

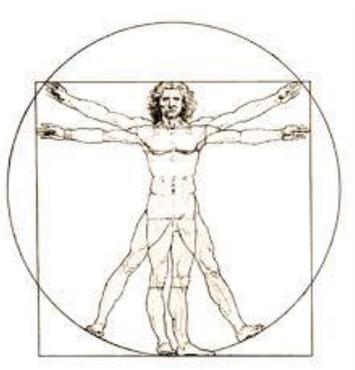
Movement Terminology

The language of movement is designed to allow us to describe how the body moves through space.

In exercise it allows us to communicate with other movement professionals so we can describe movement in a common language. This helps avoid confusion, as we are all speaking with the same frame of reference.

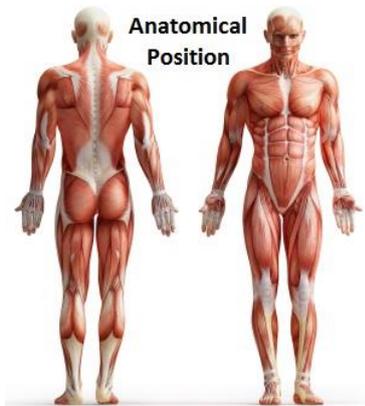
The basis of this frame of reference is the Anatomical position, famously used by Leonardo Davinci

in his drawing The Vitruvian Man.



The anatomical position is slightly different to the Vitruvian Man in that the arms are closer by the side of the body, but everything else is essentially the same.

This position, standing straight, arms by the side, palms forward is the position we base all movement description from this reference point.



FLEXION

Is the when a joint bends to decrease the angle between two bones.

Example: Elbow flexion, or doing a bicep curl creates a flexion movement at the elbow joint where the humerus and ulna join.

In the picture below the starting position is essentially in the anatomical position. The only joint moving in a bicep curl is the elbow, specifically called elbow flexion on the up phase.



Flexion is also used commonly at the Knee, such as in a lying leg curl, which uses the hamstrings to bend, or flex the knee joint.

Extension

Is the opposite of Flexion, it describes when a joint straightens, or when the joint angle increases between body parts.

For example when we reach out to pick up that all so essential morning cup of coffee, our elbow goes into Extension, being the ulna and humerus joint angle increases.

When we stand up our knees go into extension, and when we kick our leg out backwards this places the hips into extension.



In the above picture of the bridge, the hip is going into extension during the up phase.

Abduction and Adduction.

Abduction describes movement away from the centre of the body, where Adduction describes movement toward the centre of the body.

An example of abduction is a lateral raise, where the arms are raised out to the sides, this is called shoulder abduction as the joint being moved is the shoulder itself.

Our hips also abduct, as seen in side to side walking.

When thinking about abduction movements remember “Abduct”, as in to take away.

Adduction is the opposite of Abduction.

Adduction refers to movements towards the midline. So when lowering your arms from the lateral raise position you are adducting your shoulder.

The hips will also adduct, if we go back to our side to side walking example, the hips adduct when we bring our feet back together.



Above we have a fantastic exercise to promote hip abduction. Lateral walking with a resistance band really helps promote hip abduction as the legs move laterally

Rotation

The body has two distinct rotation movements, being internal and external rotation.

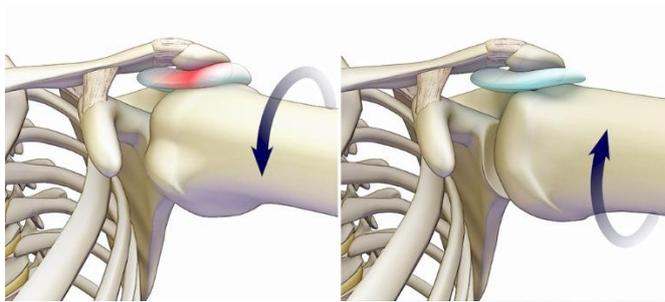
These rotation movements occur around the two big joints of the body, the shoulder and hip.

Internal rotation describes when the humerus turns medially. From the anatomical position, the arms will roll inwards, if you watch the position of the thumb you will notice it goes from the outside, to the inside.

Internal rotation at the hip will turn the entire leg medially, or toward the midline. If you watch the patella you will notice that it turns in.

External rotation reverses internal rotation, both at the hip and shoulder.

Sometimes it's tricky to work out the actual movement, especially when the knee or elbow is flexed. The key thing to do is to carefully observe where the humerus or femur is, as the rotation movement occurs at those joints.



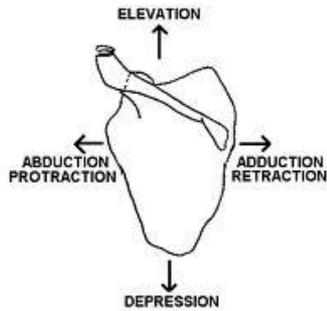
Here we have shoulder Internal rotation (left), and then Shoulder External Rotation (Right)

Elevation and Depression

Elevation is the movement of a superior or upward nature, like raising your arm overhead or shrugging your shoulders.

Depression is the opposite of elevation and describes a downward acting movement.

Most commonly when talking about the human body in movement Elevation and Depression relate directly to the scapula, being Scapula Depression and Elevation.



The above scapula showing 4 of its primary 6 movements (protraction and retraction not shown)

Dorsiflexion and Plantar Flexion

Dorsiflexion and Plantarflexion are specific terms used to describe movement at the ankle, or more specifically the Tibia – Talar joint.

Dorsiflexion is the movement which decreases the angle between the dorsum (superior) aspect of the foot and the Tibia (shin).

Dorsi = the back surface of a body part of organ

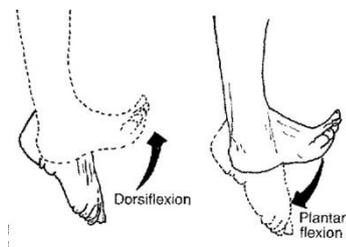
Flexion = decreasing the joint angle

When running the foot Dorsiflexes to allow the foot to clear the ground during the swing phase.

Plantarflexion describes the movement of the foot away from the shin or Tibia, such as standing up on your toes.

The Plantar surface is used to describe the bottom of the foot, or sole.

A common exercise that produces Plantarflexion is a standing calf raise.

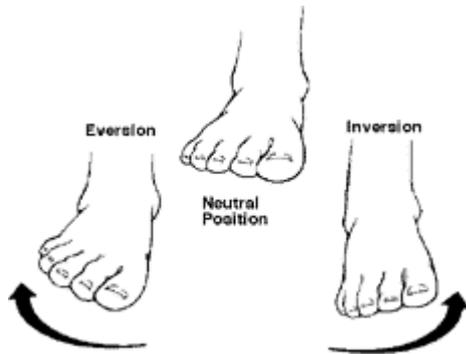


Inversion and Eversion of the Foot

Inversion and Eversion describe the movement at the Talo – Calcaneal Joint. This joint sits just beneath the ankle joint and is responsible for the side to side rolling action of the ankle.

Ankle Inversion describes the movement of the Sole toward the midline, or the big toe rolls in toward the middle.

Ankle Eversion describes the movement of the Sole of the foot outward, so little toe rolls to the outside.

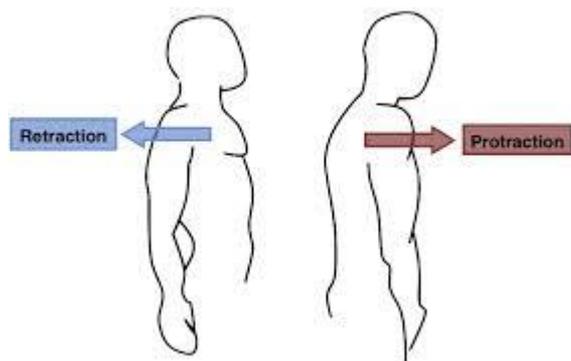


Protraction and Retraction

These two movements describe the forward and back movements of body parts, especially relating to the scapula and head.

Scapula Retraction is when the scapula pulls back along the torso, where Protraction is where the scapula slides forward.

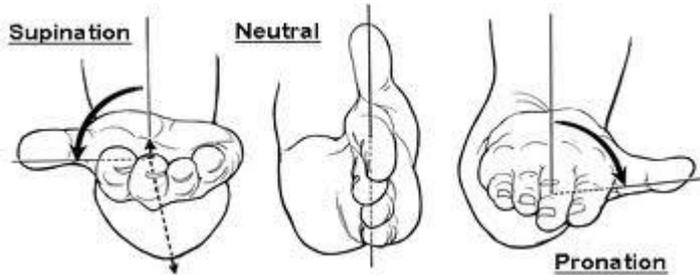
During a pushup the Scapula will protract forwards to assist the Pecs in pushing the body upwards.



Pronation and Supination

Pronation and Supination describe the movement of the forearm, particularly how the radius rotates around the Ulna.

In the anatomical position the forearms are in Pronation, so that the palms are forward and thumbs are on the lateral side. If you were to roll forearm in so that the thumb points toward your body that will create Supination.



Supination and pronation are important movements as they allow for many gripping and rotation movements of the arm.

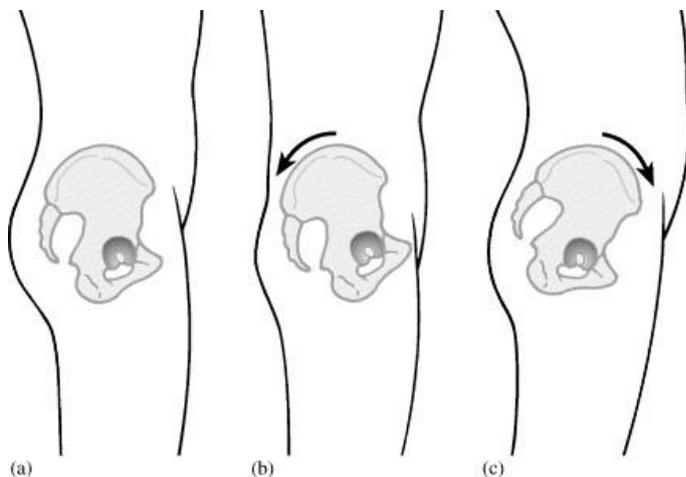
Anterior and Posterior Tilting of the Pelvis

The pelvis is the foundation of the spine, and moves through most movement with a gentle Anterior to Posterior tilting depending on what position you are in.

An anterior tilt is best observed from the side, where you will see the pelvis tilted forward, often creating a lordosis

The Posterior Pelvic Tilt is the opposite, and can be seen when the Pelvis rolls so the lower back becomes flatter.

These two movement are very important for healthy posture.



Here we have three different pelvis positions, a, Neutral b, Posterior Tilt c, Anterior Tilt

Spinal Flexion, Extension, lateral Flexion and Rotation.

The spine comprises 23 bones, off which each joint can move. It is bet to view the spine as a column of interlinked joints that move in unison. An individual spinal joint may only produce small degrees of flexion and extension, but when the entire spinal column moves in integration then this allows for a great deal of movement.

Spinal flexion is when the spinal column rolls forward, like when curling up into a ball. From the anatomical position if you were to roll down to touch your toes then this would be producing spinal flexion.



Spinal Extension is the reverse of Flexion, and is where the spinal column extends, or straightens.

Hyper extension is excessive extension of the spine.

Spinal Lateral Flexion is when the spinal column flexes, or side bends to the side

Spinal rotation is when the spinal column rotate or turns

When we are doning core and abdominal exercises we often use flexion, extension and rotation of the spine. For example a simple situp places the spine into flexion, a bridges creates spinal extension, and Russian twist produces spinal rotations.

