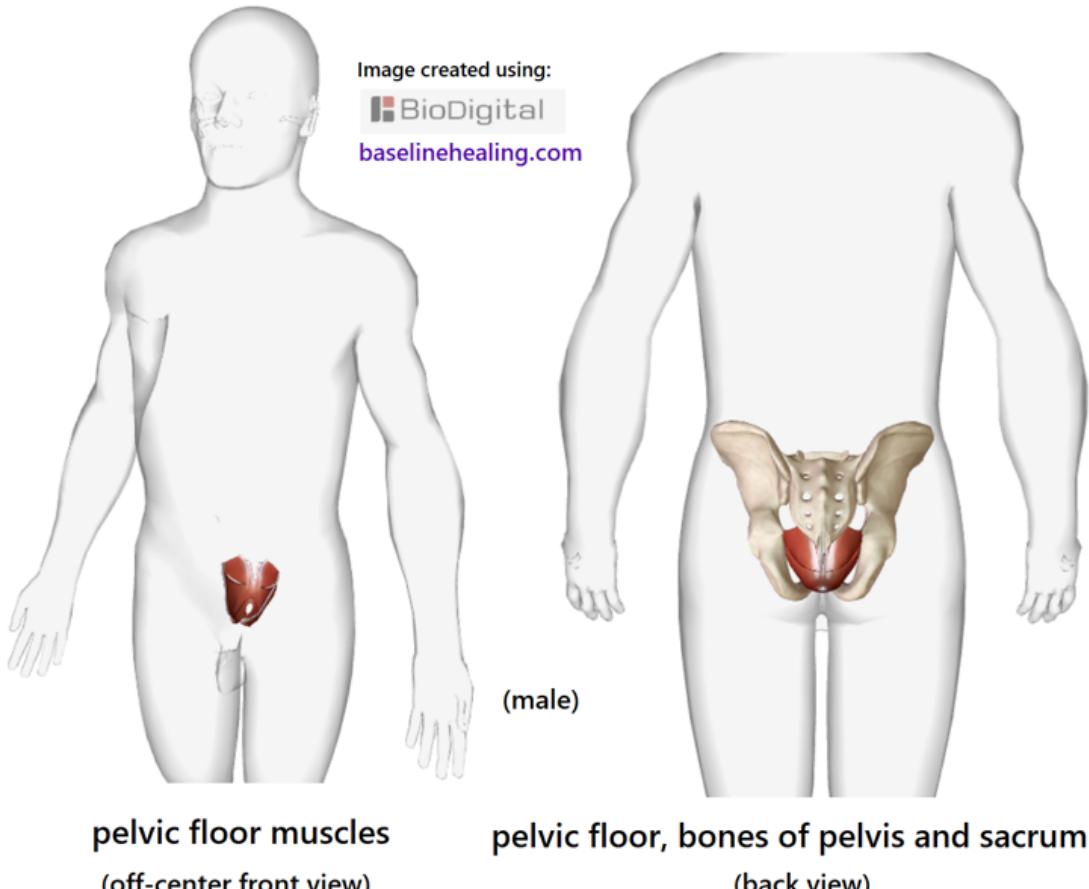


The gluteus maximus and rectus femoris
of each leg should work together.

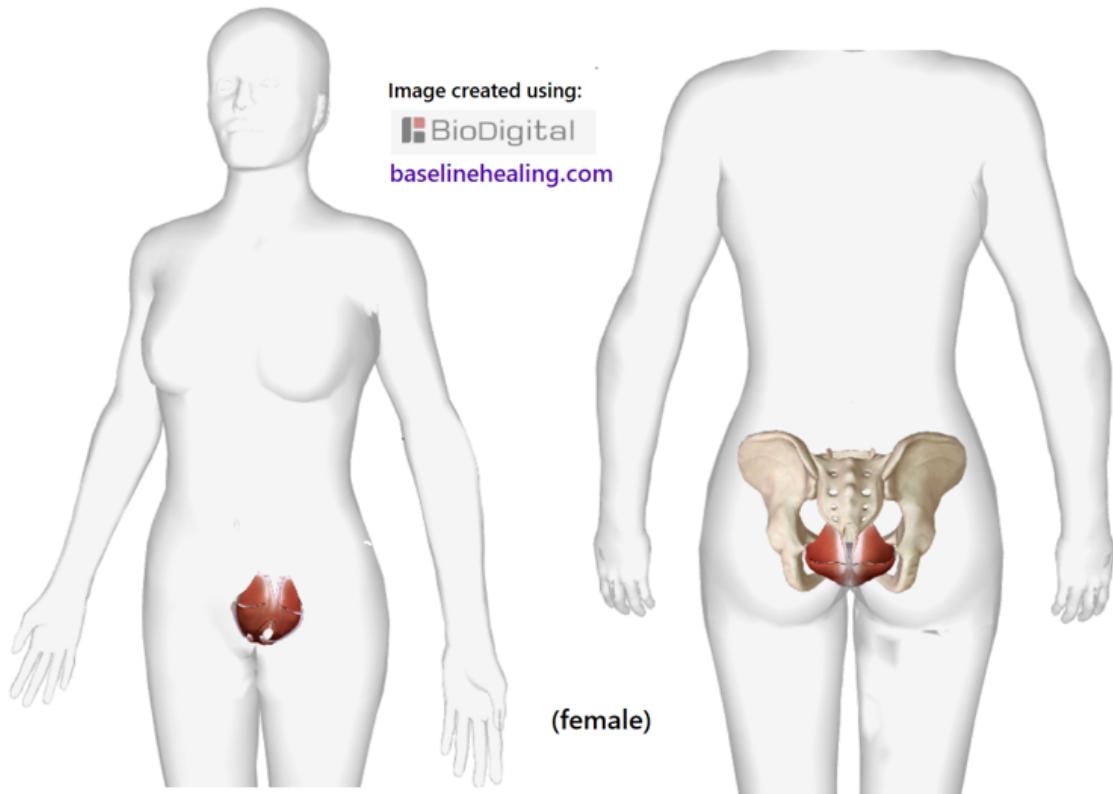
Now the key muscles to connecting mind to muscles, body to brain ... The body's 'core pillar of strength' and key to feeling your state of physical alignment and balance: **Your Body's 'Base-Line':**

3. Pelvic floor. BASE

The pelvic floor - a basket of muscles within the bones of the pelvis.



The pelvic floor muscles isolated and within the bones of the pelvis and sacrum.



pelvic floor muscles
(off-center front view)

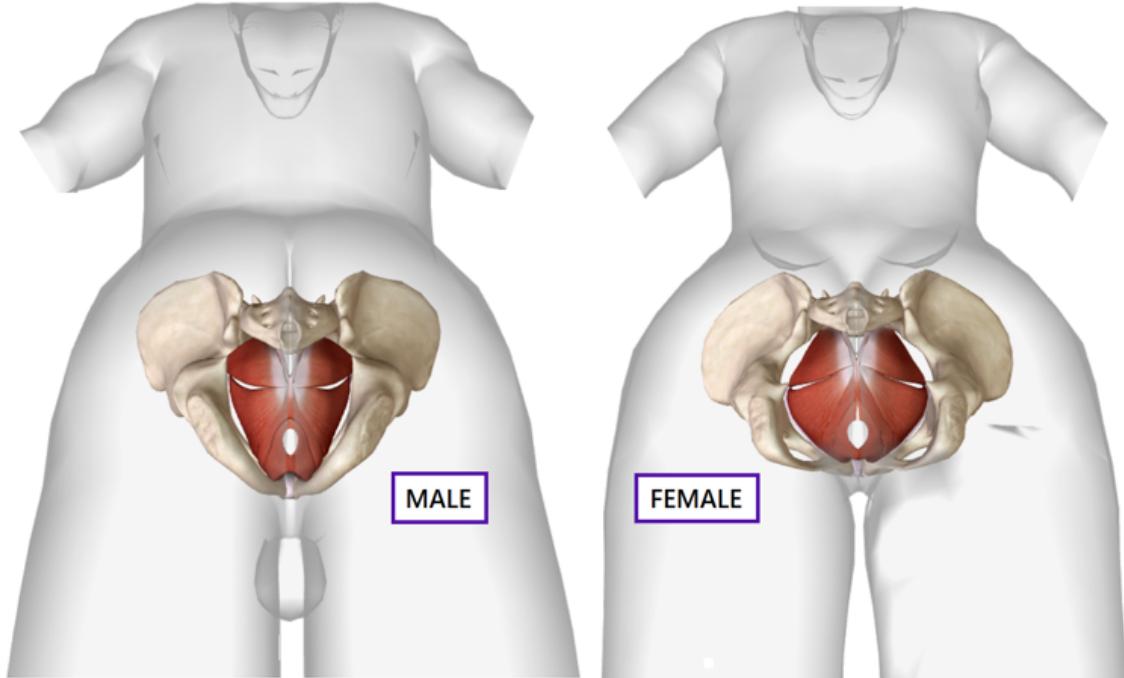
pelvic floor, bones of pelvis and sacrum
(back view)

The pelvic floor muscles isolated and within the bones of the pelvis and sacrum.

The pelvic floor consists of several small muscles spanning the pelvic canal. Left and right sides a mirror image.

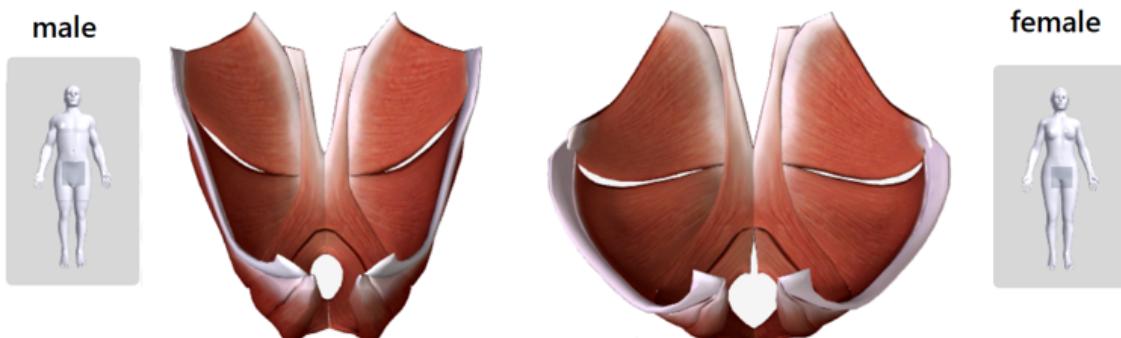
**PELVIC FLOOR MUSCLES
THE BASE OF THE BODY.**

Image created using:
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VIEW FROM BEHIND - TILTED FORWARD.

The pelvic floor - a crescent shape on the body's midline.

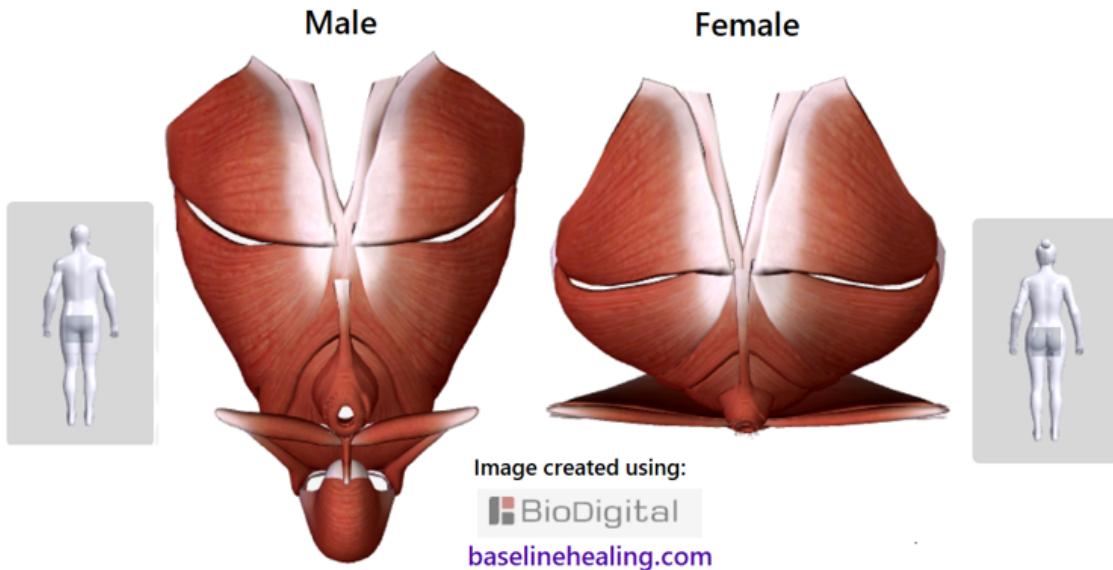


View from the front.

Image created using:
 BioDigital
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These muscles are closely associated with the anus and genitals.

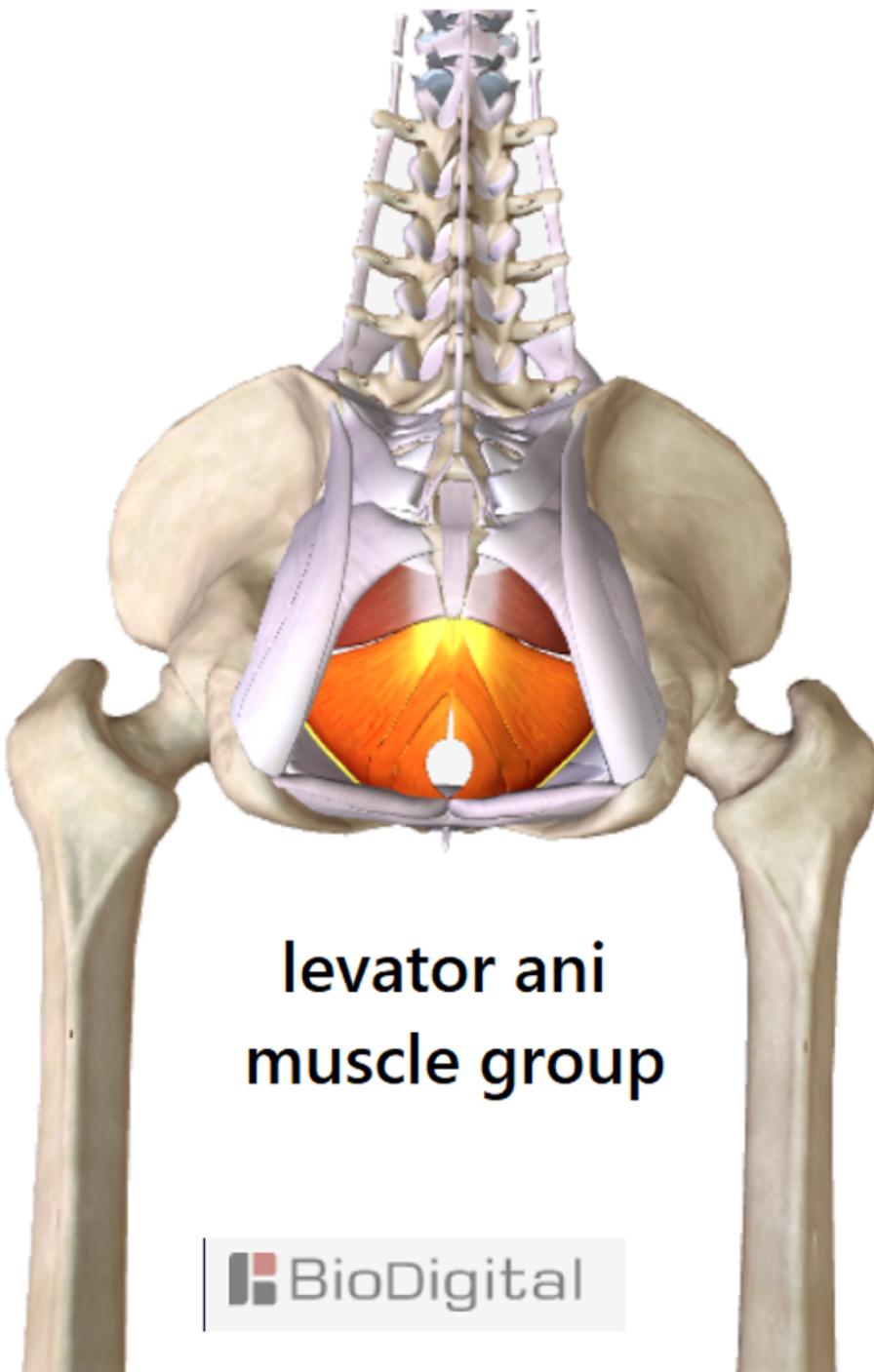
MUSCLES OF THE PELVIC FLOOR AND PERINEUM VIEW FROM BEHIND.



Kegel exercises are the most well-known introduction to strengthening the pelvic floor muscles. Picture these muscles contracting in your mind, feel for them working. Find a connection. Keep working at it. It will become easier the more you practice.

Aim for a balanced contraction left and right sides. Providing the sensory information for the 'base' point of our '[body map](#)' in the mind' from where the rest of the body extends.

[The pelvic floor is generally accepted to correspond to the "root [chakra](#)".]



levator ani muscle group

 BioDigital

female pelvis view from behind

the levator ani muscle group is highlighted.
The levator ani consists of 3 muscles (on each side), making up the most of the pelvic floor.

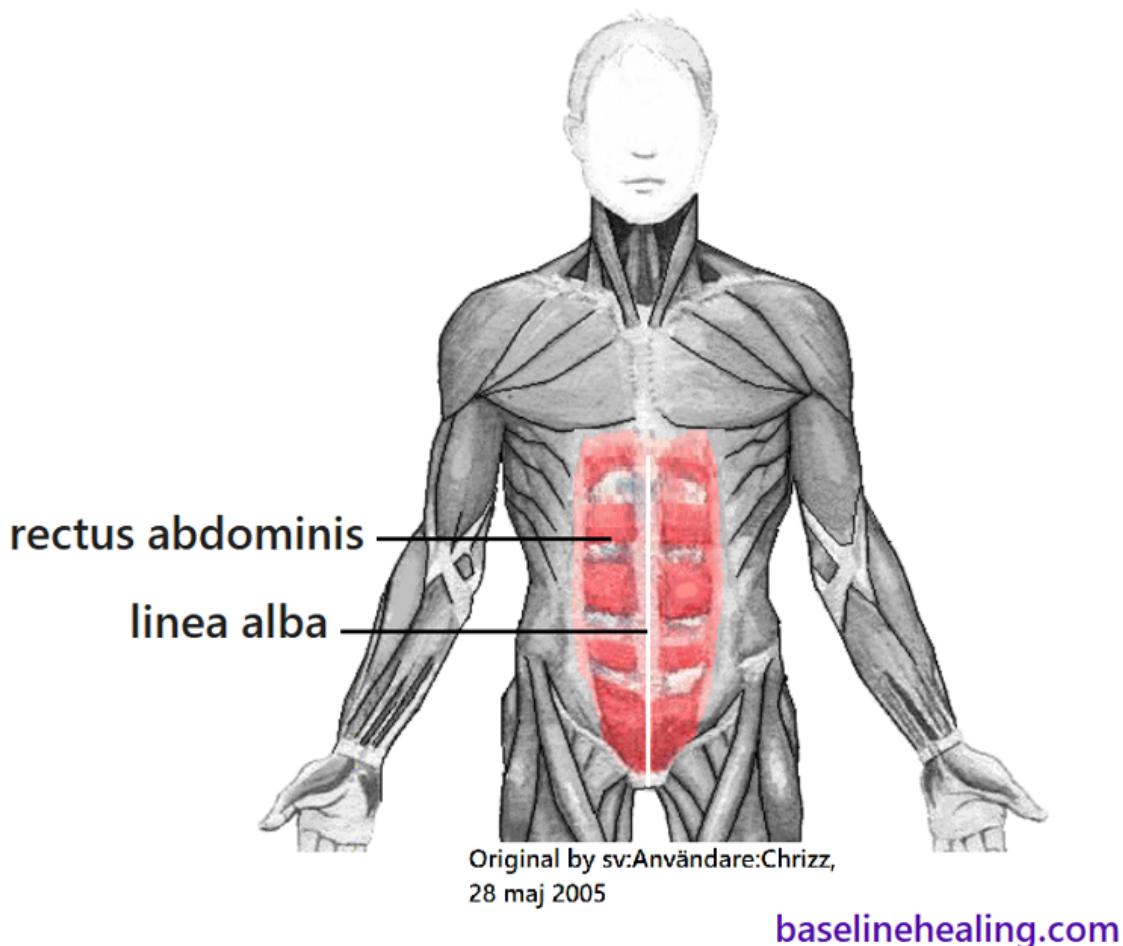
The pelvic floor muscles.

The base of the body.

4. Rectus abdominis. LINE

"The abs" = rectus abdominis muscles.

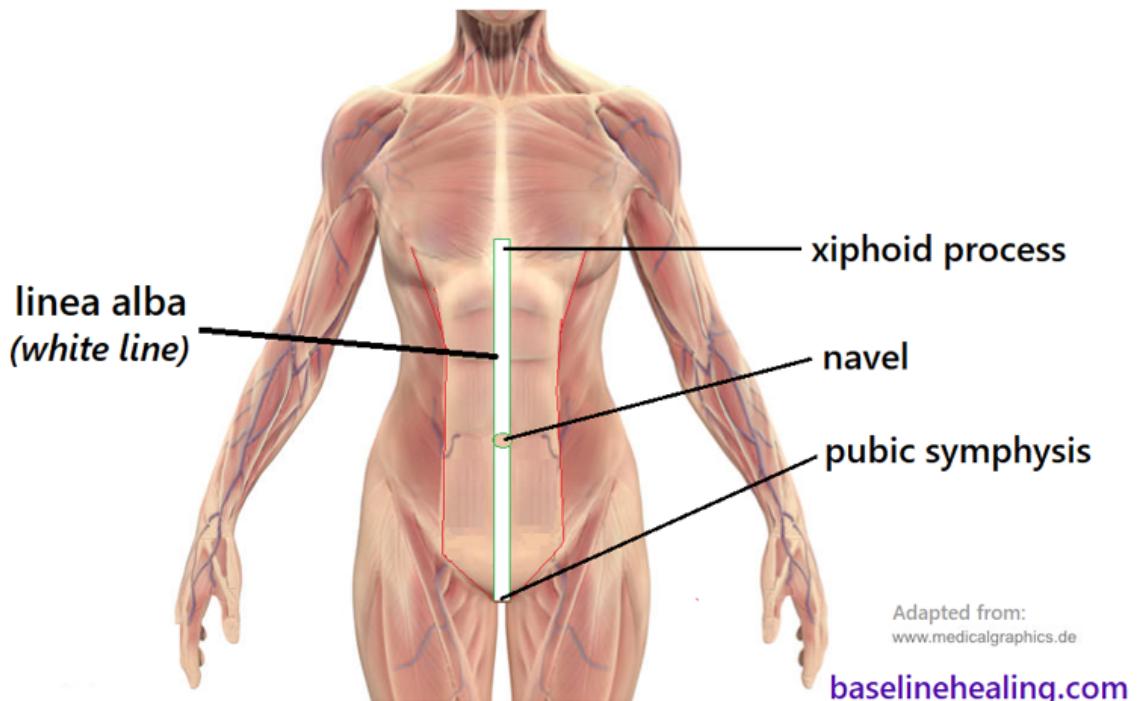
Strong and powerful, the muscles that allow the body to bend and flex in all directions when functioning at optimal.



Think of these muscles as your central LINE, extending from a solid Base, that should be free to move and fully extendable.

The rectus abdominis muscles:

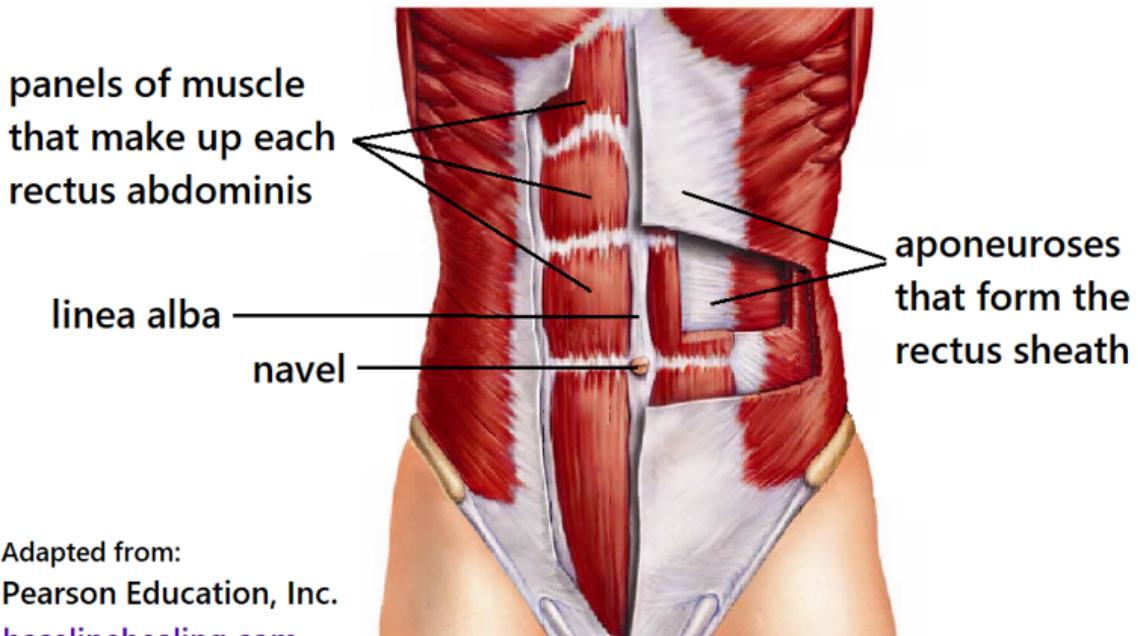
- **From pelvis to chest up the front of your abdomen.**
- Either side of the **linea alba** - our primary guide for body alignment.
- Feel the relative positioning of 3 midline markers for **body alignment** - the pubic symphysis, navel and xiphoid process of the sternum by working with your Base-Line muscles.



The linea alba, between the rectus abdominis muscles.

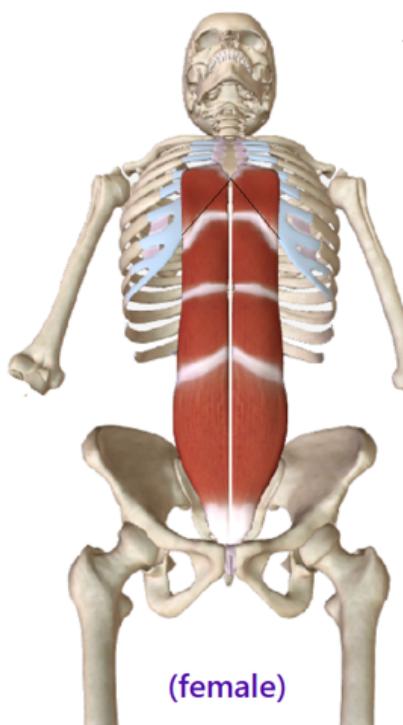
Our primary guide for body alignment, connecting 3 midline markers (pubic symphysis, navel, xiphoid process)

- The rectus abdominis consist of 2 parallel strips of panels of muscle within connective tissue. *These panels create the "6 pack look" but the number of sections of muscle varies - 4, 6, 8, 10 packs can occur.*



The rectus abdominis. Panels of muscle tissue within connective tissues connecting the front of the pelvis to the lower ribs.

Feel your rectus abdominis muscles:



FIND YOUR RECTUS ABDOMINIS MUSCLES

TOP:

*Hands over the front of your rib-cage,
fingers meeting at the "Λ" on your midline*

BOTTOM:

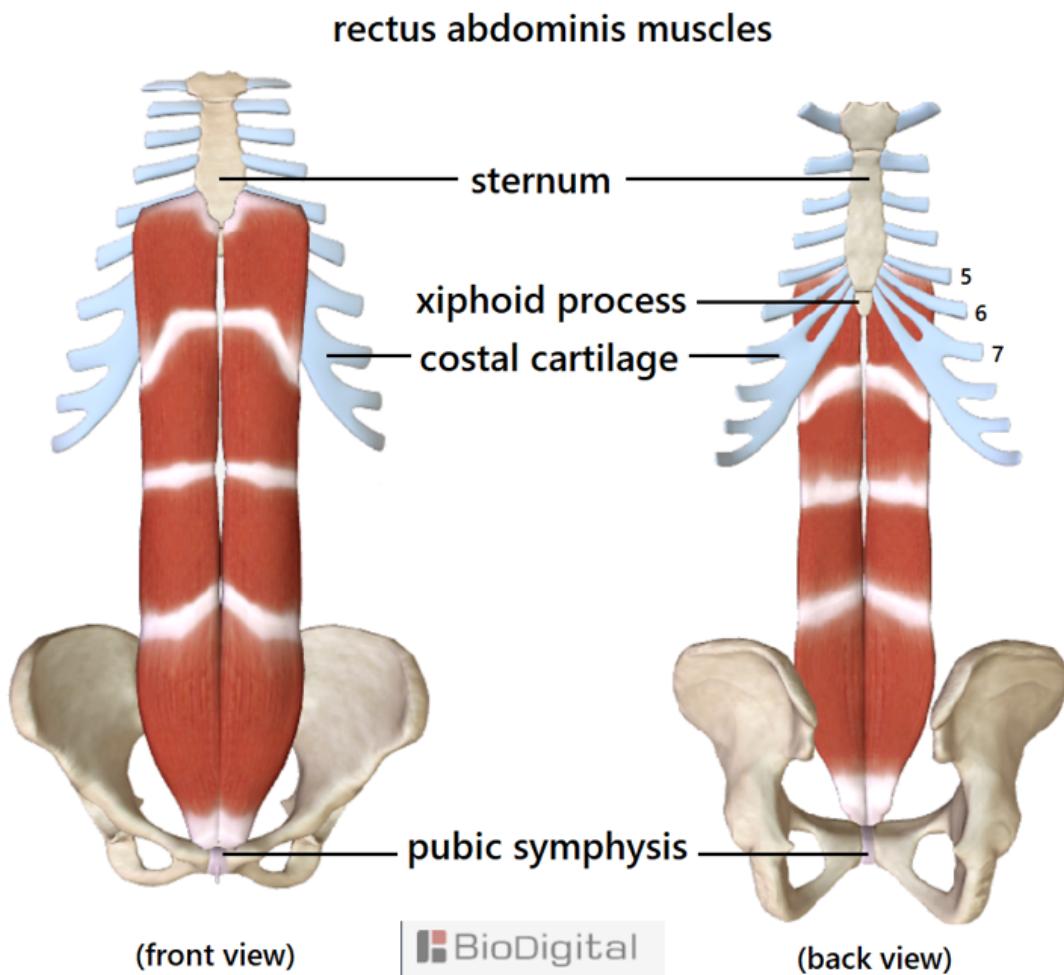
*Midline, between your legs at the front
where your pubic bones meet.*

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Place your hands over your rectus abdominis muscles, starting from the bone between your legs (*pubic symphysis*) then, as you breathe in, move your hands up thinking of activating and elongating - section by section - all the way up to your chest. (Put your hands over the front of your lower ribcage to appreciate how high up the chest the rectus abdominis attach).

Repeat the breathing and extension of your rectus abdominis, lengthen the muscles as much as you can and think about the linea alba straightening and aligning.

Think of the panels of muscle as a set of lights to be activated in sequence. Or whatever works for you ...



attachments of the rectus abdominis muscles.

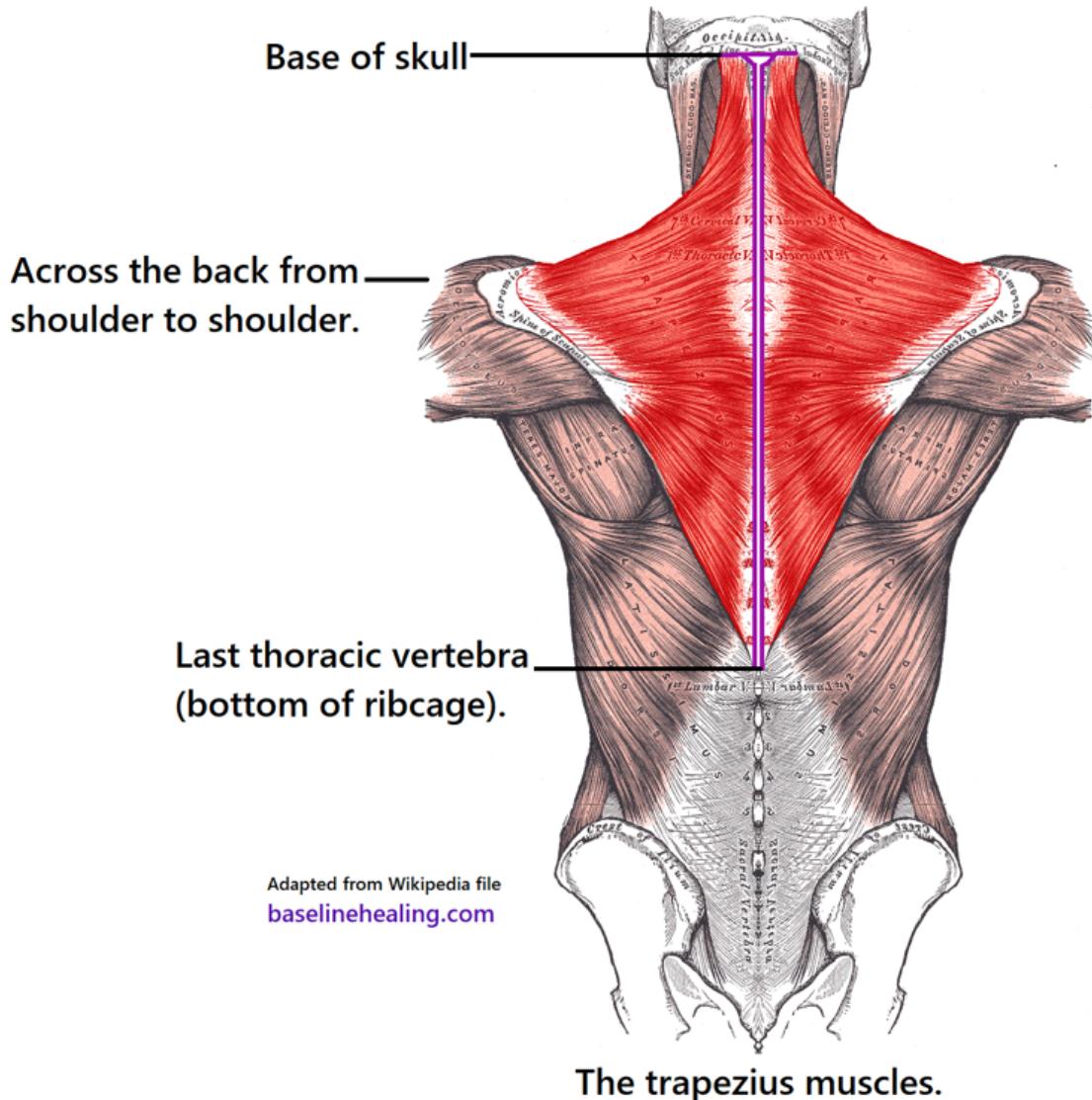
The rectus abdominis muscles - our core pillar of strength from where all movement should originate.

[Breathe with your Base-Line.](#)

Think stronger and longer with every breathe in.

5. Trapezius

A blanket of muscle that should be smooth and wrinkle-free, from mid-back to the back of the skull, extending out towards each shoulder.



A kite-shaped sheet of muscle from mid back to the back of the head, extending out towards each shoulder.

The trapeziii should be able to fully extend, without pain or tension supporting the head and arms through a full range of natural movement.

- Can you drop your head forward, extending from mid-back, without tension?
- Can you spread your arms wide, from midline to fingertips without restriction?
- Can you lift your arms up above your head feeling the trapezius muscles fully extend?

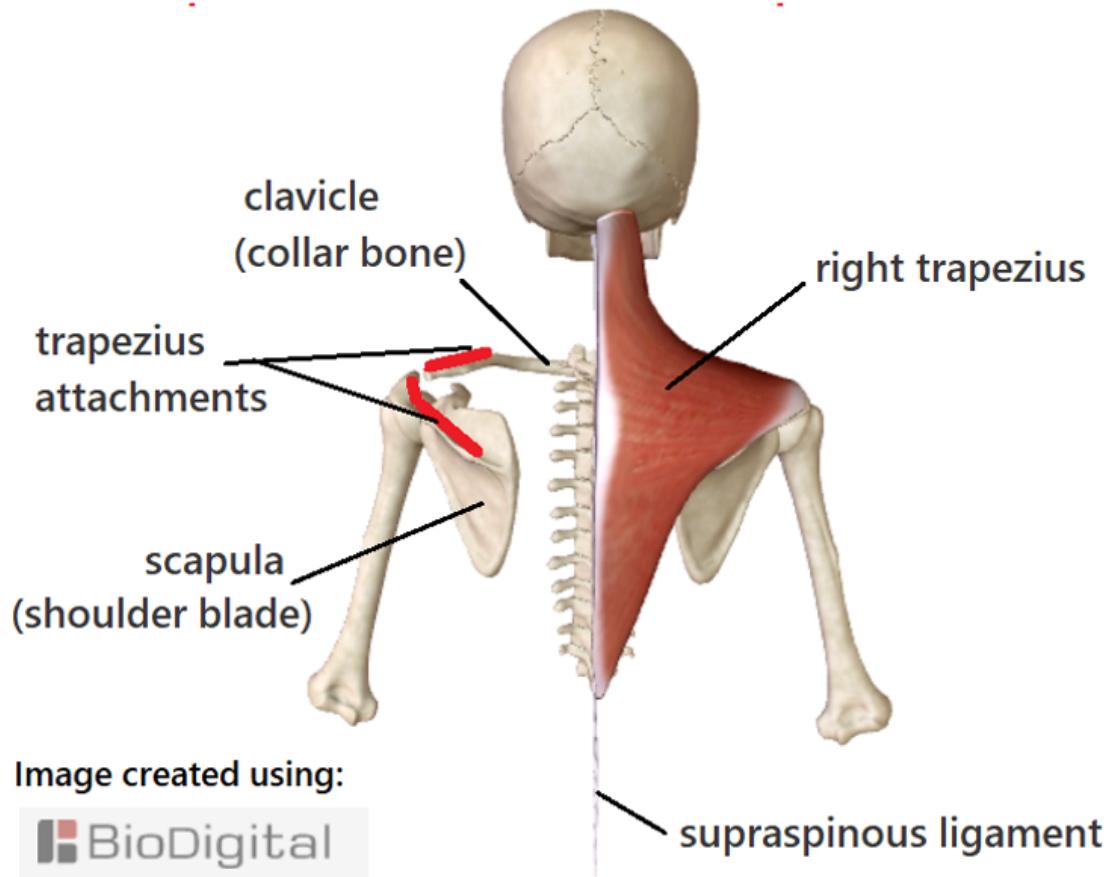


The trapezius muscles can be thought of as 6 sections (approximating - 2 triangles and a horizontal strip to the shoulders on each side as shown above).

- Mid-back, feel from bottom of the rib-cage extending up.

- Extending out to each shoulder.
- Feel for all the bony bits where the trapezius attaches near the shoulder.
 - a 'pencil' like bone at the front (*the collar bone/clavicle*).
 - lumps of bone at shoulder and a ridge of bone at the back. (*parts of the shoulder blade/scapula*).

Trapezius attachments to scapula and clavicle.



- Sculpted over the front of the collar bone and up the sides of the neck.
- The trapezius muscles attach to the back of the skull. Feel for the ridge and midline bump at the back of the skull.
- There is a connective tissue 'ellipse' as the trapezius muscles meet in the upper back/between the shoulders region.

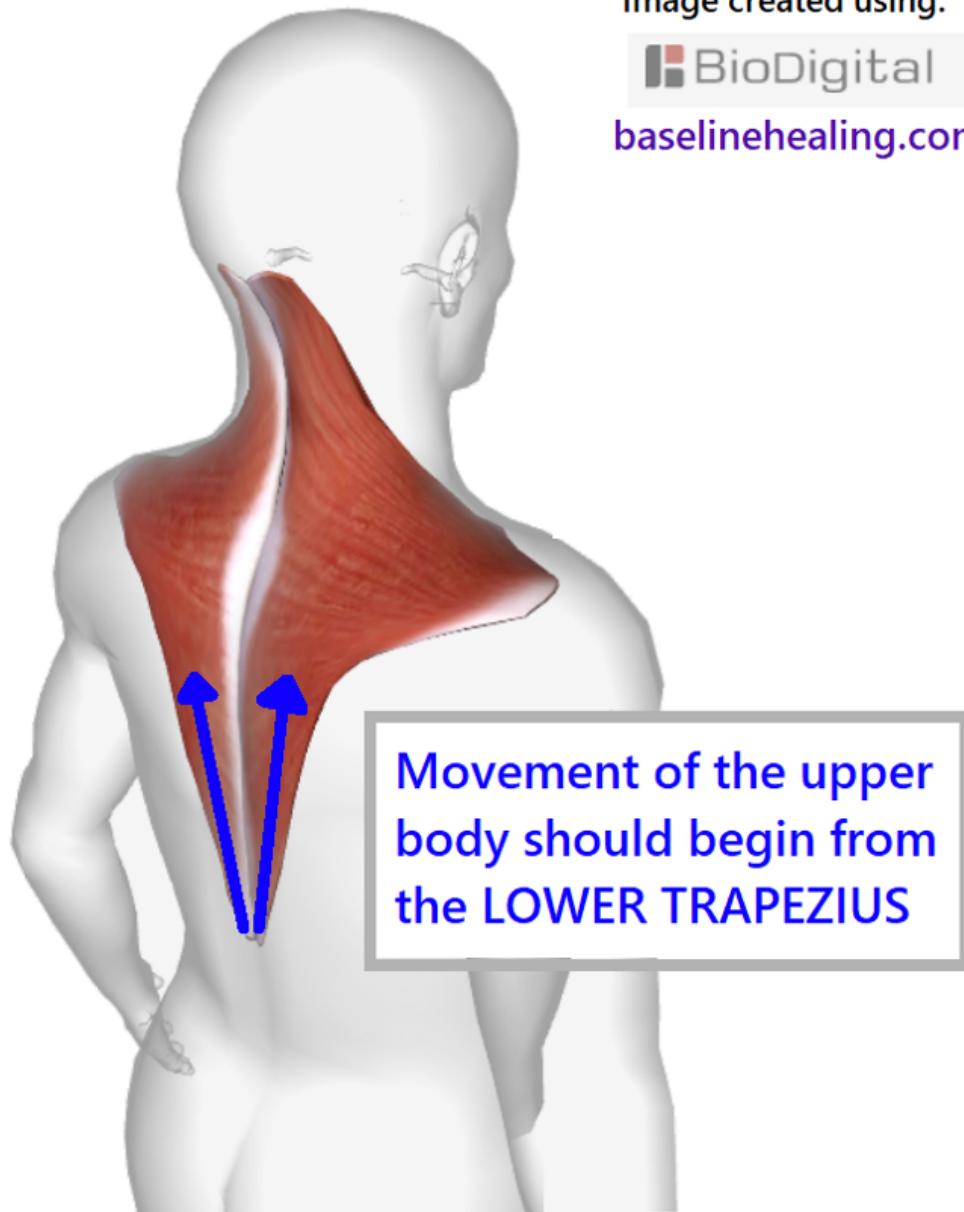
Movement of the upper body should begin from the lower trapezius.

Like wings extending from the middle of your back.

Image created using:

BioDigital

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Think of lifting your shoulders **from below**, rather than pulling them up.

Study the shape of the trapezius muscles.

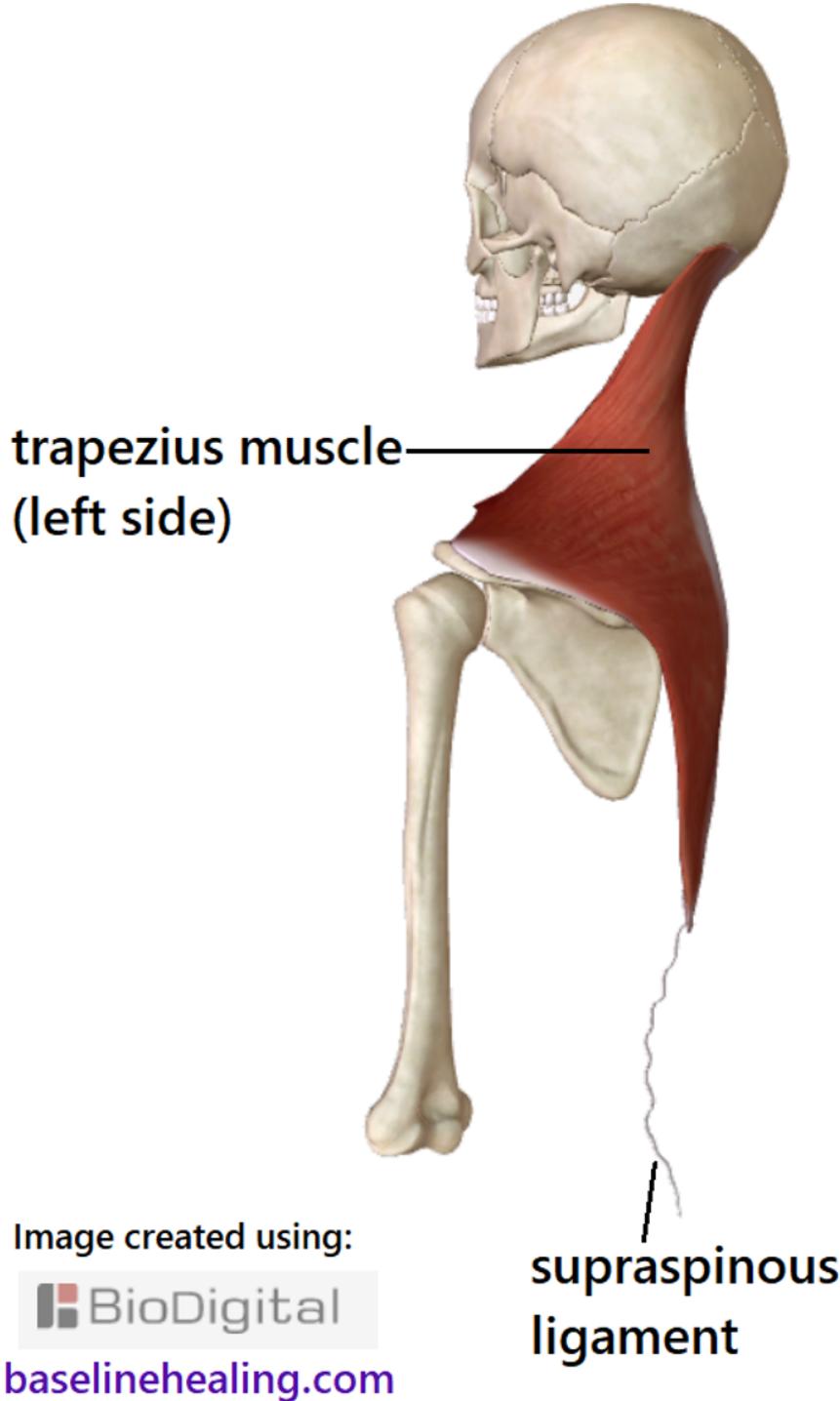
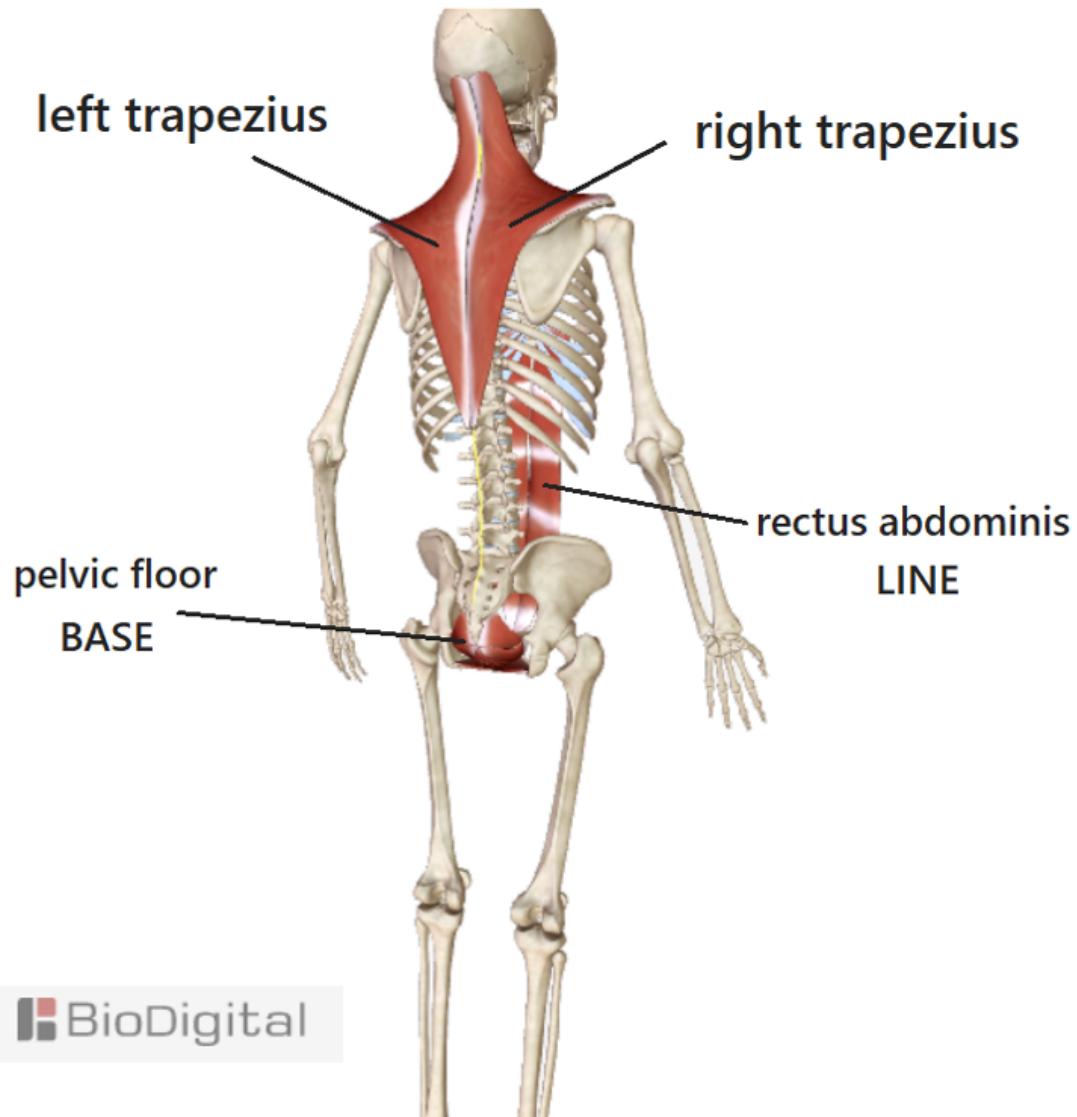


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The trapezius muscles meet midline and merge with the [nuchal/supraspinous ligaments](#) - our 'secondary guides for alignment'.

The trapezius muscles - guiding and supporting the head and arms through a full range of movement and aligning the upper body.



BODY ALIGNMENT with the main muscles of movement:

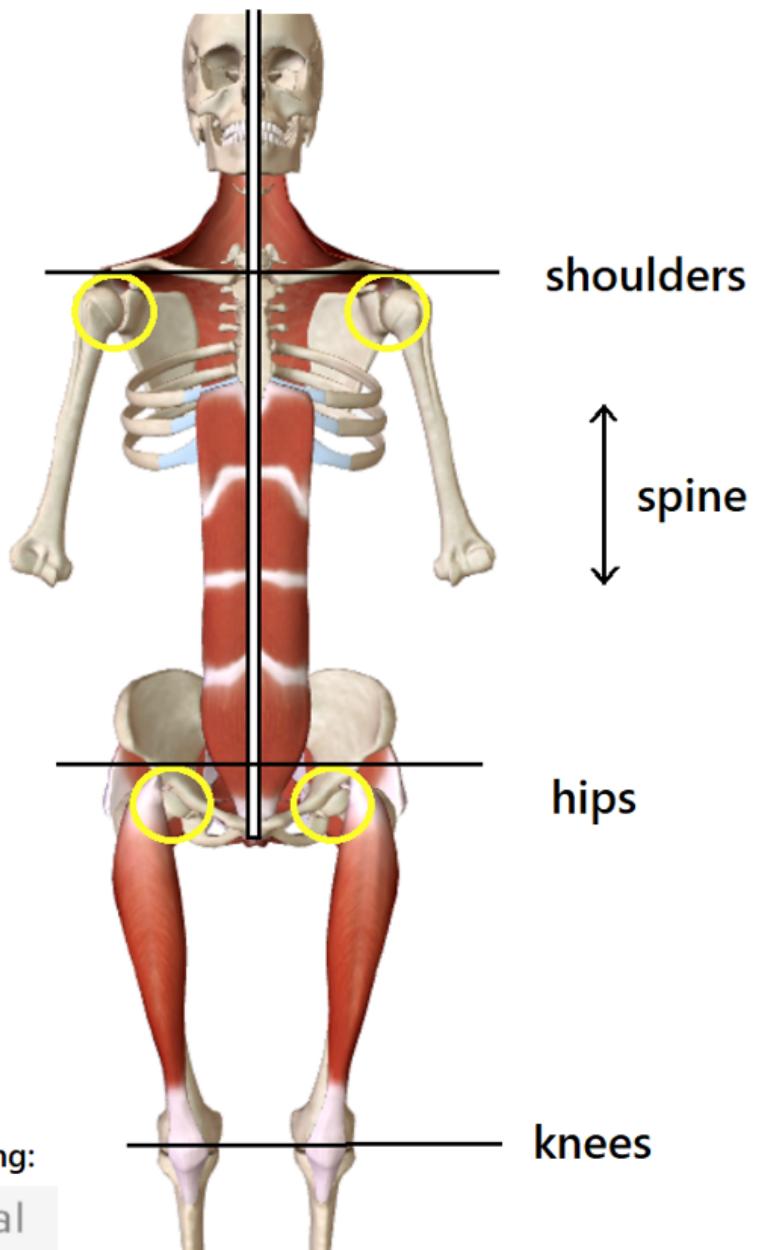


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BODY ALIGNMENT

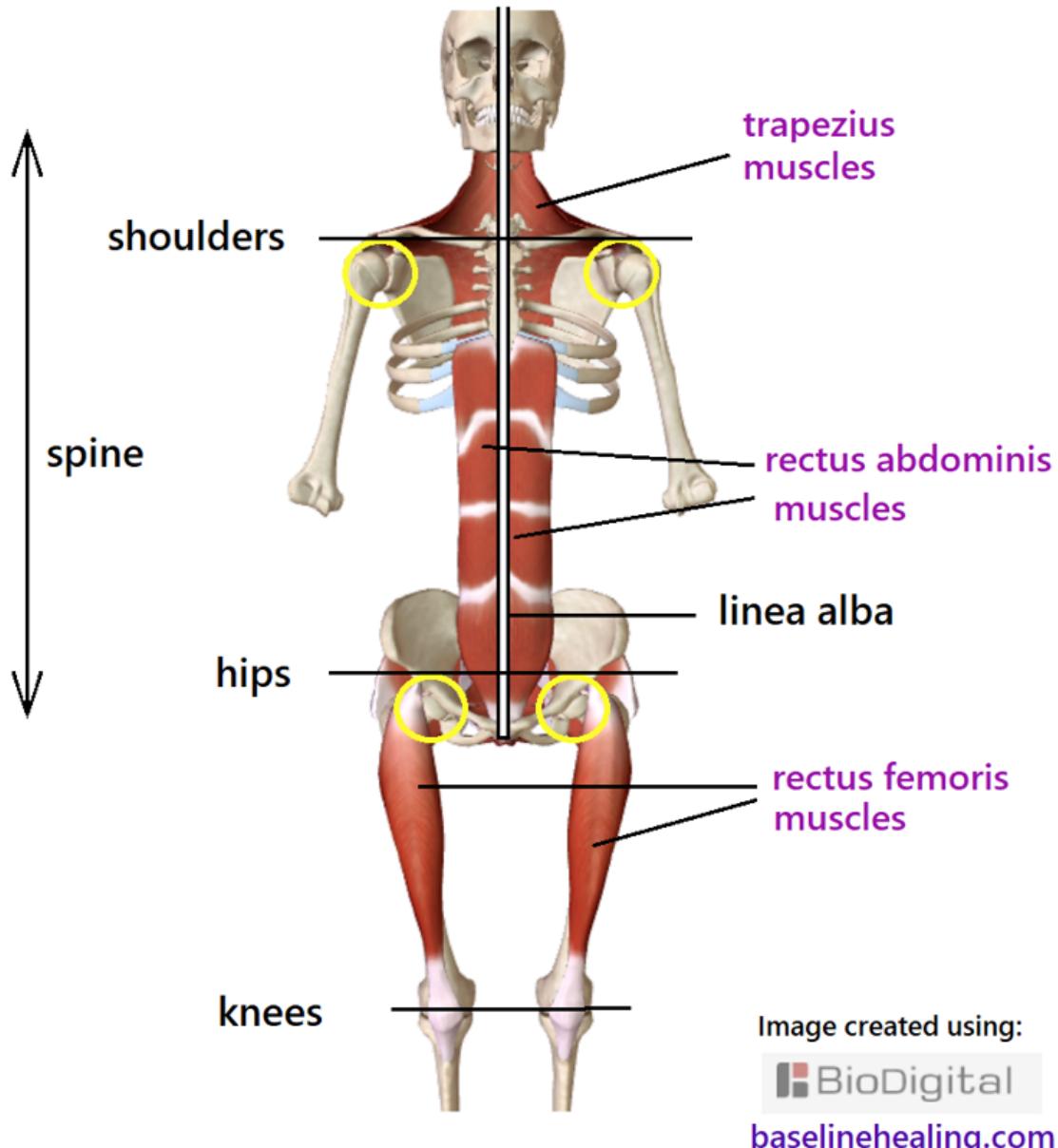


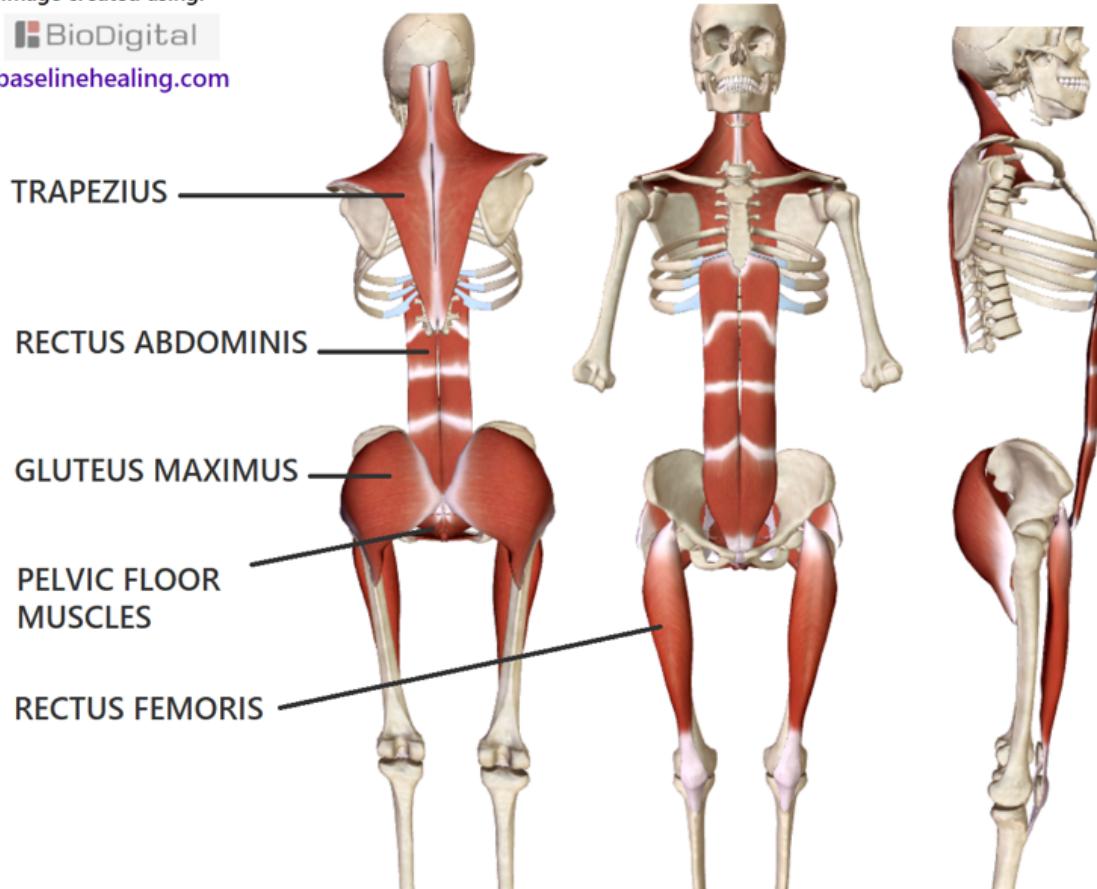
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Find your 5 main muscles and work towards regaining a full range of natural movement, releasing the physical tensions on your body. The key to better health.

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THE 5 PAIRED MUSCLES THAT ARE THE MAIN MUSCLES OF MOVEMENT
Back, front and side views.

Time and Effort Required.

- Find these 5 muscles on your body.
- Be guided by your Base-Line and get moving. Use the [roll-down](#) action.
- Feel for engagement and balance as you work with these muscles.
- Develop the connection between muscles and mind.

Link [to 3D model](#) on biodigital.com.

Conscious Proprioception.

Conscious Proprioception: Increased Awareness of your Sense of Position, Motion, Alignment & Balance.

After an introduction to the anatomy of [alignment and balance](#) and the [5 main muscles of movement](#), consider what you experience if you focus on the position ([posture](#)) and motion of your body:

How much of your sense of proprioception are you aware of ?

Origin page is located here: [conscious proprioception @ baselinehealing.com](http://consciousproprioception.baselinehealing.com)

Introduction.

Standard definition of proprioception:

Proprioception: "The ability to sense stimuli arising within the body regarding **position, motion, and equilibrium.**"

The basic physiological model of proprioception:

- 'Sensors' located throughout the body generate sensory feedback, 'information' that is sent, via the nervous system, to the brain. Sensory feedback concerning the body's position, motion and balance is our sense of proprioception.
- The brain 'processes/interprets' this feedback about positioning and then sends signals around the body to maintain a '[functional posture](#)', the positioning of the body that we use day-to-day.

I feel it fair to say that the different mechanisms and various proprioceptors ('*sensors*') involved in proprioception are far from being understood and our sense of "[bodily awareness](#)" appears in the philosophical section at Stanford.

This post is my attempt to explain my experience of an increased consciousness of the proprioceptive feedback my body is continually producing - and how everyone can increase their awareness of their physical selves - feeling the positioning of the parts of your body, your state of motion and equilibrium.

Conscious proprioception.

Awareness of:

- The **relative position** of the parts of your body.
- The **motion** of your body.

- Your **equilibrium** - whether you are balanced or not.

According to:

Base-Line Theory of Health and Movement. (part 2)

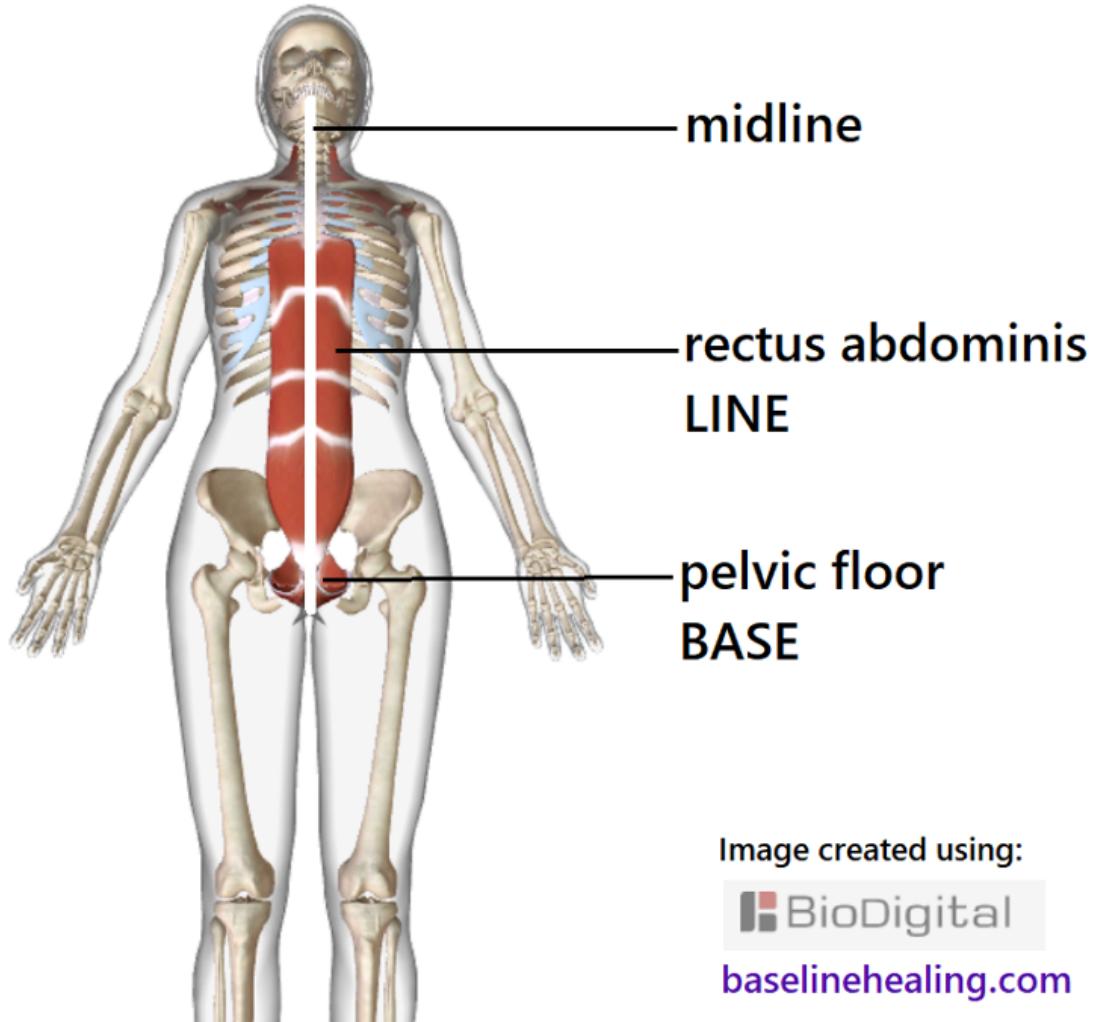
(BLTH part 1).

Increased awareness of the body's positioning, balance and state of alignment - of the body's posture - comes with focusing on the right anatomy.

Working from the body's '**Base-Line' muscles** (pelvic floor Base, rectus abdominis Line) starts to connect us with our midline anatomy and guides for body alignment.

Position, Motion, Equilibrium.

- To describe the **position** of something you need a reference.
- → *The position of the rest of your body is **relative** to your **Base-Line**.*



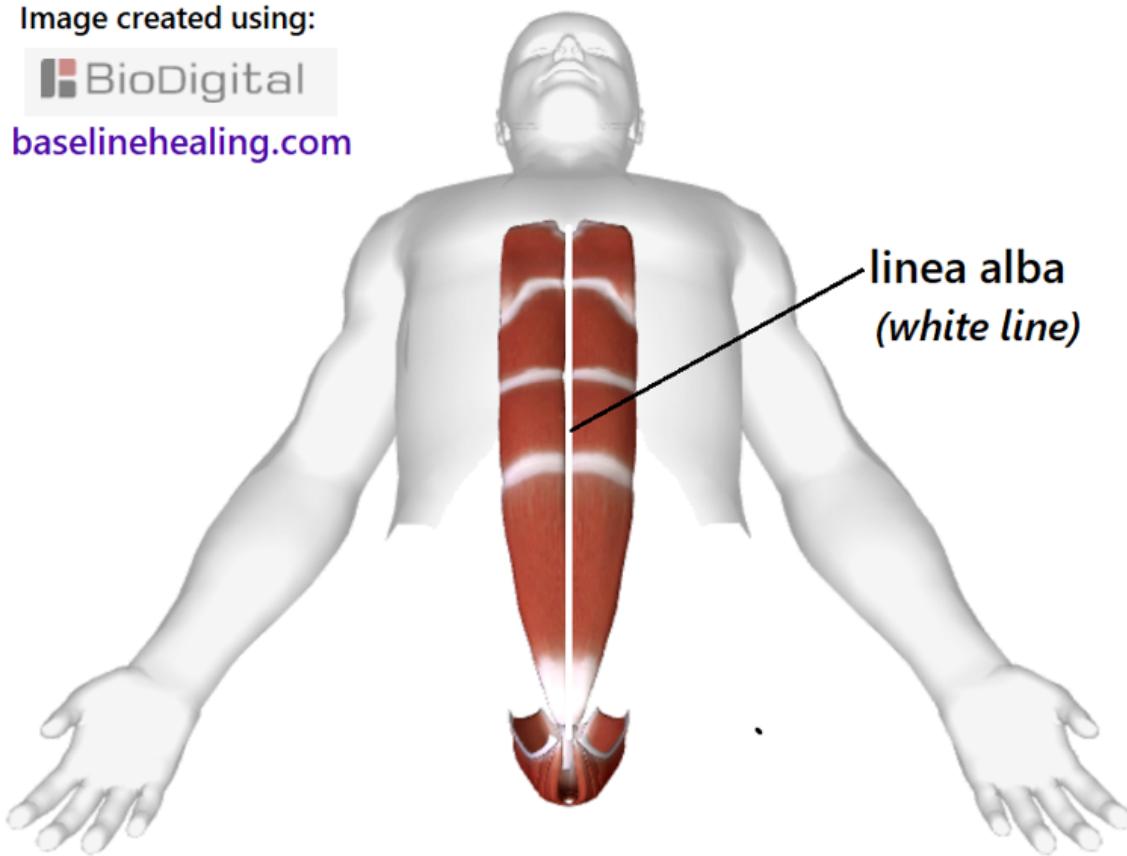
To describe a **motion** (a change in position) a reference is also needed.

- → All movement should originate from your Base-Line muscles.

Image created using:



baselinehealing.com



Base-Line muscles.

(male)

- **Equilibrium** comes when the body has a [full range of movement](#) and is [dynamically aligned and balanced](#).
- → The [linea alba](#), between the rectus abdominis muscles, being our primary anatomical guide for body alignment and balance.

The Body Map in Our Mind.

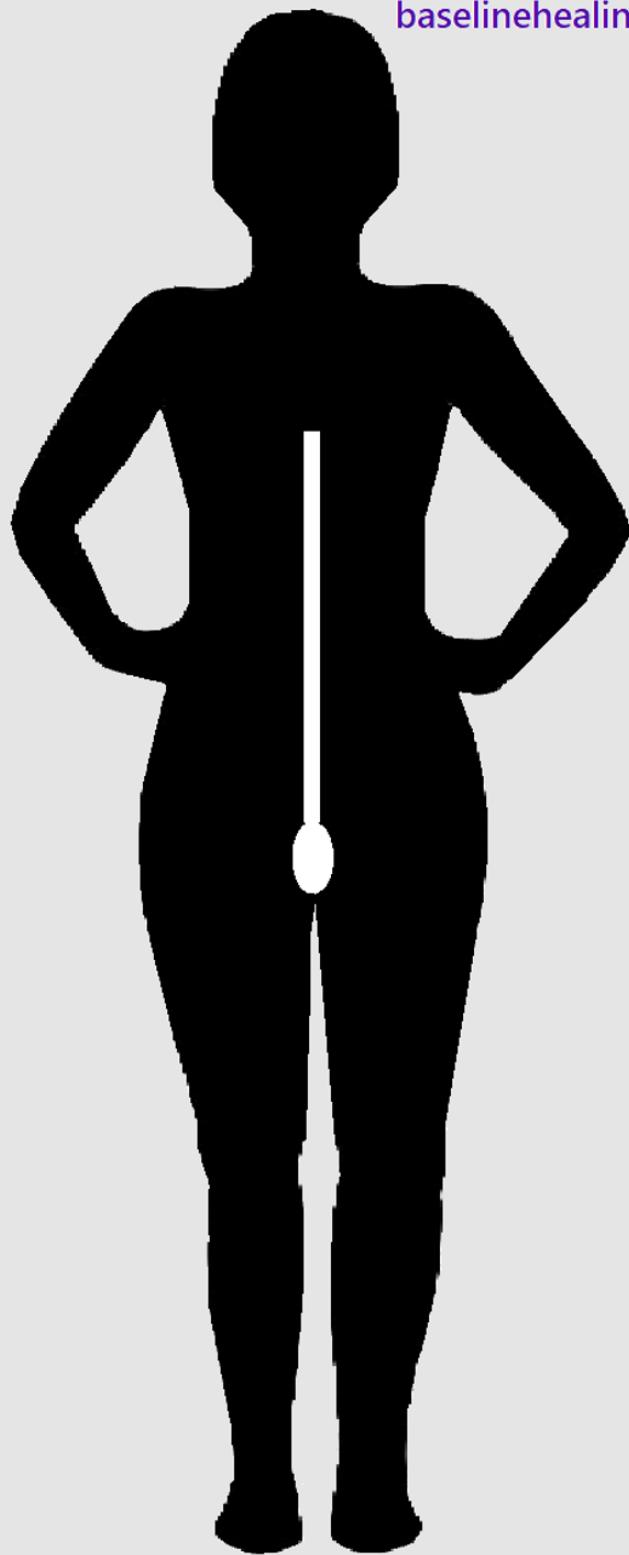
I believe we have the innate knowledge of what the body is capable when functioning at [optimal](#). Of where our full range of natural movement should take us.

Imagine a 3-D representation of the body, demonstrating movement through innumerable positions, a flow, within the largest possible "body bubble" with the body fully extended from head to fingers to toes.

--> **A moving map in the mind of our full spatial potential.**

Proprioceptive information received by the brain is applied to this 'body map in the mind'.

- Sensory feedback from the pelvic floor muscles should align with the **Base** point of the map.
- Sensory feedback from the rectus abdominis muscles should align with the **Line** that oriantates the map.
- All proprioceptive feedback can be accurately placed onto the map when the body has a full range of natural movement. *Ability aligns with potential.*



**Base-Line. From
where the rest of the
body extends.**

When [physical restrictions](#) are present sensory feedback **does not align** with the ideal map.
The body is crumpled. The map distorted.

A distorted map sends motor commands to the '[wrong' muscles](#)', adding to imbalance and misalignment.

- - -

Active engagement of the Base-Line muscles creates a positive feedback loop, increasing awareness of :

- **Voluntary activation of muscles.**
 - *building the mind to muscles, body to brain connection.*
- **The body map in the mind**
 - *sensing our potential for a full range of natural movement.*
- **Proprioceptive feedback** that is compared to the map
 - *seeing the sparkles.*

Something to be experienced to be truly understood. (*see below for technique tips*)

My Experiences.

I'm not the first to try and describe the sensation of proprioception but words aren't so easy.

To sense, to feel, to visualise, to awaken, to see, to be aware of, to instinctively know.... [The sensory experiences of chakras and qi?](#)

Connecting with My Base-Line.

The key to unlocking my sense of proprioception was focusing on my Base-Line muscles along with a good [breathing technique](#).

- Activating my **pelvic floor** muscles.
 - The solid **Base** at the root of all movement.
- Then my **rectus abdominis** muscles engaging and elongating, section by section, from pelvis to chest.
 - The central **Line** supporting the rest of the body.

Learning to connect with my 'core pillar of strength', the central muscles that should support all movement. Feeling the rest of my body extending from Base-Line.

The Body's BASE-LINE muscles.

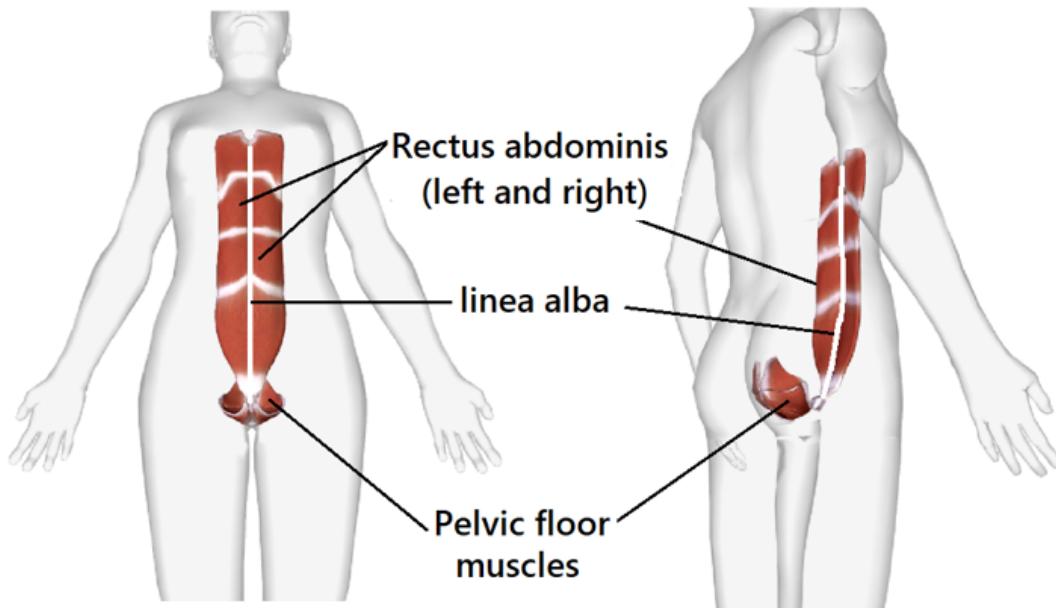


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 BioDigital
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pelvic floor & rectus abdominis. The key muscles to increase awareness of our sense of proprioception. Connecting body and mind.

The Roll-down.

My fundamental move as I worked from Base-Line - thinking '**stronger** and **longer**' with every breath in was the roll-down action.

Thinks of forming the longest possible arc, by extending my rectus abdominis section by section from pelvis to chest, and letting myself roll-down as felt natural.

Aim for your **Base-Line** to form the longest possible arc.



Adapted from: [wikiHow](#)
baselinehealing.com

When I felt resistance I would pause the movement and focus on 'breathing with my Base-Line' again. I started to feel 'releases'. They felt good. With the support of my Base-Line muscles in place I found I could roll down a little further each time.

I began to instinctively move ...

Swinging my arms, stretching my fingers. Adjusting my legs, bending my knees, flexing ankles and toes. Shifting my weight from heel to toe, side to side. Moving my mouth and jaw, rolling my eyes (as if I don't get enough practice!), pulling faces, sticking my tongue out. Whatever feels natural. The possibilities are endless on the way to a full range of natural movement.

... the movements allowed more releases of tissues (accompanied by various sounds - pops, cracks etc.). I was gaining a little more movement each time. It felt 'right'.

I experienced a lot of pain whilst moving and releasing. They were 'old' pains. I knew them, they were familiar and often sparked old memories. I think of them as my 'healing pains' as I released my '[stored trauma](#)' and unravelled the physical mess I was in.

At some point (quite early on) I became aware of:

A Sense of Visuals.

- Sparkles - splodges - lights - colours - bursts - streams.
- Loci, shapes and patterns.
- Flowing, flashing, pulsing. Always on the move.
- Slightly out of reach, unable to be pinned down. A visual experience.

Activity in the visual centre of my brain, something played out on my retinas, or what? I don't know what the process is, but I assume I'm not the only one who sees:

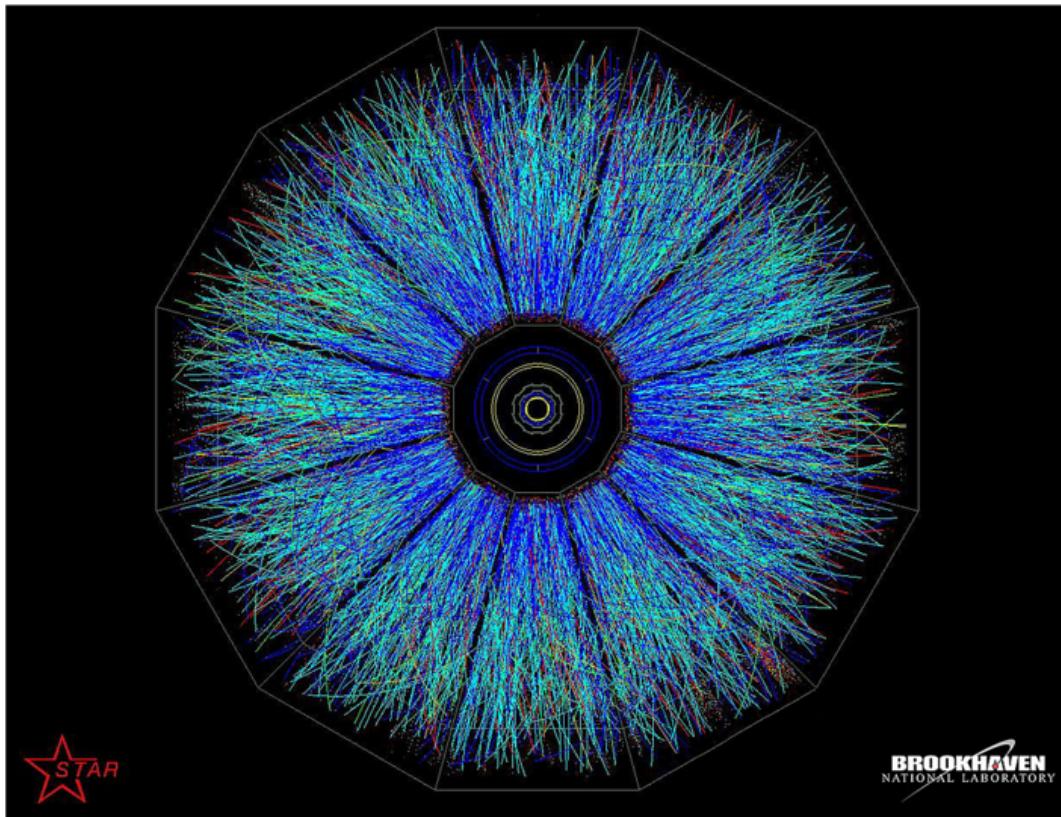
'The sparkles'

A representation of proprioceptive feedback from my body.

A **mental image** of the current position and motion of my body in **colour** and **light**.

Constantly moving, bright and vivid in places where the proprioceptive feedback is clear and my body free to move.

CONSCIOUS PROPRIOCEPTION.
It's an experience not a graphic, but I liked this image.



Seeing the sparkles - conscious awareness of proprioceptive feedback.

It feels like there's no feedback from areas of my body where my range of movement is restricted - blank spaces/missing information in the streaks and waves.

Focusing on my [**main muscles of movement**](#) increases the sparkles.

I have a mental image, a representation of my anatomy - especially the connective tissue structures that run through, surround and connect these muscles.

- Feeling for balance in my [**trapezius**](#) muscles extending from midline to head and arms.
- Working on full engagement of my [**gluteus maximus**](#) and [**rectus femoris**](#) of each leg.
- With my Base-Line [**pelvic floor**](#) and [**rectus abdominis**](#) the central core of my body.

A Sense of Presence and Potential.

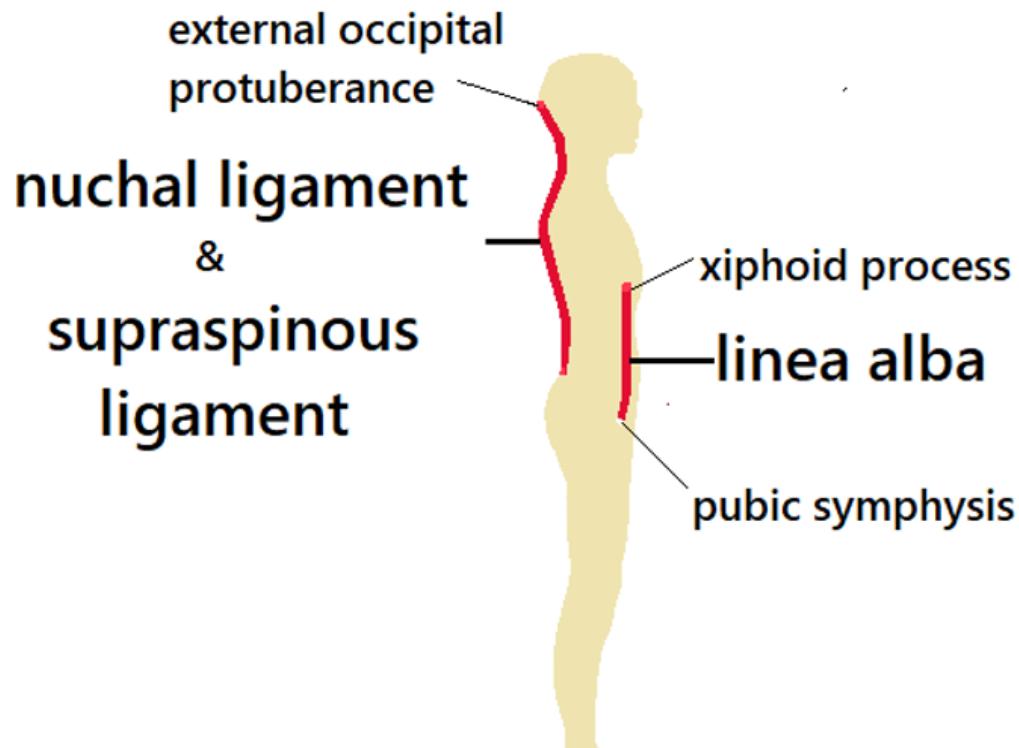
I now have a conscious awareness of my body's presence in space that I previously lacked. *I was clumsy and accident prone but had no idea what I was lacking.*

I can see my 'body map in the mind'. (see above). A peripheral outline of where a full range of natural movement should be able to take me. A 3-D shadow of my potential.

I can feel what my body should be capable of. The potential for dynamic alignment where all movement is smooth, controlled and pain-free.

I used to think the human 'machine' was a poor design. But I was wrong, it was years of poor usage that had made life so painful.

I am aware of relative alignment of my [midline anatomy](#) and can sense the 'target line' of the median plane. Feeling how to move to work towards balancing my body and regaining my full range of natural movement.



baselinehealing.com

Things I've Come to Believe.

Sensory feedback from "[connective tissue](#)" is a major contributor to our sense of conscious proprioception. This sense is the basis of the experience of "[Chakras and Qi](#)".

A lot of currently [unexplained pain](#) in the world is due to the tensions of physical **restrictions** in connective tissue and the [myalgia of imbalance](#) that comes when the main muscles of movement are not adequately utilised and the body does not have a [full range of natural movement](#).

Connecting with the body's Base-Line is the **key to better health** for so many these days. (*better health to be expanded on in later posts*).

I was a wreck when I started. I'm now into year three of working towards a full range of movement and dynamic alignment. Every day feeling and moving better than ever before.

BLTH - Definition of Conscious Proprioception:

"The ability to sense the position of your body in space and to feel where your natural range of movement should take you."

Think about activating your main muscles of movement and becoming aware of the sensory information they provide. A positive feedback loop to develop your sense of 'conscious proprioception', the innate connection between body and mind.

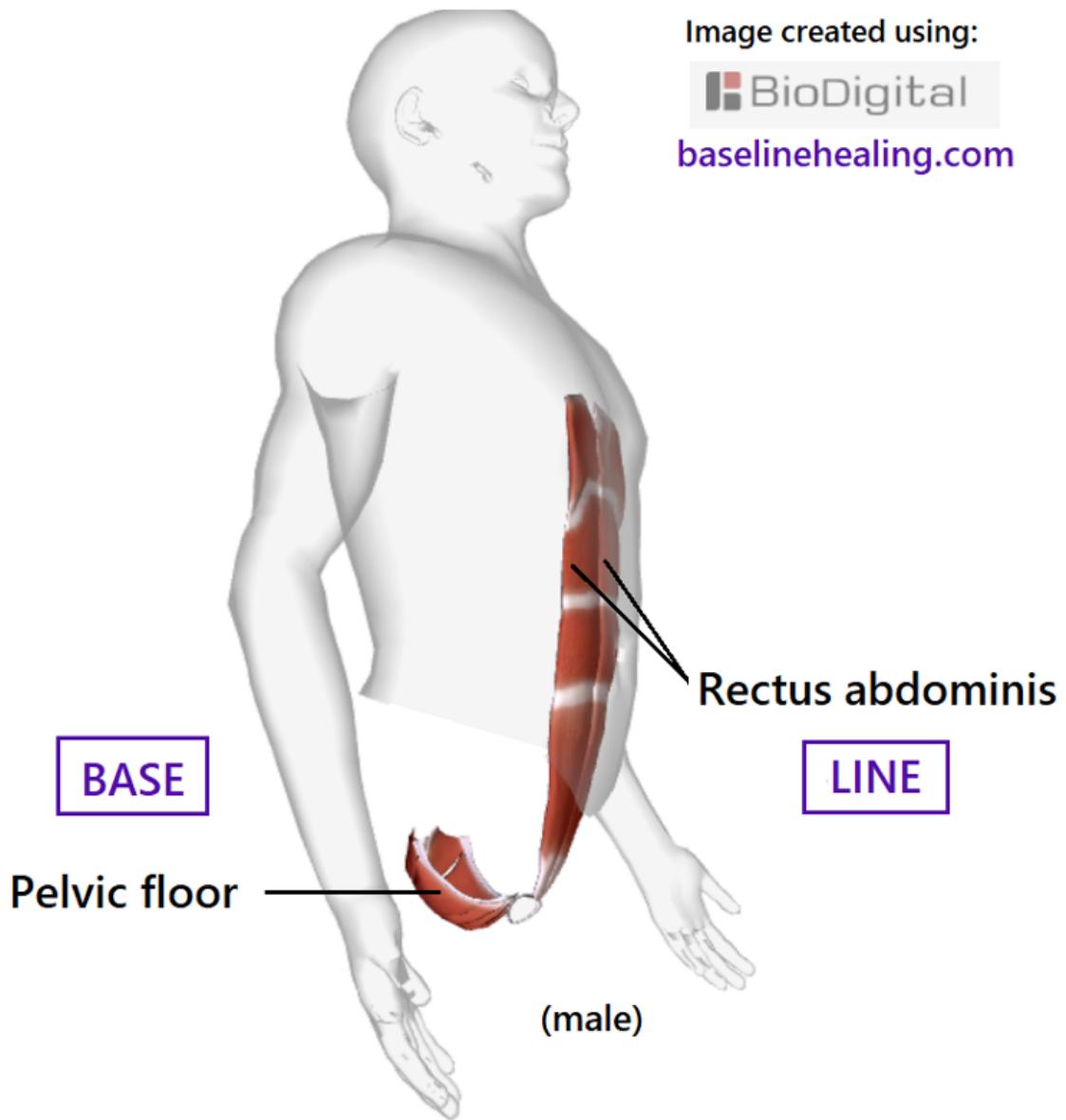
Technique Tips.

1. Inward Focus.

Whatever helps you relax and lose a little of the outside world. Close your eyes and think of your Base-Line muscles at the core of all movement, the central pillar from where the rest of the body extends.

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THE BODY'S BASE-LINE MUSCLES. Central to healthy movement.

Technique: [Breathing with your Base-Line](#)

2. Use Your 5 Main Muscles of Movement.

Think about using your [main muscles movement](#) whatever you are doing, whatever position you are in.

The Main Muscles of Movement.

5 paired muscles

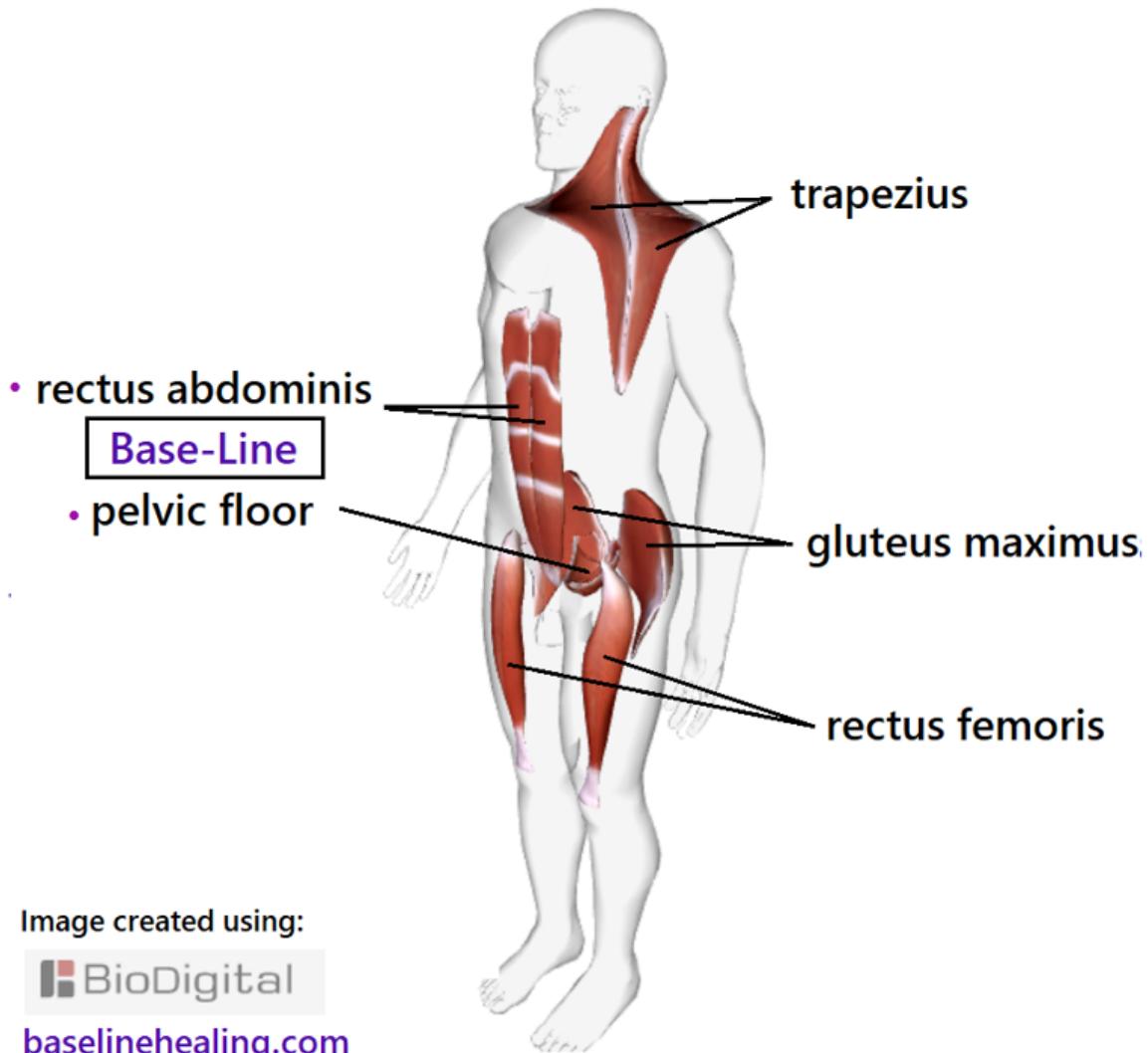


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Pelvic floor, rectus abdominis, gluteus maximus, rectus femoris, trapezius.

- Consider the relative position and condition of each of these muscles. Tap into the sensory feedback from your body.
- Move around, feeling for balance between the left and right of each of the main muscles of movement. Explore your range of movement supported by your Base-Line.
- Adjust your body as feels natural, thinking about your [midline anatomy](#) as your guide for alignment, beginning with your linea alba.

3. Feel the Sunlight.

Dawn and dusk seem to be recommended as good times for many traditional exercises, but whatever works for you.



Leigh S. Mylin

Closing my eyes and feeling the sun's rays on my face. The light through my eyelids helping me to see the sparkles and develop the conscious connection to my body.

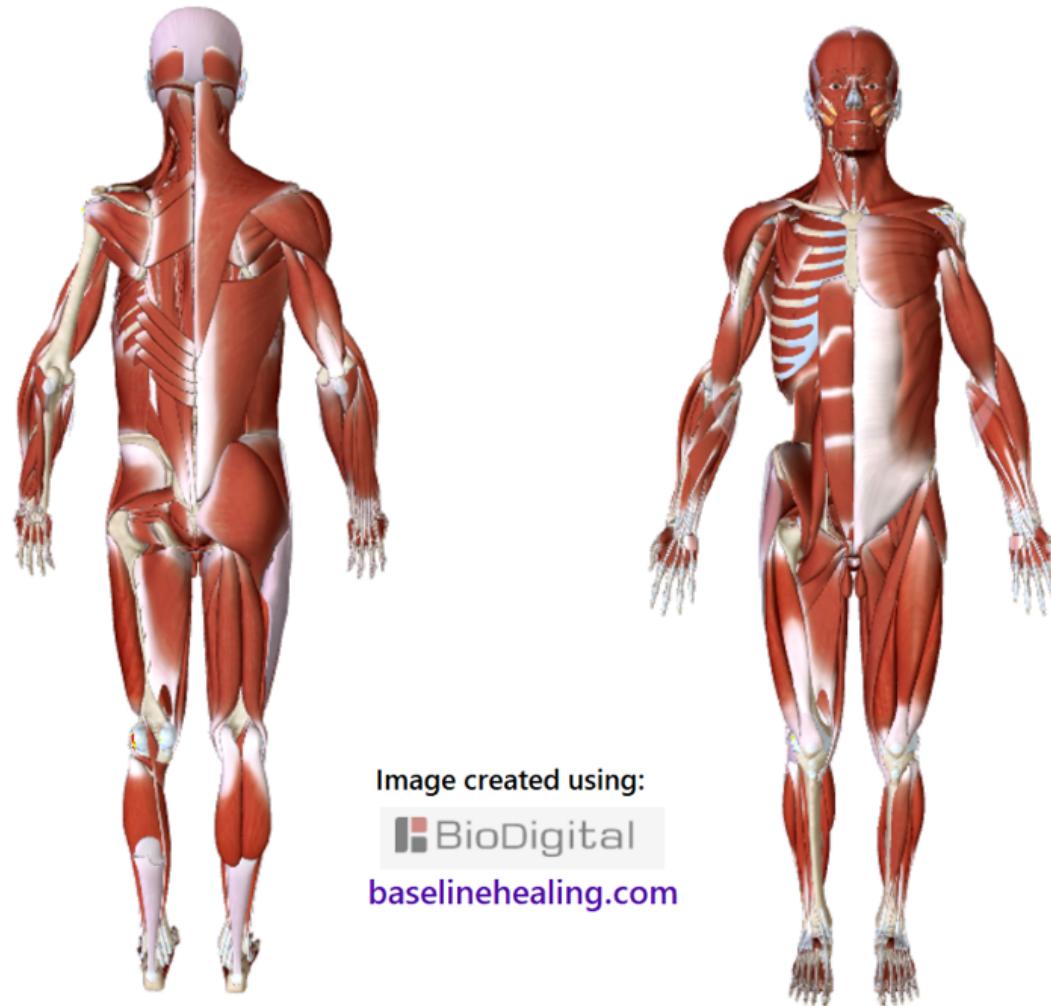
Being outdoors, breathing clean air, walking on uneven ground, all good things in my opinion.

4. Appreciate Your Anatomy.

Our system for movement consists of hundreds of muscles and bones surrounded by a body-wide web of [connective tissues](#).

We are interconnected from head to fingers to toes.

The human muscular system is complex.



Right side - first layer of muscles in-situ.

Left side - first layer of muscles removed.

Other than the 5 main muscles of movement, knowing the anatomical details is unimportant, but it's good to appreciate the complexity of the body.

Biodigital.com - A great resource to play with the anatomy. Thank you.

5. If You Experience a Pain or Weird Sensation.

⇒ Examine the feedback your brain is getting.

How would you describe a pain?

Is that an accurate description or a habitual response?

Focus on activating your Base-Line and explore deeper to find the origin.

Move as feels natural Never force anything.

Does the pain change or move?

What is your body trying to tell you?

Learn to read your body's signals better.

Conscious proprioception - the connection between body and mind.

Find your Base-Line.

Feel your potential.

A Good Posture - Muscles & Self-Awareness.

(A version appears here: [What is a good posture?](#))

Posture = The position of your body.

All of it.

At any time.

A good posture contributes to proper functioning of our living machine.

With a good posture the body is well-positioned and comfortable. A bad posture means the body is in a less than ideal position, increasing physical stresses and resulting in pain.

But what is a "good" position for your body to be in? **What is a good posture?**

Current presentations of posture.

A go-ogle search for "good posture" returns various definitions:

Standing up tall. No slouching when sitting.

Positioning of the head and joints ...

*Correct curvature of a **neutral spine** ...*

Alignment of various parts of the body ...

And a lot of side-view illustrations:

POSTURE STANDARDS

Intermediate-Type Boys

Excellent Good Poor Bad



A



B



C



D

EXCELLENT POSTURE

1. Head up—chin in.
(Head balanced above shoulders, hips, and ankles)
2. Chest up
(Breast bone the part of body farthest forward)
3. Lower abdomen in, and flat.
4. Back curves within normal limits.

GOOD POSTURE

1. Head slightly forward.
2. Chest slightly lowered.
3. Lower abdomen in
(but not flat)
4. Back curves slightly increased.

POOR POSTURE

1. Head forward.
2. Chest flat.
3. Abdomen relaxed
(Part of body farthest forward)
4. Back curves exaggerated.

BAD POSTURE

1. Head markedly forward.
2. Chest depressed
(Sunken)
3. Abdomen completely relaxed and protuberant.
4. Back curves extremely exaggerated.

Children's Bureau, United States Department of Labor, Washington, D.C., 1926.

How posture is often presented.

Postural assessment tends to rely on external assessment (*somebody else judging your position*), employing:

- Visual inspection (+/- *plumb-lines and grids*).
- Palpation of anatomical landmarks.
- Newer techniques include radiography, photography.

Traditionally the subject is stationary or doing specific actions e.g. leaning forward/back/side to side - part of a "routine exam" of posture.

Computerised assessment of the body in motion - "gait analysis" etc. offers increased detail - but all methods tend to focus is on the positioning of bones and joints (*especially the spine*).

But what positions our bones and joints? What moves the body? **What creates our posture?**

(BLTH Part 1, 2, 4, 5)

Base-Line Theory Health and Movement. Part 3:

- **Muscles and connective tissues are responsible for the relative positioning of our bones.**
- **Muscles and connective tissues create our posture.**

Posture can be:

- Passive:
 - The default setting.
 - The position of your body when you are not thinking about it.
 - The maintenance of a 'functional posture' (see below) at the subconscious level.
- Active:
 - Conscious thought about "how you are holding yourself".
 - Using **voluntary muscles** under voluntary control to alter your positioning.

The body is dynamic - our posture is continually changing on some level.

Good postural habits can be formed by working with the right muscles for a sufficient length of time. i.e. An active posture becomes the passive norm when the relevant connections between mind and muscles have been 'wired in'.

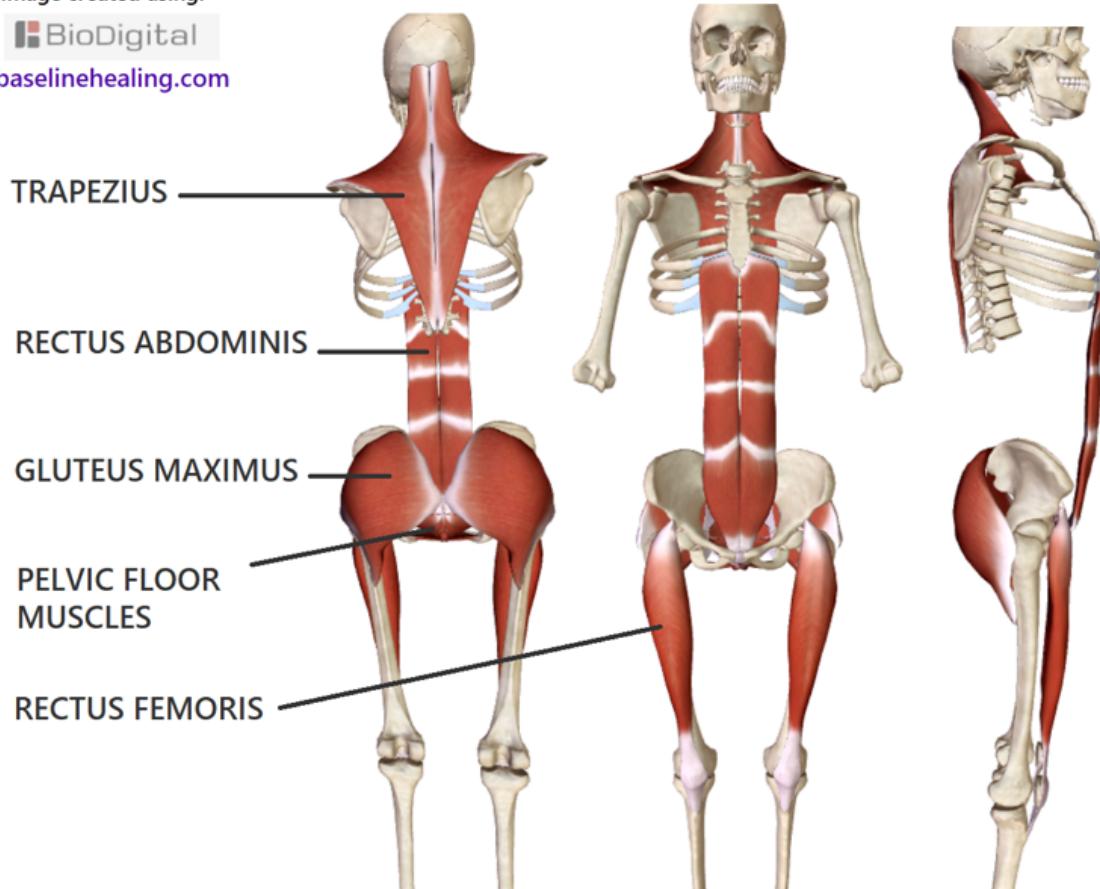
Restrictions in the body's connective tissues reduce range of movement and add to poor posture. These restrictions can be released through movement when working with the right muscles.

But what muscles to focus on? A google for "posture muscles" names a lot of different muscles - too long a list for me to work through here (*I'm happy to discuss specific muscles in comments*) but nowhere gets it 'right' as far as I can see. According to my Base-Line theory of human health and movement:

The muscles to focus on for a better posture, a full range of natural movement and a body that is dynamically aligned and balanced are the five main muscles of movement.

Image created using:

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THE 5 PAIRED MUSCLES THAT ARE THE MAIN MUSCLES OF MOVEMENT

Back, front and side views.

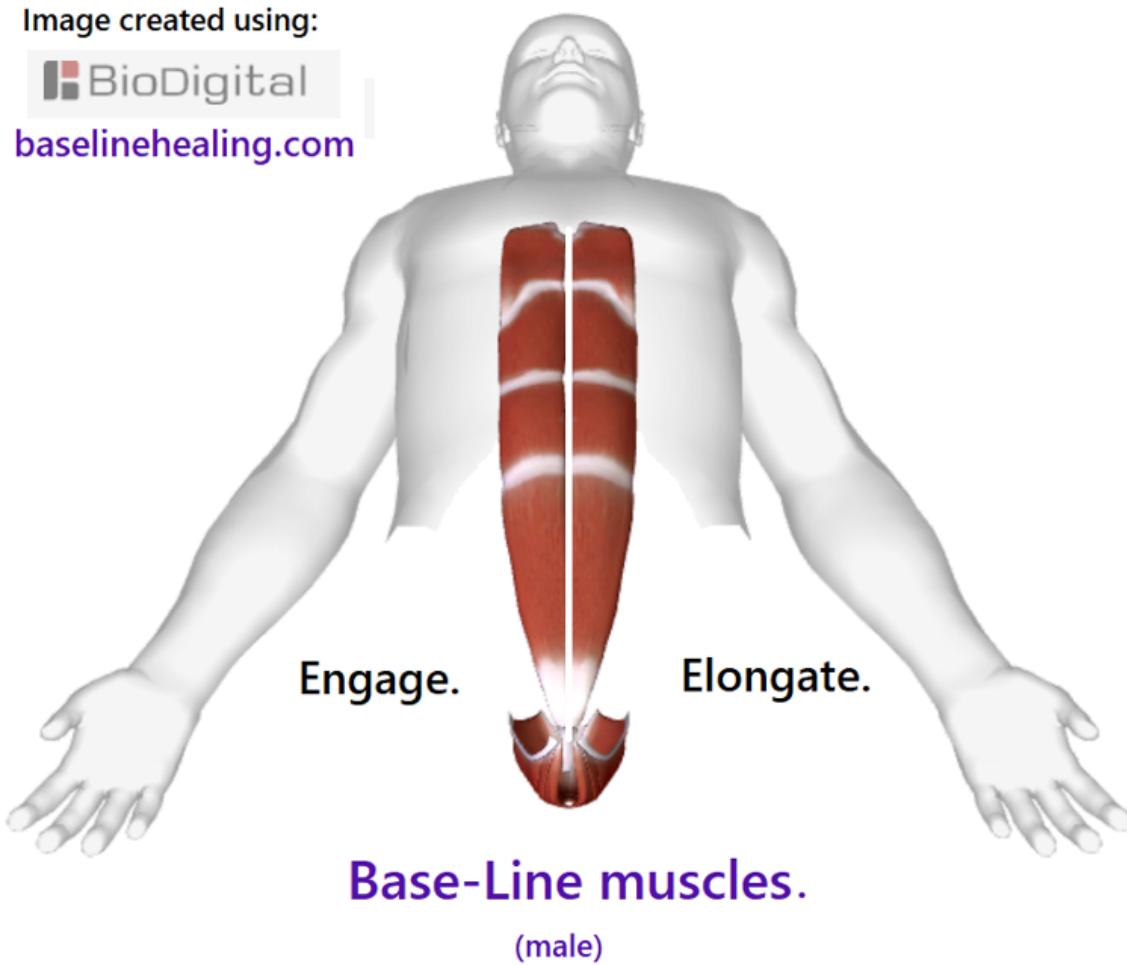
the 5 (paired) muscles to focus on for a "better posture".

These muscles (*when fully utilised and the body is free of physical restrictions in connective tissues*) create a "good posture" - whatever position the body is in, for whatever it is doing.

Our 'Base-Line' muscles (pelvic floor 'Base', rectus abdominis 'Line') are the primary muscles to focus on. The core support from where the rest of the body extends and from where movement should originate.

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- [**5 main muscles made easy**](#) - introduction to the anatomy.
- [**Base-Line Breathing Technique**](#) - how to find your Base-Line.

Properly utilising the [main muscles of movement](#) brings an understanding of what a good posture feels like. When the body is dynamically balanced and aligned with a [full range of natural movement](#). Easy, comfortable, relaxed, strong.

Try it. Feel for yourself.

Self-Assessment of Posture.

The body provides more sensory feedback about its positioning than can ever be supplied by external sources. Becoming aware of this sensory feedback is the basis of [conscious proprioception](#) (*increased awareness of your sense of position, motion and balance*). Connecting with your 'Base-Line' develops this connection between body and mind, bringing the benefits of:

- Increased **awareness** your body's positioning.
- **Self-assessment** of posture.
- Instinctively sensing how to move to improve positioning and work towards **full range natural movement**.
- Feeling for the body's state of **balance and alignment**.

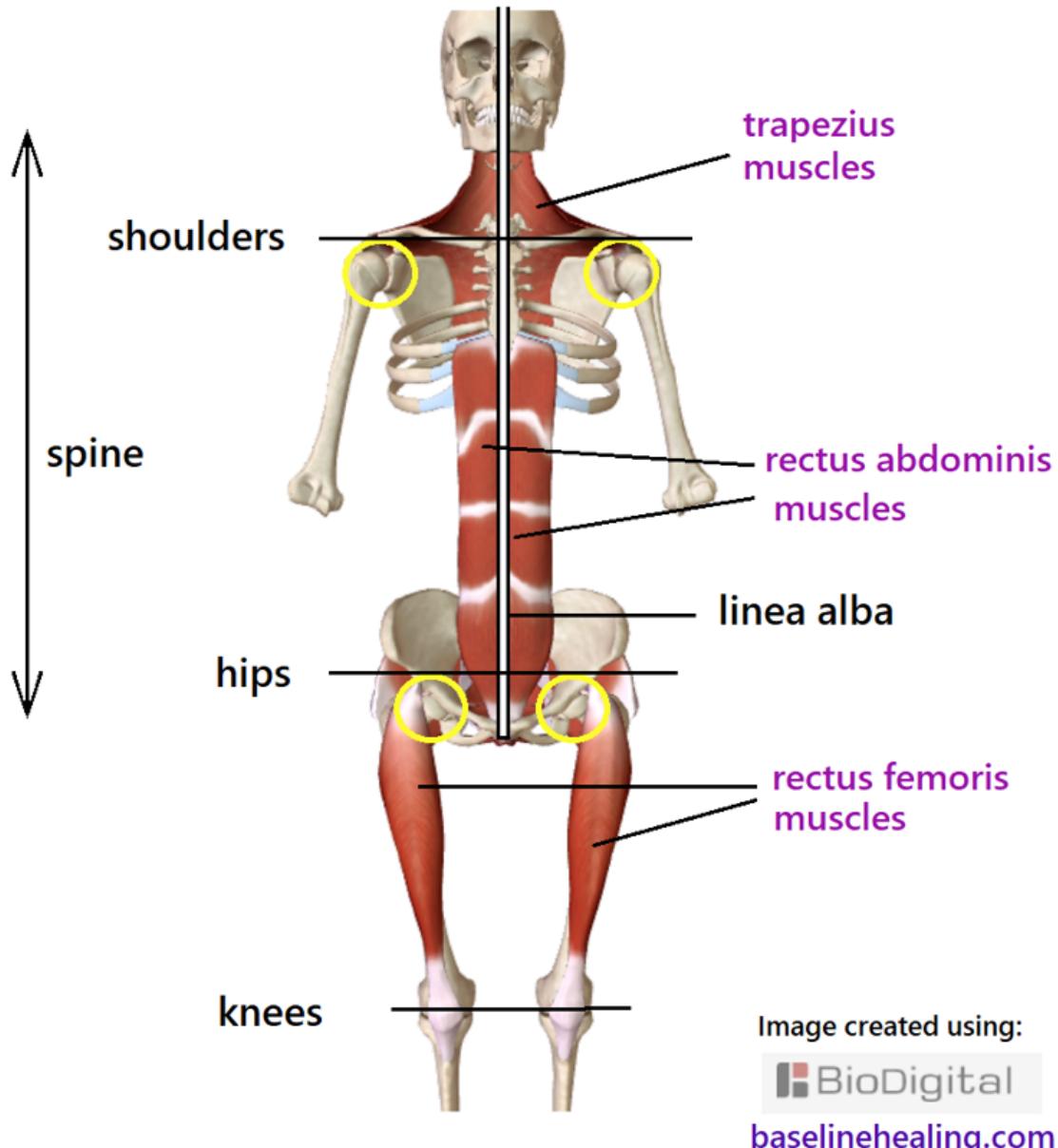
Micro-adjustments in positioning can have wide effects throughout the body (*everything's connected*) which can be felt when the body-mind connection is strong.

A good posture allows the body to be in alignment and balanced.

Body Alignment & Midline Anatomy.

Body alignment comes when our [midline anatomy](#) can be correctly arranged to create the [median plane](#).

BODY ALIGNMENT



Linear midline structures:

- linea alba. (between the rectus abdominis muscles)
- nuchal/supraspinous ligaments (between the trapezius muscles)

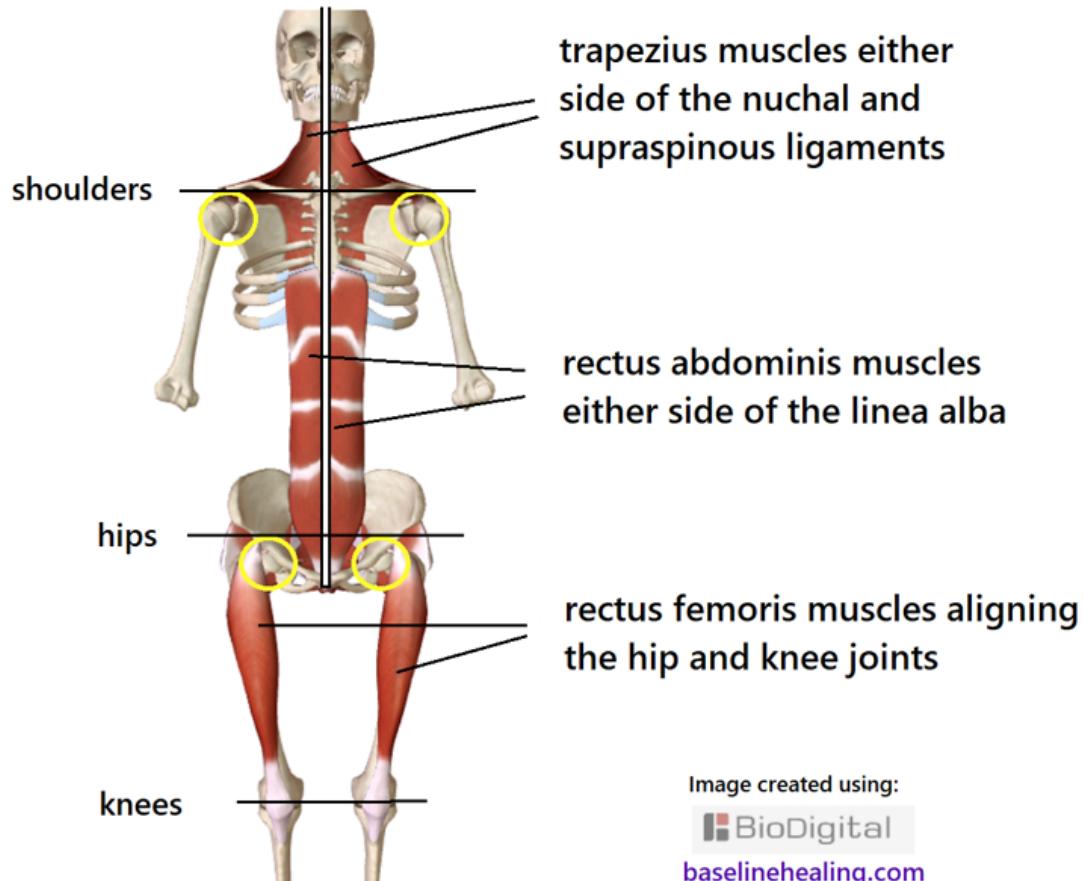
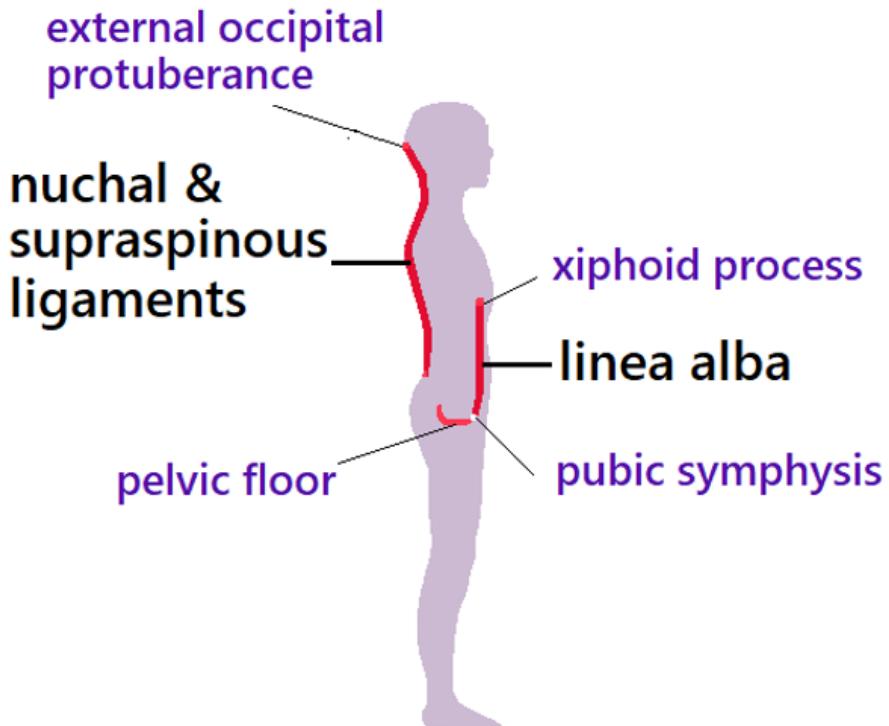


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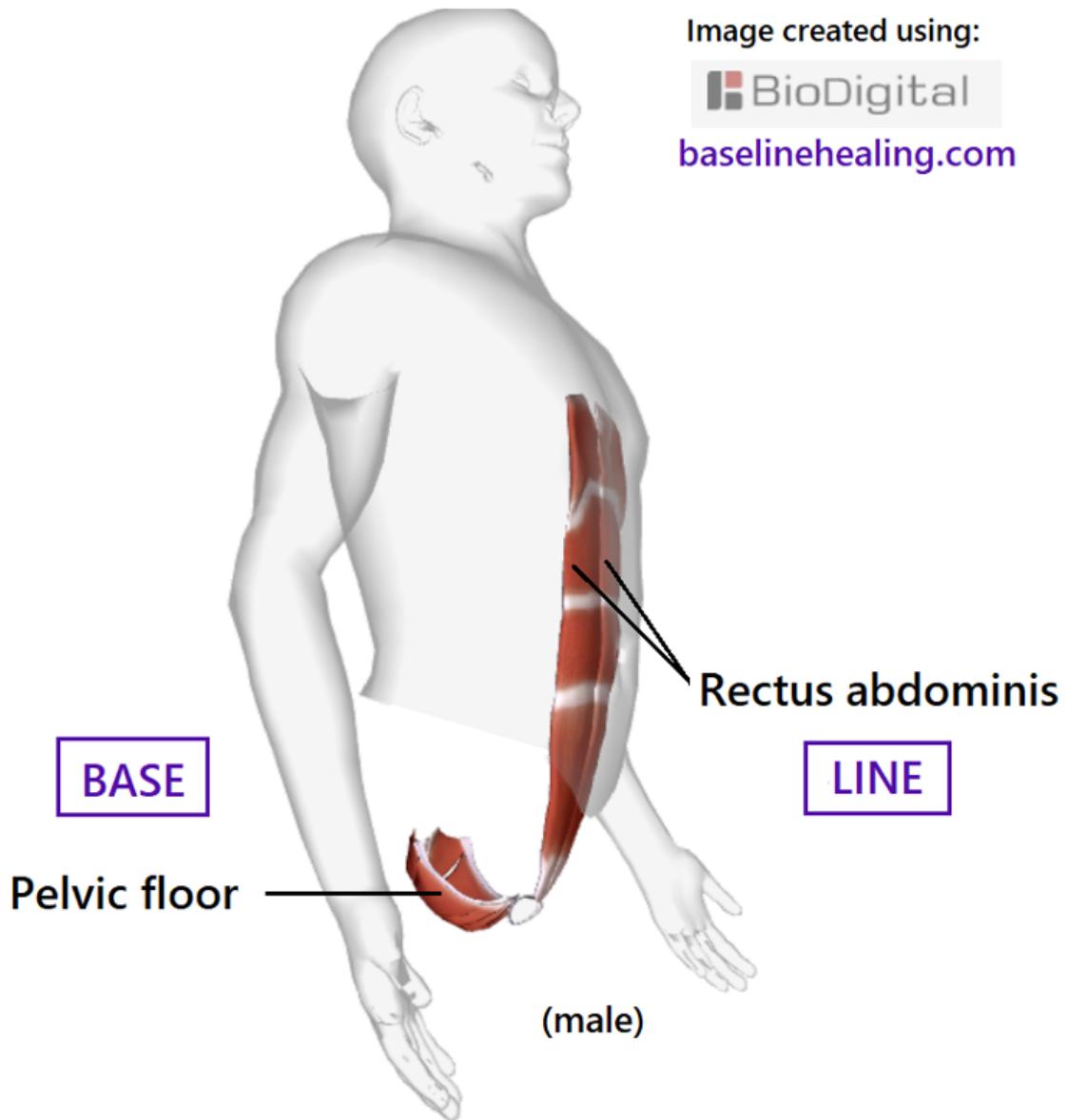
A good posture - when the main muscles of movement support the body and our midline anatomy can be aligned on the median plane. We can stand upright with ease, with no excess strain on the spine (*see below for details on a 'neutral spine'*). Movement is easy and unrestricted.

Core Muscles.

"Use your core" is oft-repeated advice - but what does it really mean?

"Core muscles" has many definitions and it would not be helpful to add to this over-used term - but think of your Base-Line as your **core pillar of strength**.

Image created using:
 BioDigital
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THE BODY'S BASE-LINE MUSCLES. Central to healthy movement.

A neutral spine.

A neutral spine is when the spine is in a natural position, under the minimal amount of stress. All vertebrae are positioned with the correct curvature and can be aligned on the [median plane](#).

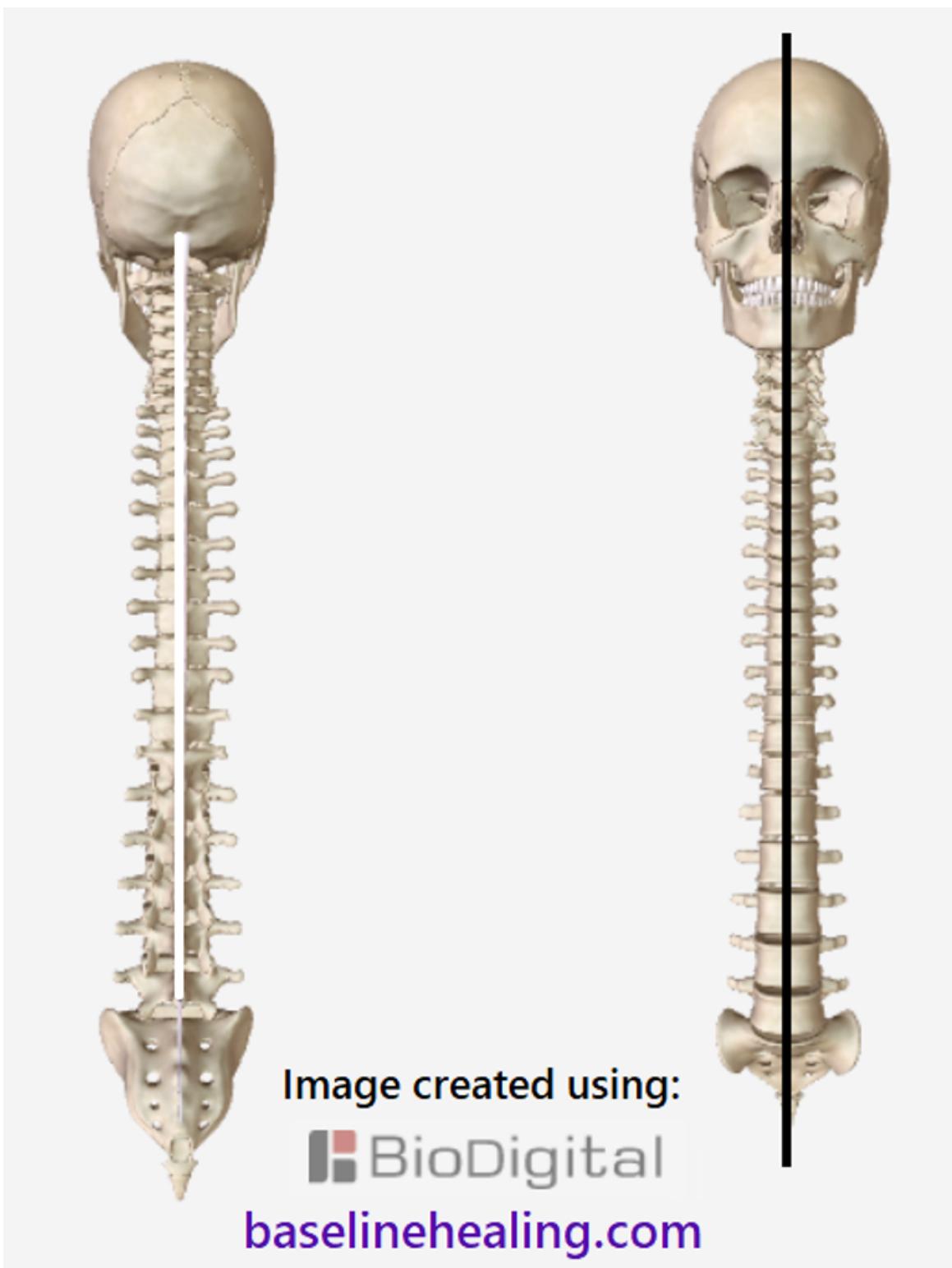


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A neutral spine. Back and front view.

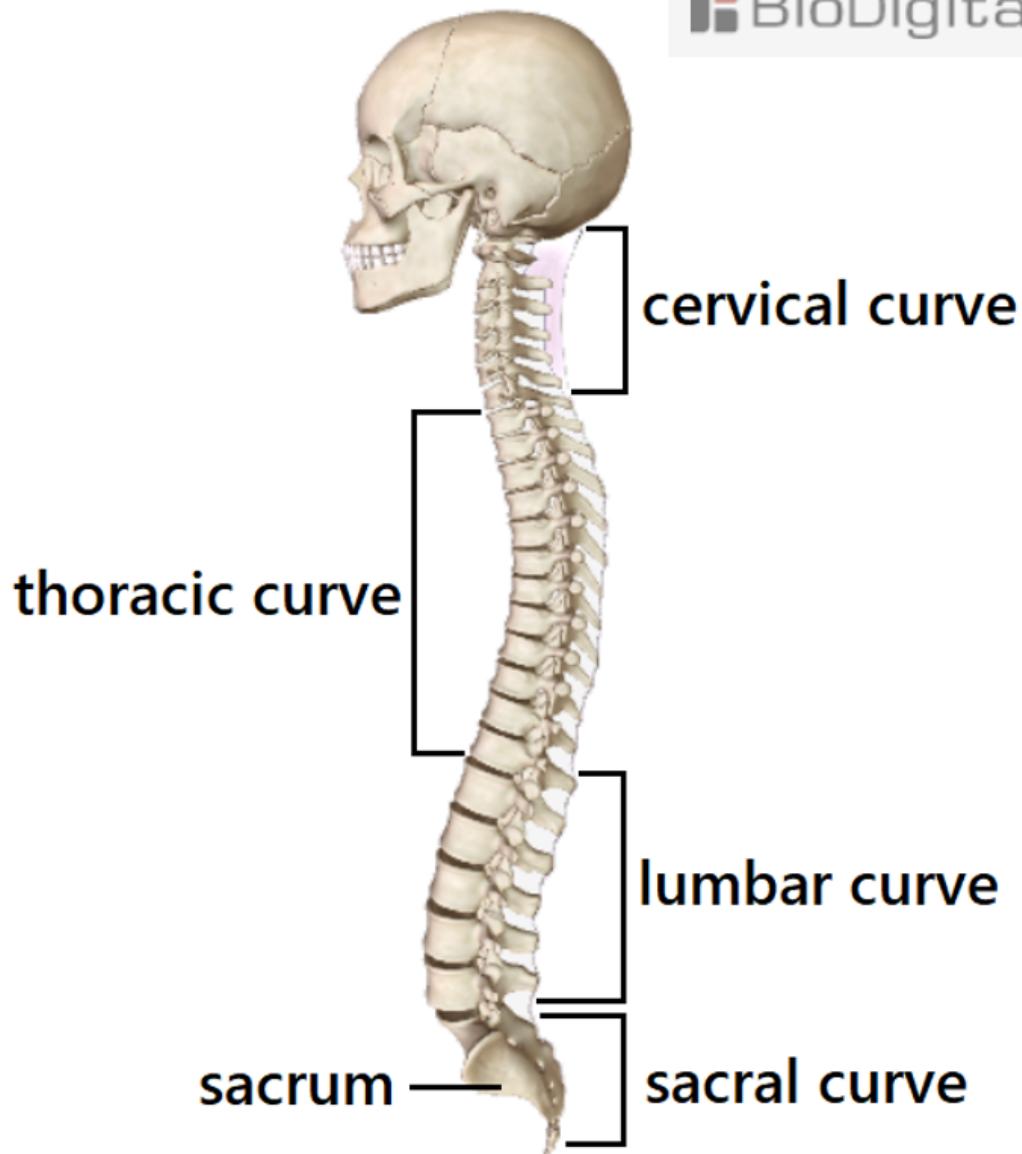
When seen from the front or back all vertebrae in a neutral spine appear completely vertical i.e. they are aligned.

The [nuchal and supraspinous ligaments](#) that attach to the posterior (back) of the spine are also aligned.

From a side view, a neutral spine is curved.

Image created using:

 BioDigital



baselinehealing.com

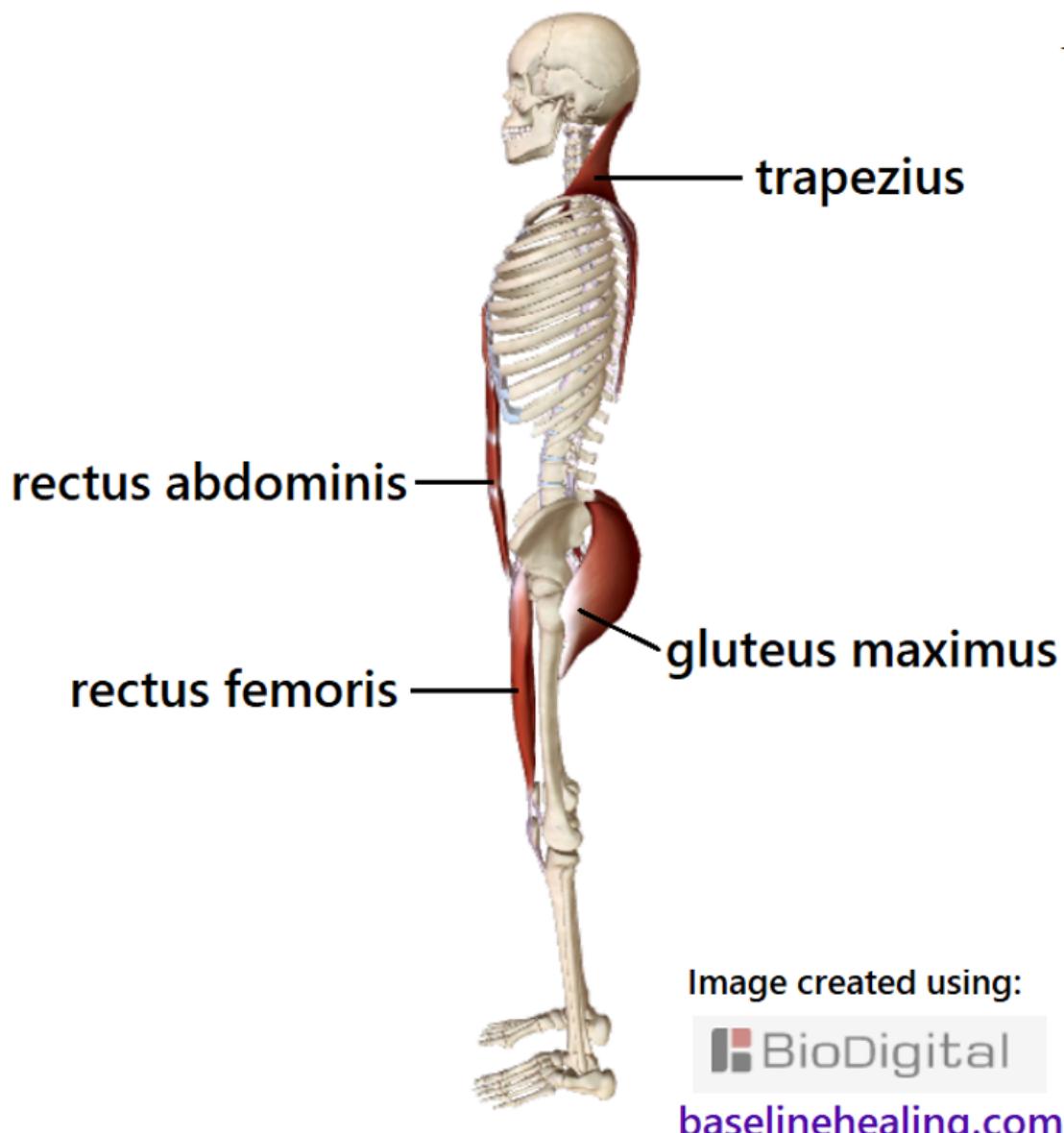
Side view of a neutral spine showing the curvature.

Side view of a neutral spine:

- The cervical (neck) spine is curves inward.
- The thoracic (upper back) spine curves outwards.
- The lumbar (lower back) spine curves inward.
- The sacrum curves outwards.

For a neutral spine, the **rectus abdominis** muscles need to be "long and strong", fully extended and taking the strain between pelvis and chest.

A "neutral spine" created by the main muscles of movement.



The rectus abdominis muscles should be 'long and strong' to allow the spine to be in a neutral position.

If the rectus abdominis muscles are not fully utilised the lateral abdominal, psoas and other muscles of the lower back bear the burden which has negative effects on the positioning of the lumbar spine and causes a lot of pain over time.

The **gluteus maximus** positions the sacrum, linking the base of the spine to the pelvis.

The **trapezius** muscles must be free of physical restrictions to allow the correct positioning of the thoracic and cervical spine.

Lying in bed trying to 'align my spine, hips and shoulders' in an attempt to improve my posture and ease the pain but I had no inner reference to guide me - until I found my Base-Line.

Dynamic Posture - Movement.

Posture isn't static. **We are constantly on the move.**

- Explore movement extending out from your Base-Line.
- Feel where the main muscles of movement are in relation to each other.
- Sense where your natural range of movement should take, you guided by your sense of proprioception.
- Work towards balancing and aligning your body for the ideal posture (see below)

Definitions for Base-Line Theory:

Ideal Posture.

In an ideal posture stresses are distributed and dissipated in the best/safest/most efficient possible manner for the activity being undertaken, permitting dynamic stability through a full range of natural movement.

An ideal posture provides the maximum capacity to deal with external stresses - the body is as strong as it can be.

There are many disciplines that appear to represent ideal postures, demonstrations of the body's capabilities when it is functioning at optimal. (**Caveat** - I can name a few, but have little formal knowledge and no experience in most.)

For example:

- **The asanas of yoga** - snapshots of the body with a full range of natural movement. Named poses (see below) that can be perfected when the body is truly balanced.
- **Pilates, tai chi** and other **internal martial arts, ballet** - demonstrating the grace and freedom of movement possible with dynamic alignment.

An ideal posture is not possible if there is:

- inadequate usage of the 5 main muscles of movement.
- physical restrictions reducing range of movement.

A Functional Posture.

A 'functional posture' is what the brain/body uses day-to-day when an ideal posture cannot be achieved. Subconscious adjustments are made throughout the body - twists, kinks, tilts and compressions - as the brain sees fit to keep us going - the development of a "bad posture".

A functional posture at its most basic:

- Keeps our eyes level (*maintaining horizontal equilibrium in visual input*).
- Keeps us facing/moving forward.
- Puts the body in a position to do the task at hand.
- Adjusts body position to bear external stresses as they are applied.

The '[wrong muscles](#)' are used to attempt to compensate for misusage in the main muscles but the body is imbalanced. [myalgia of imbalance](#).

Anticipatory Posture.

When faced with a task, the body/brain prepares by activating muscles into an 'anticipatory posture' - *bracing yourself*.

An anticipatory posture should be the ideal posture for the activity - using the main muscles of movement to their full potential, but if that is not achievable, the body braces into a functional posture with the use of other muscles.

Becoming aware of anticipatory postures and the activation of other muscles allows self-correction by focusing on engaging with the main muscles of movement instead, over-writing bad postural habits that have developed.

Positions & Poses.

When talking about the position of the body there is a sliding scale of precision, from a very generalised description (*which may include some details*), to named poses, to a full assessment, to the constantly changing exact position.

A Generalised Position.

A generalised position may be a broad categorisation e.g. sitting, standing, squatting, or more specific e.g. sitting on hands, standing on one leg (*which leg?*), squatting with arms extended (*extended in what direction?*).

There is a wide scope for variance in the same generalised position.

A Named Pose.

e.g. *downward dog, half lotus, plank pose*

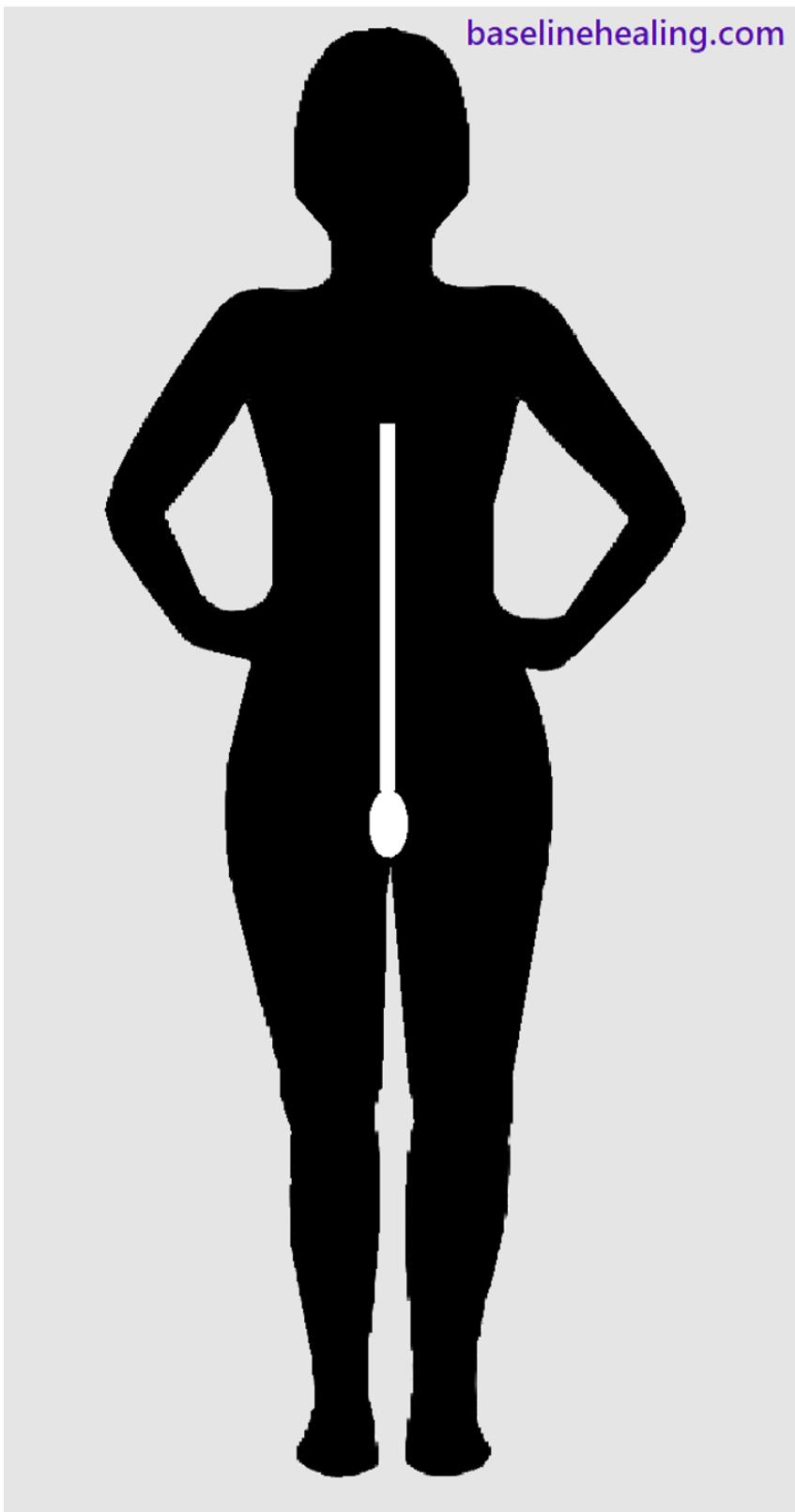
Named poses can also be considered as generalised since there is a wide range of possibilities to be in what, without closer examination, appears to be the same named pose.

Named poses are representations of the ideal, something to aim for and achievable when the body is functioning at [optimal](#).

A Full Assessment of Positioning.

A full assessment considers the positioning of all parts of the body from core to extremities, looking at the details from head to toes.

A full assessment needs a starting reference - a [Base-Line](#) - from where the rest of the body is positioned relative to.



Exact Position.

The body is always moving. *Infinite possibilities ... Never the same position twice?*

The movements of breathing, vibrations in the cardiovascular system, muscle activity etc. means the body's exact position changes moment by moment even when trying to be still. *Stillness is finding the perfect oscillation for equilibrium.*

On what scale is exact position considered? Movement at the cellular level - a twitch of a [muscle fibre](#)? At the electro-chemical level - movement of molecules and ions? Unimportant to my theory, but something to think about.

Final Thoughts.

**Muscles do the work. Muscles create our posture.
Muscles can be under our conscious control.**

You want to stand up straight? Use your main muscles of movement.

You want to sit properly? Use your rectus abdominis muscles to support you.

You want to know what body alignment feels like? Work towards aligning the linea alba and nuchal/supraspinous ligaments.

Want to 'center yourself' and experience a sense of enlightenment?

Find your Base-Line.

baselinehealing.com

Fibromyalgia, Pain & Depression. How much is due to physical misalignment?

I used to think the human 'machine' was a poor design.

I was wrong.

It was poor usage that had made life so painful.

This is my explanation for chronic pain and the many pain-related syndromes currently classified as idiopathic (*the cause is unknown*) i.e. fibromyalgia, restless legs, chondritis, plantar fasciitis, shin splints, many "IBS" issues, frozen shoulder, neck cricks, tension headaches etc. A long list of symptoms and conditions that plague the modern world.

This is based on:

1. My recovery from nearly 20 years of severe depression and a lifetime of pain.
2. Anatomical facts. Logic starts here: [midline anatomy & the median plane](#).
3. My education and experience in handling mammalian tissues as a veterinary surgeon (surgery, autopsies, butchery).

Key Points:

- **Myalgia of physical imbalance.** If you are not using the "right muscles" you are using the wrong muscles. I did not use my [main muscles of movement](#). I had no connection to my [Base-Line muscles](#) - the body's [core](#) pillar of strength. Without a connection to my Base-Line I had no inner reference to reset back to 'baseline healthy' and a body that is physically balanced and aligned.
- **Physical restrictions** form in our body-wide web of **connective tissues** in a **response to inflammation** (triggered by injury, infection etc.) which induces cross-linking of collagen fibers. Some easy notes here: [Connective Tissue Response](#).
 - Restrictions reduce range of movement adding to the body's imbalance and misalignment.
 - Physical restrictions apply tensions throughout the body, along "threads" that run from head to fingers to toes.
 - These tensions generate pain & weird sensations. The body adjusts to avoid pain, adding to the misalignment.
 - This physical restrictions are '**stored trauma**', creating an '**individual trauma imprint**' and with it a unique collection of symptoms for each person. Generalised patterns exist, with grouping of symptoms along affected threads.

Physical imbalance in the usage of the muscular system and restricted connective tissues cause:

- Unexplained pain. (often diagnosed as fibromyalgia these days). Pain related symptoms that increase in number and intensity over time.
- Self-doubt. Stress. Hypochondria.
- Anxiety. Depression.

My Story.

I was too young to voice my pain when it started and grew up thinking 'stiff and sore' was normal - that the pains, spasms and weird sensations were just a part of life.
(*more details of my pains for anyone that's interested ... [here](#)*)

Over the years traumas built up on my body, restricting my [natural range of movement](#). I became increasingly tense and imbalanced. I never slept well. A long list of seemingly unrelated injuries and symptoms. There was always pain, and then a lot of self-doubt. Depression hit hard and enveloped my life for many years.

My rock-bottom was akin to the cruciatus curse (*an acceptable reference on LW I presume?*). Stuck on the floor one morning, screaming as the intense pain seared through every part of my body. I was unable to move, any attempt was terrifying. I could feel myself going in to clinical shock. I helpless and I knew it but rather than sending me crazy, the pain forced me to surrender. I experienced a sudden clarity that my body was saying "NO MORE". Something had to change.

Afraid of returning to that level of pain and knowledgeable enough to know the range of drugs I had been prescribed (*morphine, codeine, paracetamol, naproxen, gabapentin, diazepam, would a) not magically fix me b) fuck me right up*) I started doing **Pilates - a few basic exercises at the easiest levels**. Taking it gently and working with my [breathing](#). Over a few weeks, I began to notice what muscles were activating as I attempted to move - of how I braced myself to do anything, of how much movement I lacked and how tense and twisted my body was. I was physically wrecked.

The day my depression lifted as I stood up from a [roll-down](#) was the day I knew I could get better. It was that dramatic. Like a blanket being pulled from over my head - a shift, a freshness, a hope. A release of tension that had been suppressing me. It felt like a whole new world. The birth day of my [Base-Line Theory](#) Human Health and Movement. It wasn't the end of my mental issues, I had a lot stored, but it was the turning point towards better.

Recovering my natural range of movement has been a long slog. My body was severely misaligned and imbalanced - tense, twisted, crumpled. Little by little I freed myself from the physical restrictions, releasing all my 'stored traumas' (see below) - both physical and mental. Improving my [posture](#), [working](#) towards body alignment and balance by learning to use the right muscles.

Approximate time scale:

Pain ~ Life long. 4+ decades. My earliest memories.

Depression ~ 17+ years. Too scared of failure to attempt suicide. Too scared of suicide to try antidepressants. I hated myself, the world, everything. Angry, stressed, miserable - hopeless of ever feeling better. I was broken. I wanted it all to stop.

Rock-bottom until the day my depression lifted ~ 14 weeks. My fear of pain and my support network were both strong allowing full time consideration of how I was using my body.

Recovery ~ 4+ years of hard slog. Using my sense of proprioception to slowly my full range of natural movement. Reliving and releasing all the pains and tension I had been carrying around bringing a new sense of balance and calm.

My earliest symptoms were of muscle pain = myalgia.

Myalgia (*from Greek*) *myo* ≈ *muscle* + *algos* ≈ *pain*.

According to:

Base-Line Theory of human Health and movement (Part 4):

BLTH Part [1](#) , [2](#), [3](#).

The 5 **main muscles of movement** should be under **full voluntary control** for optimal functioning of the body.

Optimal Functioning - Strong, Balanced and Pain-free.

The body functions at optimum when it is dynamically balanced and aligned i.e. it is free of physical restrictions (*see below*) and the main muscles are fully utilised so an [ideal posture](#) can be achieved.

Movement is smooth and controlled, unrestricted through a [full range of natural movement](#). The head and limbs can all be moved independently without pain or tension whilst the rest of the body remains stable.

The [midline linear](#) anatomy can be felt to be in alignment. The Base-Line muscles ([pelvic floor](#), [rectus abdominis](#)) providing the core support from where the rest of the body extends.

We are balanced, we are aligned. A strong connection between muscles and mind.

I believe this capacity is what so many disciplines are trying to demonstrate (*yoga asanas, Tai chi, the internal martial arts ...*).

The Main Muscles of Movement.

5 paired muscles

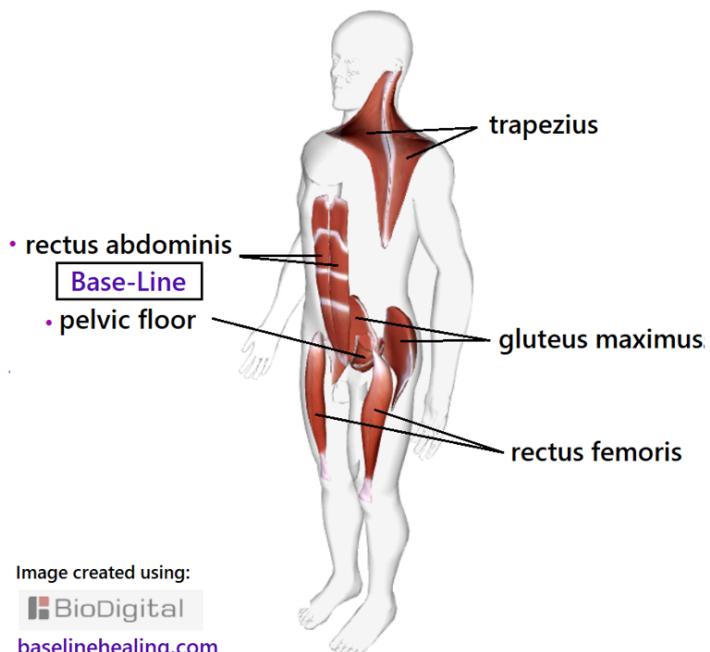
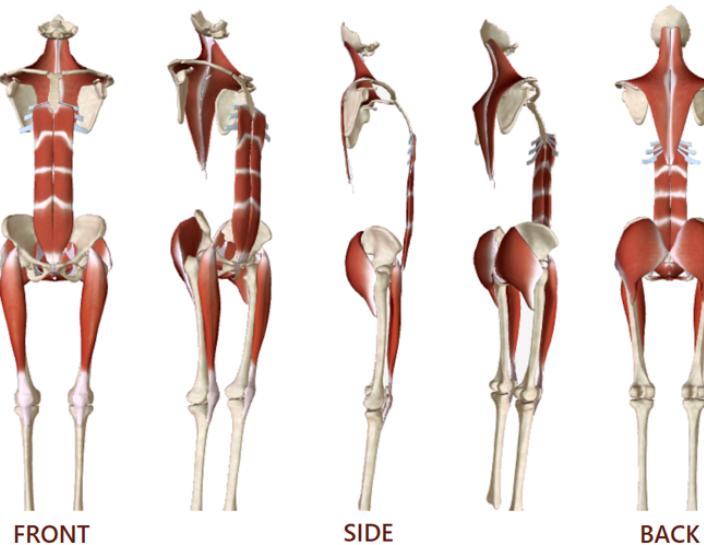


Image created using:



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The 5 (paired) key muscles to focus on to improve physical condition.



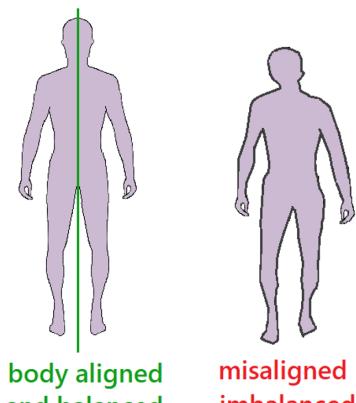
MULTIPLE VIEWS OF THE MAIN MUSCLES OF MOVEMENT

Image created using: BioDigital

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The 5 main muscles - central to healthy movement. **pelvic floor, rectus abdominis, gluteus maximus, rectus femoris, trapezius**

An ideal posture cannot be maintained if any of the main muscles of movement are not fully functional or our range of movement is restricted. [Dynamic alignment and balance](#) are easily lost - **the body becomes imbalanced and we suffer PAIN.**



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Imbalance, the Wrong Muscles & Myalgia.

A [functional posture](#) is maintained by the activation of [parts](#) of other muscles (*the 'wrong muscles'*) **in an attempt to mimic the action of the main muscles**, but stresses are distributed less efficiently - either side of ideal - adding to imbalance. The location and distribution of these areas of '**wrong muscle**' varies, dependant on:

- The body's current position and action. *Standing, sitting, bending, walking, climbing etc.*
- External stresses. *Pushing, pulling, lifting, hugging, throwing etc.*
- Physical restrictions that are present. *(see below)*
- Habits that have formed. e.g. [anticipatory postures](#) recruiting other muscles rather than the main muscles.
- Skewed [body map in the mind](#). Motor signals from the brain instructing which muscle areas to activate follow a 'pattern' but are not overlaid onto the body correctly. ('patterns' to be expanded on in later posts)
- Other. *Anything I've not thought of yet.*

I became aware of what muscles would activate when I tried to move. The 'wrong' muscles, activated via motor pathways that need to be reprogrammed to the 'right pattern' by consciously engaging with the 'right' muscles.

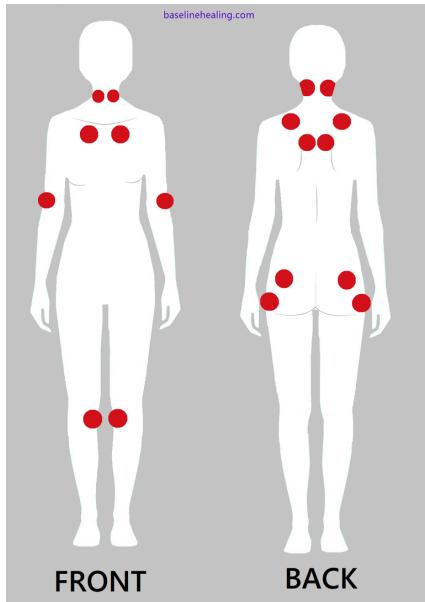
Other muscles cannot tolerate the same burden as the main muscles of movement. The muscle tissue is **quicker to fatigue** and more prone to **spasms and strains**,

resulting in **myalgia**. When areas of muscle become painful, 'fresh' areas of muscle are then used. More and more areas become stressed and sore as the burden shifts around, the body adjusting its posture in an attempt to avoid/minimise the pain.

If not corrected ⇒ imbalance leads to further imbalance.

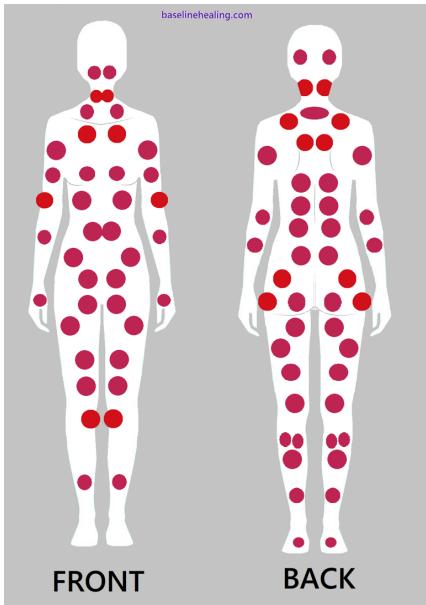
Widespread myalgia occurs with an imbalanced body.

There is a tendency towards a pattern of distribution of the wrong muscle areas and the associated adaptations (*see below*) of the body, which are what I believe are the basis of the "tender points" associated with a 'diagnosis' of fibromyalgia (*see below*) are.



location of some of the tender points traditionally associated with fibromyalgia.

From personal experience I say these documented tender points are the early indicators of an imbalanced body and many more tender points develop (*just about everywhere eventually!*) if the underlying issue of imbalance and misalignment is not rectified.



There's only so many dots I can add to a picture. Illustrating widespread tender points and pain after years of physical imbalance and misalignment.

(Time for a small interlude.)

Some Thoughts on Bones and Joints.



Historically, the skeletal system has been considered the basis of the body. Bones remain, long after we have gone, but it is our main muscles that 'do the work' - that [create our posture](#). That allow us to move.

Stressed muscles 'pull' on the bones they attach to, causing pain that is often misinterpreted and misdiagnosed as a problem with a joint.

Bone Imaging.

Radiographs provide clear images of bone in living patients. It has become habitual to focus on bones and joints because we can see them on an X-ray and 'diagnose' a problem. Muscles and connective tissue are not so easily imaged and consequentially, not so considered.

Changes to the surface of a bone (*roughening, remodelling, osteophyte spurs etc.*) provide a visual abnormality for doctor and patient to focus on. But **WHY** have they occurred? Bone is a comparatively inert body tissue (*bone marrow is active*) and these changes take time to develop. Although they may become clinically significant, bony changes should be considered a symptom of a problem not the primary issue, and should not be used to 'explain the pain' without supporting evidence.

- ◊ "Traction spur" osteophytes occur where muscles attach to bone. They indicate a long-term problem where a muscle (*via its connective tissue attachment*) is pulling on its periosteal attachment causing the periosteum to react.
- ◊ Osteochondrophytes occur at the cartilage-bone junction, in response cartilage damage. This can be due to acute trauma, but more commonly is "wear and tear" (*degenerative joint disease, osteoarthritis*). Are osteochondrophytes also due to long-term misusage of the main muscles of movement?

An MRI after rock-bottom was comforting. A sense of relief at having evidence of physical damage and that the pain wasn't just all in my head but when I evaluated my MRI I could see the pathology was old - I'd been living it with for years. It was not an explanation for all the pain.

Back Pain.

Studies have shown there is little correlation between pain levels and findings on imaging the spine (*I exclude acute trauma and nerve impingement*).

Further reading:

[Clinical guidelines lower back pain](#) - includes references to various studies.

[MRI and X-Ray Often Worse than Useless for Back Pain](#) - An article worth skimming through.

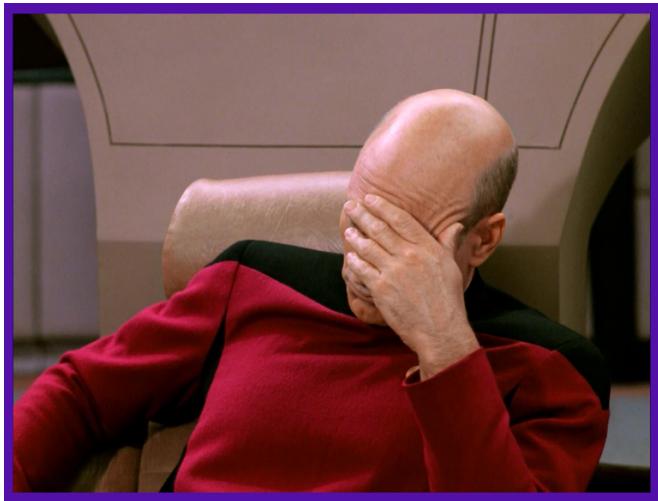
With "back-pain" our attention is drawn to the spinal column (*vertebrae*) because:

Fear of the consequences of spinal cord damage.

Imaging often provides something to look at.

Our vertebrae are there to protect the spinal cord. They are NOT a stack of blocks that keep us upright.

I've seen back pain attributed to the "rapid" evolution of humans - the suggestion that our ability to walk on two legs developed too fast and our body didn't adapt itself to bipedal movement.



*A face-palm thought now that I understand the importance of the '**five main muscles of movement**'!*

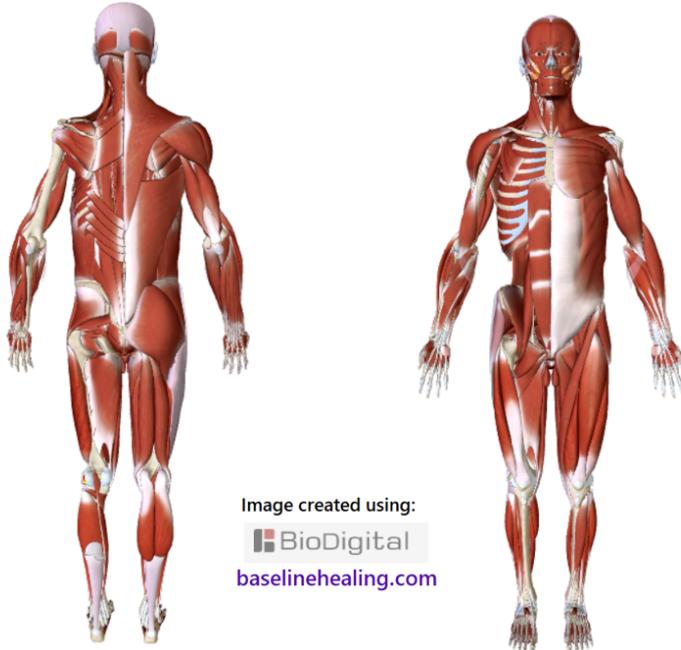
Non-specific Location of Pain.

We tend to use our joints as reference when talking about pain, umbrella terms covering a section of body. "Oh, it's my knee." or "It's my shoulder."

But where is the pain? The joint itself, or the surrounding connective tissue and muscles?

Is the pain always in the same place? Or does the exact location shift around? Even if it's still your 'knee', or your 'shoulder'? [Examine your pain.](#)

The human muscular system is complex.



Right side - first layer of muscles in-situ.

Left side - first layer of muscles removed.

Get to know your body better.

More of my thoughts on a new perspective of modern health [here at discussion/baselinehealing.com](http://baselinehealing.com)

Base-Line Theory of Human Health and Movement (Part 5):

Physical restrictions in the body:

- Reduce range of movement.
- Cause stiffness.
- Apply tension.
- Generate sensory feedback → pain and weird sensations.
- Add to imbalance.
- Increase misalignment.
- Affect the way we move and act.
- Are 'stored trauma' .
- Can be palpated in subcutaneous connective tissues when large enough. (*Felt below the skin*). Lumps, bands, thickenings.

Many others have noted physical restrictions on the body using various terminology ('*fascia*' is popular). I use the covering term 'connective tissue' (see notes below).

Connective tissue: *The stuff that surrounds and links all the other bits of us.*

Physical restrictions form in 'connective tissue' because of:

1) Trauma, Inflammation & Tissue Repair.

The involvement of 'connective tissue' in inflammation and the healing process are well documented (*but still subject to research*). The healing process is complex (*fibroplasia, granulation, collagen deposition etc.*), involving the creation and cross-linking of **collagen fibres** the main component of connective tissue. (see notes below).

Traumatic injury causes affected tissues to get 'sticky'. *Tearing of tissues/vascular damage, leakage, inflammatory factors etc.* Wounds "contract". Physical restrictions form e.g. scar tissue, surgical adhesions.

Main injuries (*whatever's bleeding or broken*) are treated, but the effects of trauma can be widespread. e.g. an impact shock radiates throughout the body - micro-tears and micro-restrictions leave an 'imprint' of the 'max-stressed position', effectively 'storing the trauma' on the body.

The body tries to avoid pain (*signals saying: watch it! protect!*) by making adjustments above and below the injury - *twists, kinks, tilts and compressions*. This maintains a 'functional posture' but increases the body's misalignment and imbalance.

Inflammation is a topic too complicated for me to cover in detail. (Here's one [article](#) as a starter). Inflammation can be caused by many things - **infection (viral, bacterial etc), auto-immune (allergies etc.), toxins etc.** but whatever the cause:

Inflammation causes connective tissue gets sticky =
physical restrictions in the body.

Addendum : November 2020. Excluding recognised damage to organs (lungs, kidneys etc.), how many of the clinical signs of "long covid" are the result of body-wide inflammation and changes in connective tissue? There is a lot of over-lap with fibromyalgia (see below).

2) Restrictions as the Body Adapts to Imbalance.

If the main muscles of movement are not adequately functioning the body lacks their central support. In an attempt to compensate, physical restrictions form in connective tissue, 'reinforcing' areas under stress.

Physical restrictions may not be noticed at first. *Like a few loose sticky plasters all over, then maybe a few tacks up and down the body, then ropes and glue and nails ...*

If imbalance is not corrected, more and more restrictions develop, forming chains of misalignments spread throughout the body. **The body stiffens.**

Micro-restrictions become macro and range of movement severely limited as connective tissue becomes a restrictive scaffold.

If not released, physical restrictions = stored trauma.

Tensions, Pain and Weird Sensations.

Along with the myalgia of imbalance, tensions from the physical restrictions generate sensory feedback resulting **widespread pain** and **weird sensations** that can occur from head to fingers to toes, along affected 'patterns'.



Pain comes in many forms.

Body Threads & Patterns.

Imagine a unique multi-threaded 'pattern' for every possible position of the body. (*On what scale? - Arrangement of muscle and collagen fibres (see below).*) Each pattern consists of threads running to the arms, legs and head connected via a central 'control board' - the rectus abdominis muscles.

When the body has a [full range of natural movement](#) all threads of each pattern are free to fully extend and can be perfectly overlaid onto the [body map in our mind](#).

A physical restriction on a thread may exert tension anywhere on the whole pattern. Movement of one part of the body affects other parts - pulling on a thread and applying tension. This generates pain / weird sensations anywhere along an associated thread and at the ends of the pattern - a stabbing pain, a sudden itching, tinnitus. Widespread symptoms - a bunch of threads "generalised pattern" to localised - threads (acupuncture points?).

myofascial meridians.

Regaining a full range of natural movement is de-kinking all the threads throughout the body from center to ends. *The body is a bundle of threads. Are they tangled, knotted or free to fully extend?*

The relevant section of the rectus abdominis needs to be engaged to support the 'shaking out' of the body, releasing restricted tissues from middle outwards to work towards an ideal pattern - the ideal posture.

Releasing Restrictions.

When an injury has healed the body should regain a full range of natural movement by releasing restricted tissues and 'resetting back to baseline healthy', if not then **cumulative damage = trauma stored on the body.**

I've come across various therapies that release physical restrictions - "myofascial release" appears to be the commonest term these days.

Self healing is possible.

I worked though and released the physical restrictions by:

- Working from my [Base-Line](#) muscles.
- Developing my sense of [conscious proprioception](#).
- Instinctively feeling how to move through and release the physical restrictions.
- Constantly moving, working through the tensions to regain my full range of natural movement.
- Letting go. Relaxing. Letting the tensions work their way out.
- Working towards aligning my body. Imaging a ribbon from pelvic floor to back of the head. Full extension, smooth ribbon is alignment.

Physical restrictions: I have felt 'releases' - pops, cracks, kruppals all over. I have seen them, I have heard them. Working through the pain and tension. Slowly regaining my natural range of movement, guided by my Base-Line.

The sounds and sensations of releasing restrictions might be scary at first - a noise, a twinge, a shock - but they FEEL RIGHT. **Never force anything.**

As I released physical restrictions I had mental releases too. A session of movement, using the roll down, working from my Base-Line and moving as felt good. Experiencing the physical releases, then feeling a build up of stress, flashes of trauma - memories and emotions that also needed to be released --> a melt-down, crying, screaming, feeling my face writhe as the tensions worked themselves out. The deep sobbing extending my Base-Line, my body unwinding and some stress being released. (physical restrictions a component of PTSD? 'physical memories'). anger, fear, self-loathing ... Experiencing my issues and then the details were gone, history. A sense of calm afterwards. Learning to let the releases happen then let them go. No longer embarrassed or ashamed of being a mess. Knowing I was making progress..

The mind-body wants to heal and return to a state of balance and alignment. Made possible when the central framework of the main muscles of movement is active.

Healing involves releasing the restricted tissues and regaining a full range of movement - including returning to positioning of trauma. Relive to release, working from Base-Line to alignment.

Idiopathic Pain Conditions.

*Idiopathic: "Describing a disease or condition **the cause of which is not known** or that arises spontaneously"*

Idiopathic = No known cause = No known cure.

Fibromyalgia is the current favourite label for a collection of clinical signs and pain-related symptoms that are (currently) idiopathic, but "fibromyalgia" is not a diagnosis, or an explanation for the all the pain and weird sensations that a sufferer experiences.

Current Research into Idiopathic Pain Conditions.

Modern research tends to focus on breaking things down into smaller and smaller parts. We have gained a lot of knowledge (*and confidence*) by taking this approach.

A good understanding of cellular function and the chemistry of our bodies has allowed the development of effective treatments for many conditions.

The ability to find small differences in our DNA is an amazing feat of human innovation and technology, continually advancing our understanding of genetic conditions.

We look deeper and deeper into micro-levels of how our body works (*the physics of biology and chemistry*) looking for an explanation for all the pain - trying to find 'abnormal' physiological commonalities between patients in pain, and then finding a chemical that will change them. But looking for subtle biochemical changes or nerve dysfunctions to explain fibromyalgia and other (*currently classified as*) idiopathic pain syndromes will not be successful in my opinion.

We should consider the whole.

We are interconnected from head to fingers to toes.

Macro-dysfunctions.

When the body becomes unbalanced and misaligned it is a "macro-dysfunction" - a problem with the whole. Which, without correction, will continue to worsen.

Somewhere sore, stressed, injured --> pain --> damaged tissues --> physical restrictions --> reduced movement --> tension --> imbalance --> misalignment --> sensory feedback saying "problem" --> pain --> weird sensations --> fear --> restriction --> stiffness --> tension --> pain --> fear --> anxiety --> depression.

I believe only when the [main muscles of movement](#) are fully utilised and the body is dynamically [aligned](#) can the [myalgia of imbalance](#) and tensions of [physical restrictions](#) be ruled out as the cause of otherwise unexplained pain. But how does an imbalanced body and physical restrictions in connective tissues explain the myriad of weird sensations and pain-related symptoms - different for every individual sufferer but with commonalities that can be grouped into progressive stages of dysfunction and patterns of symptoms?

Individual Trauma Imprints & Stored Trauma.

Where physical restrictions form is directly influenced by what a body has been subjected to. An individual's life experiences. A physical record of what the body

suffered, creating our unique 'individual trauma imprint' and with it a unique collection of pain-related symptoms.

Every trauma (injury, inflammation, stress) leaves an imprint in connective tissue (scar tissue, surgical adhesions are well known examples). This alteration to connective tissue causes a restriction -a stiffening, a reduction in movement (may be on a microscale so not noticed - the body is very adaptable).

A trauma imprint is released if a body returns to a full range of movement, otherwise it becomes '**stored trauma**'.

Stored trauma applies tension along the specific pattern the body was in at the time of trauma. e.g. an impact shock radiates throughout the body - micro-tears and micro-restrictions leave an 'imprint' of the '**max-stressed position**', effectively storing the trauma on the body. (?component of PTSD) "memory of the stress".

As the body adapts to the effects of misalignment it becomes more restricted - imbalance leads to further imbalance. A growing list of niggles, aches and pains. Residual effects from old injuries, a growing list of complaints over time. 'Patterns' of symptoms develop according the gross patterns most affected by physical restrictions (myofascial meridians etc.)

My Experience of 'Fibromyalgia'.

From:

(New Latin) fibro ≈ of fibrous tissue + (Greek) myo ≈ muscle + algos ≈ pain

The pain and tension of an imbalanced and restricted body.

Constant pain. A whole list of things that are poorly explained. Symptoms that come and go and then come back again. Worse and worse over time.

The foot spasms, shin splints, sore knees, pulled hamstrings, pelvic pains, chronic 'bad back', abdominal pains, sore ribs, burning shoulder, stiff neck, crunching jaw, headaches ... The random shocks, spasms, sudden intense itching, stabbing, biting and gnawing sensations. The chest palpitations, abdominal 'pulsing', restless legs, eye twitches, white fingers, numbness, sudden extreme fatigue feeling and pins and needles in my arms and legs.

I had no idea how stiff and restricted my body was. No idea the physical pain was the cause of my depression and emotional issues. They had always felt like a fault with "me", that I was a failure. I doubted my pain, myself, my abilities. I shutdown, I hid. My emotional issues have been released during my physical recovery. Stored traumas - finally healed.

Baselinehealing: [Fibromyalgia - textbook symptoms and my explanations.](#)

My comments on Fibromyalgia.

Baselinehealing: [An explanation for the symptoms of fibro.](#)

To those with 'fibro':

- A diagnosis of fibromyalgia may be a recognition of your suffering, but it is a label - not an explanation.
- Medications may mask some symptoms but won't cure the pain.
- Imbalance is a **physical problem** that affects body and mind.

Ask yourself:

- How is your physical condition?
- Is your posture (the positioning of your body) good?
- Does your body feel balanced and comfortable?
- Is your body free of tension? Or can you feel areas that are stiff and restricted?
- Do you move well?
- Do you have a full range of movement?
- Can you achieve physical alignment?

What to do:

Find your [Base-Line](#) and develop your sense of [conscious proprioception](#) - **Feel how to heal**.

- Get to know your body. Keep notes. Look for patterns. Acknowledge your pain.
- Don't expect someone else to fix you. *They won't.*
- This is a do-it-yourself approach.
- Keep moving. Movement and releasing of physical restrictions is why tai chi, yoga, and other exercises do help -when you are using the **right** muscles.
- Be aware how the pains and weird sensations move around your body as you move. We are interconnected from head to fingers to toes and restrictions in one area can have distant sensations.

To clinicians:

Look for imbalance. The body misaligned, tense, restricted and in pain. A holistic approach to a macro-dysfunction.

The clinical presentation of myalgia due to imbalance is variable, influenced by:

- The sufferers biggest concerns - what they are currently most worried about. The primary complaint/s versus symptoms that get ignored, classified as not so serious or are so chronic they are barely mentioned. *People can get used to a lot of pain.*
- Duration of dysfunction. Symptoms will only spread and worsen over time if the body is imbalanced.
- An individual's trauma imprint - what the body has been through. The stored trauma of a patient's life-experience. (*see above for more details*)
- The quality of history-taking and clinical exam performed.

As a starting example: The [nuchal ligament](#) is an easy accessed piece of midline anatomy - 'our secondary guide for alignment' but an easy first check for alignment. The nuchal ligament should be easily palpated when the [trapezius](#) muscles are free to fully move. If not - the body is imbalanced. How many clinicians give the nuchal ligament much/**any** consideration?

The End (of the main section of this post)

[Base-Line Theory of Human Health & Movement.](#)

The following is some extra notes:

[Simple notes to maintain my sanity. There's much more information out there if you are willing to go down the rabbit hole of research and if anyone has thoughts to add I would love to hear.]

Connective Tissue.

Connective tissue surrounds and connects muscles and bones, suspends internal organs, runs through those organs and wraps around individual cells - it's everywhere!

A body-wide web of fibres throughout the body.

There are many types of connective tissue - varying in composition, organisation and scale. The differentiation and delineation between 'connective tissues' isn't always clear. I include the extracellular matrix (see below) in my thoughts.

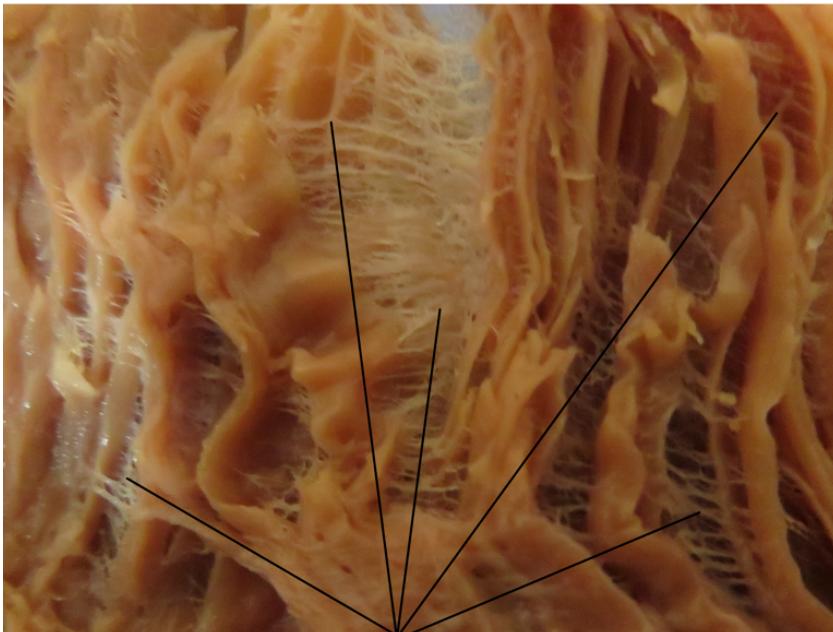
Connective tissue:

A spectrum of fibres, cells, water - from solid and tough to fuzzy and goo.

For example, **connective tissue runs through and around every muscle:**

- Every single muscle cell (*muscle fibre*) is surrounded by connective tissue called endomysium.
- Muscle fibres are grouped into bundles surrounded by connective tissue called perimysium.
- Then the whole muscle is surrounded by more connective tissue called the epimysium.

Close up view of muscle tissue being pulled apart.



Strands of connective tissue are everywhere.

Bone:

- Bones are surrounded by a membrane of dense irregular connective tissue called periosteum.
- Bone matrix is a collagen scaffold for the deposition of bone minerals.

Soft tissues:

- reticulin is the supporting meshwork in soft tissues such as the liver and bone marrow. Formed from the cross-linking of collagen III fibrils (*fibrils see below*) named 'reticular fibres' .

The broad classification categories for connective tissue are:

Dense or loose - *Solid or soft. Depending on the amount and type of collagen.*

Regular or irregular - *whether the collagen fibres arranged in parallel or not.*

- Irregular connective tissue (*loose and dense*) is found mostly layers of the **dermis** (*skin*) and adipose (*fatty*) tissue - surrounding and enveloping the rest of the body.
- Specialised connective tissue includes **tendons, ligaments, aponeuroses, cartilage, fascia, bone, teeth, meninges, pleura, peritoneum, pericardium** etc.

The **linea alba**, **nuchal** and **supraspinous ligaments** - our midline linear guides for alignment - are connective tissue.

An APONEUROSIS (thin sheet of connective tissue).

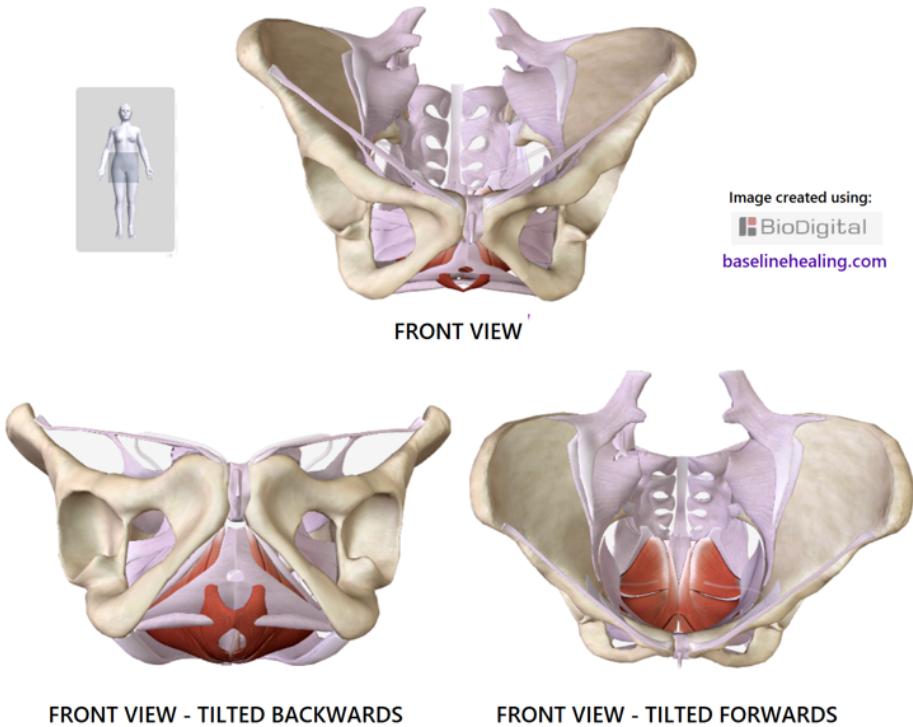


Examples of connective tissue - this is a tough, thin sheet known as an aponeurosis.

Connective tissue runs through the body grossly organised in myo-fascial meridians. Well illustrated by the "anatomy trains" series of publications (*go-oogle images to see these layers of the body illustrated - fascinating stuff if you've not thought about how you are put together before.*)

Connective tissue structures are complicated - and very prone to pain. For instance the pelvic region. The image below shows the pelvic floor muscles and surrounding connective tissues. Much of the connective tissue attaches to the sacrum and lumbar spine (*not shown*). Pain in this region is common, both in the muscles and from connective tissues.

FEMALE PELVIS
BONES, PELVIC FLOOR MUSCLES AND CONNECTIVE TISSUES



Connective tissue structures of the pelvic region. (Some complicated anatomy prone to pain and strain).

Connective tissue can be thought of as a body-wide web of collagen fibres.

Collagen - some notes.

Collagen is the most abundant protein in the body. 25-35% (*figures vary between sources*) of the body's protein is collagen.

a major structural protein ... protecting and supporting the softer tissues and connecting them with the skeleton. Twenty-eight different types of collagen have been identified in vertebrates. [Source.](#)

Collagen is the major insoluble fibrous protein in the extracellular matrix and in connective tissue. 80 – 90 percent of the collagen in the body consists of types I,

II, and III. [Source](#). (Out of date on the number of collagen types but a good grounding in collagen.)

Collagen consists of

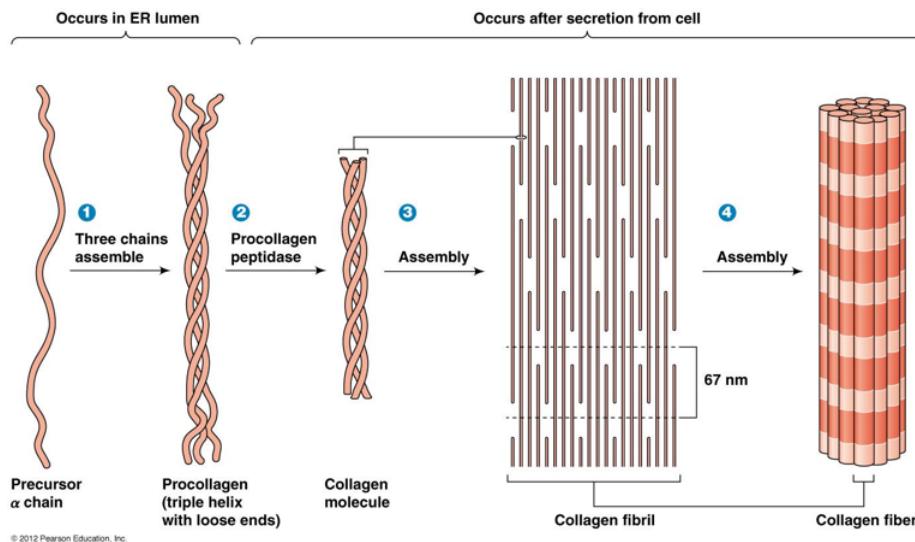
collagen fibres which are 'ropes' made from covalently bonded strings of

collagen fibrils which are bundles of

collagen molecules which are **triple-helices** of

polypeptides (α chains) which strings of a repeating sequence of 3

amino acids 'twisted' around each other.



The 3 amino acids (*the building blocks of proteins*) determine the type of collagen. Most collagen in the human body is type I where the amino acids are 'glycine-proline-hydroxyproline' that form a tight triple-helix that form 'straight' fibrils that bond well to create strong collagen fibres.

Extra-Cellular Matrix (ECM).

Links to : [concepts of ECM](#) , [khan video](#) - complexity and research regarding ECM.

Collagen is the most abundant fibrous protein within the interstitial ECM ... Elastin and Fibronectin [source](#) - stiffening etc.....

Micro-Components of Positioning.

muscle fibre = myocyte = a single muscle cell: Diameter 10 to 100 μm (*micrometre*) [source](#). And what is the width of an intra-cellular filament in a muscle cell? IDK

The width of a collagen fibre: Diameter 1 to 20 μm (*micrometre*) [source](#).

Threads - fibres - to be straightened and aligned on the ideal pattern of the body.

The arrangement of muscle fibres, collagen fibres. are they aligned for a full range of natural movement. The width of a collagen fibril. A collagen molecule. How small to go?

Not so random last words - if you've made it this far - thank you - I'm just not sure what to do with the following:

Restrictions: Protein fibres. Bonding, cross-linking, like velcro?

arrangement of collagen, elastin, fibronectin ... Alignment of fibres...

Proteoglycans - Large molecules consisting of a core protein with one or more covalently attached glycosaminoglycans (GAG).

Are you balanced and aligned?

Physically and mentally?

[What do physical alignment and body balance mean?](#)

Chakras & Qi - Old Stories for the Base-Line Experience. Improve your physical & mental health by connecting body and mind.

Epistemic status: Based my [experiences](#), a simple explanation for some very old ideas.

The connection between body and mind. [Conscious proprioception](#), using the [main muscles of movement](#), seeing the sparkles, feeling the power of the human body when it is used correctly.... qi, chakras...

Chakras.

"Chakra" is probably the most well-known terminology in English for a concept that appears in many traditions. I remain vague about 'many traditions' (*my knowledge is insufficient to comment*) and I include no definition for "chakra" but the existence of chakras is a topic that appears to split people (*who have an opinion on the topic and inhabit the online world*) into two camps - those who talk of chakras as if they are real phenomenon and those that say it all sounds like nonsense. *Is that a fair assessment?*

My First Thoughts.

When I started working with my **Base-Line** - focusing on activating my pelvic floor and rectus abdominis muscles, section by section from pubic symphysis to chest - I found myself thinking 'red, orange, yellow, green ...' as I engaged these muscles and the concept of chakras came to mind.

Research.

I would classify my starting 'knowledge' as almost zero. I've seen the typical posters (*go-ogle images*) but I've never been to a yoga class and don't even have another example of where I might encounter chakras. (Nov. 2021 I've now been to a yoga class - no mention of chakras!)



For illustrative purposes only!

I went looking for the original source of chakras (*internet trawling*).

Reading the blurbs from a couple of 'classic' chakra books instinct/rational thought said to me this is not the right path/*seems like a load of BS* and most information that appears via go-ogle is an echo-chamber - energy centres, meditation, blockages, symbols, colours ... *It gets flaky fast.*

I did however deem a couple of articles bookmark-worthy at the time:

- [hinduism/concepts/chakras](#). A couple of lines that stood out:

chakra or cakra has multiple meanings.

The earliest known mention of chakras is found in the later **Upanishads**, including specifically the Brahma Upanishads and the Yogatattva Upanishads.

I stopped reading at the "seven basic chakras". *I had neither the time or need to read.*

I skimmed the Wikipedia page and a couple of other sites for information on the Upanishads. I came across: [Introduction to The Upanishads](#) (*I haven't read them - text starts here*).

- [Tantrik studies](#): Makes some interesting points on how chakras are portrayed and the modern associations with them. A few lines:

... books on the chakras based on sound comprehension of the **original Sanskrit** sources so far exist only in the academic world.

There's **not just one** chakra system in the original tradition, there are **many**.

The chakra systems are **prescriptive**, not descriptive.

Assessment.

- The concept of "chakras" originate in texts called The Upanishads.
- The original texts are written in Sanskrit a long time ago.
- "chakra" has multiple meanings.
- There are many "chakra" systems described.
- The chakra systems are prescriptive, not descriptive. *Use the word 'imagine' before the details...*

I can't read Sanskrit so all information available to me is a translation. Translations are subject to interpreter error and whim. Most information available is an echo-chamber from a couple of 'classic' translations. I haven't found a source I would consider reliable.

The modern presentation of 'chakras' appears to be both simplified and elaborated.

Qi, Prana.

Chi, Ki.

Many labels when I was searching for a definition. A feeling of vagueness, something there but not solid. An experience, a sensation?

Qi translates as "air" and figuratively as "material energy".

Prana - breath, vital force forming part of any living entity.

(*I've no more words to pad this bit out...*)

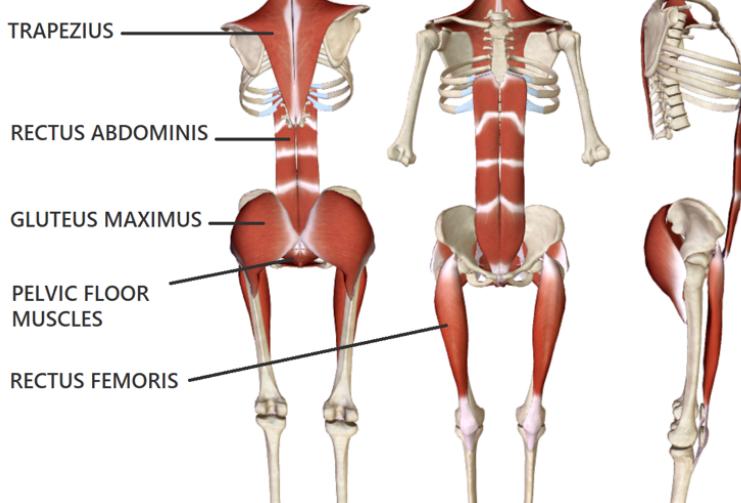
My Rationale on Chakras and Qi.

I believe these concepts are all trying to describe the sensory experience of **conscious proprioception** and the strength and power of the body when the '**main muscles of movement**' are fully engaged.

Image created using:



baselinehealing.com



THE 5 PAIRED MUSCLES THAT ARE THE MAIN MUSCLES OF MOVEMENT

Back, front and side views.

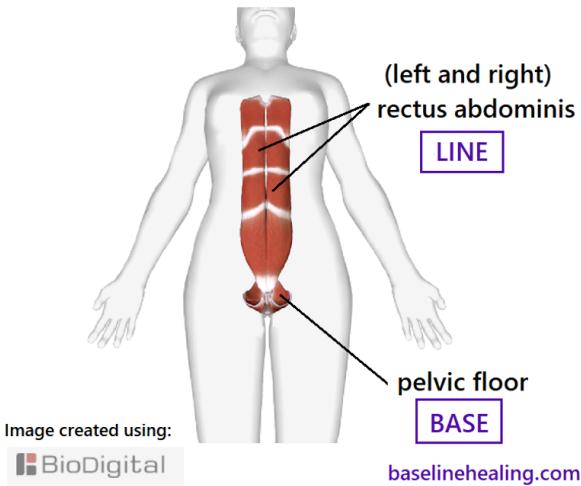
Chakras, Qi etc. - words trying to guide us in how to use the body correctly.

Describing/prescribing the experience of the body functioning at optimal, dynamically balanced and aligned. *Appropriate presentations for their time, not details to be memorised and regurgitated.*

When the body is balanced and free of tension, the mind is quieter/calmer/clearer. Enlightenment is now the word I want to use. I feel better than I ever have - more balanced, connected, relaxed.

Something to be felt to be understood.

The Body's BASE-LINE muscles.



All you need to start doing:

Breathing with your Base-Line

The fundamental step to work on the connection between body and mind, everything stems from Base-Line.

I would be very interested to compare the original words in the Upanishads to the main muscles of movement and all associated connective tissues (bones, cartilage, ligaments, tendons, aponeuroses ...)

Prescriptions of chakras = mind's awareness of our anatomy = visualising shapes and attachments of the relevant anatomy. ([Easy intro. to the anatomy](#)).

The following is me having a 'guess' at what's what (a work in progress but the details aren't important, it's the experience that counts):

Pelvic floor muscles = "root chakra". The pelvic floor a crescent on midline. The muscles are 'petals'.

The "7 chakra system" - working up the rectus abdominis and trapezius muscles. The panels of muscle of each rectus abdominis separated by the tendinous intersections and linea alba. Attaching to the ribs, linking to the trapezius muscles. The trapezius six functional sections - triangles and horizontal strips. The shape of its attachments to the skull via a lamina of connective tissue. __

The [linea alba and nuchal & supraspinous ligaments](#) a string from 'head to tail 'that should be felt to fully extend and align.

I imagine a strong ribbon that runs through the body from pubic symphysis of the pelvis to external occipital protuberance at the back of the skull. The ribbon should be able to flex and rotate at every level without crumpling, the rest of the body extending from our central core.

The aponeuroses that sandwich the muscular tissue of each rectus femoris. The gluteus maximus muscles balls of muscle connecting the legs to the torso

Energy.

How would I describe the sensory experience of proprioception - the awareness of the position, motion and balance of my body? (*An introduction to [my experiences](#).*)

I've gone with '[sparkles](#)' but "energy" seems a reasonable description of what I feel and visualise about the position and condition of my body when working from Base-Line. Seeing my anatomy in lights and colours, a constant flow, a buzz ...

- - -

We are electro-chemical beings, a constant movement of ions and electrons.

{A thought experiment: *Think of electrons as positive, protons as negative. Does it change your perspective at all?* }

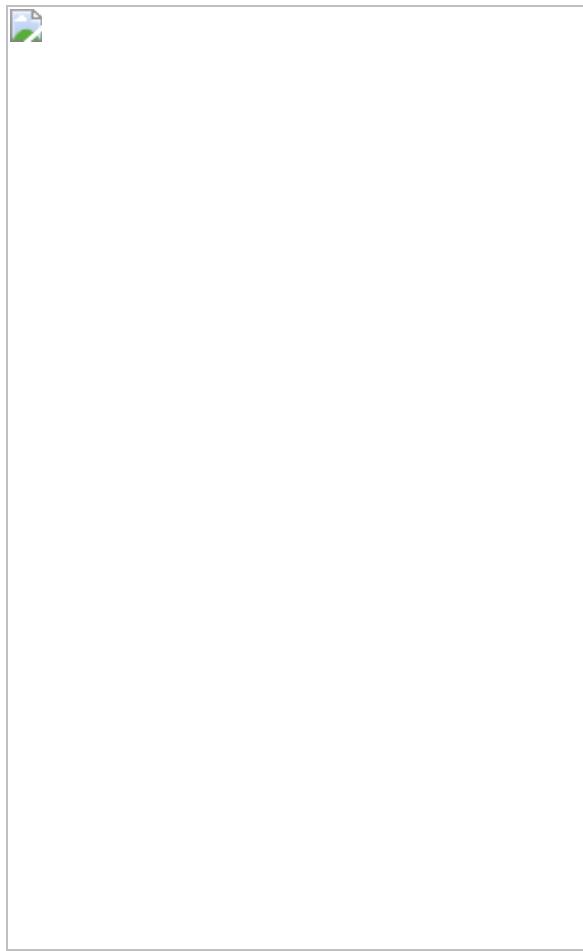
Somewhere along the line I started to think: proton-electron ~ yin-yang. Random maybe but I feel the need to include the comment here.

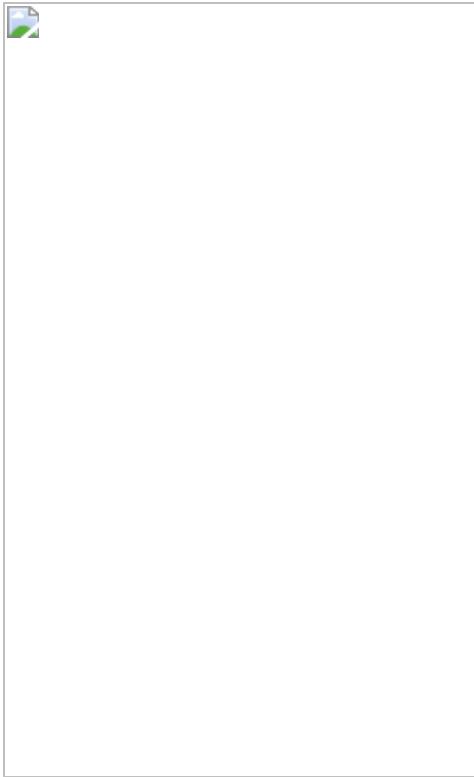


Now with my returning full range of movement I can move my head and hips picturing this configuration.

Smooth and unrestricted through a full range of movement, changing direction in any position. An easy flow of a balanced body.

Or maybe a strange attractor is a better illustration of a full range of movement.





Blockages In Energy.

I believe "blockages in energy" are [physical restrictions](#) on the body.

Physical restrictions reduce range of movement and affect the sensory feedback, leaving 'blank spaces' and misaligned signals on the [body map in the mind](#). Releasing the restrictions allows the sparkles to be experienced - the 'energy' to flow.

Focus on your [Base-Line](#) muscles.

See what you experience.

It's that simple - if you give it time and thought.

[baselinehealing_chakras & Qi](#)