

Posture & Balance

Saturday 24th November 2018 | 10 – 1.30 pm

MATS BLOCKS & WALL SPACE

10.00 Welcome ~ Half hour of Theory

DEFINITION OF POSTURE

- i. Posture is the position in which you hold your body position in space against the force of gravity.
- ii. Good posture is proper distribution of weight around the body causing as little stress to the supporting bones, ligaments, tendons and muscle during lying, sitting standing and walking.
- iii. Good posture allows for efficiency of energy and movement and decreased wear and tear of the joints
- iv. Good posture helps maintain your joints, muscles, and organs in the proper alignment, so they can function optimally against the stress of gravity.
- v. Poor posture might lead misalignment of joints causing friction, degeneration, inflammation, arthritis and pain.
- vi. Poor posture may put pressure on the internal organs causing problems with breathing and digestion which leads to loss of energy & tiredness.
- vii. Poor posture effects our balance making falls more likely.

Muscles can be tonic or phasic. Tonic muscles contract slowly and have great endurance. (Slow twitch). They're also prone to over activity and tend to tighten causing chronic tension. {NTS ~ this is different from strengthening}

Phasic muscles contract quickly and have poor endurance. (Fast twitch). They are prone to lengthening when they are weak. {NTS ~ this is different from stretching}.

Muscle fibers have different directions and contract to pull the body parts in that direction ie the TVA wraps horizontally around the body. The erectors vertically.

As muscles work in pairs, when a tonic muscle becomes too tight and a phasic muscle too weak, this causes misalignment of a joint. A good example of this is in the neck. In FHP where the head juts

forward the postural muscles at the front (SCM) are too weak to carry the weight of the head, and this coupled with the tightening of the muscles behind the head, the whole spine goes out of alignment. And as the spine is our central support structure then the whole body and all the organs are also under pressure. Fixing this can have a massive impact on alleviating joint pain, improving respiration and function of the digestive system, increasing our energy and making us feel and look better.

10.15 Anatomy & Kinesiology – see model

- I. **The Spine** - hollow cylinder bony segments. Protect the spinal cord. Nerves branch out between the vertebrae. Intervertebral discs cushion the vertebrae.
- II. **Cervical** - 7 vertebrae 1 = Atlas = pivoting 2 = Axis = rotation 3 – 7 flexion and extension and lateral flexion movement. Lordotic. (FHP)
- III. **Thoracic** - 12 vertebrae attach to each of the ribs. Flexion extension lateral flexion and rotation but restricted because of the ribs. Kyphotic. The scapula should rest flat against the back ribs.
- IV. **Lumbar** - 5 vertebrae = Lower back. Movement forward backward twisting. L4 - L5 are weight bearing. Degeneration of discs = herniating, most common. Compression of nerves. Sciatica. Lordotic. Talk about core. Only skeletal structure is the lumbar spine. 5 big vertebrae.
- V. **Muscles of the core ~ work from deepest outwards**
 - a. Multifidus ~ deep fibres close to the midline running through each vertebra. This muscle functions with transversus abdominis (TVA) & pelvic floor muscles to stabilize the whole spine and pelvis, and additionally takes some of the pressure off the intervertebral discs.
 - b. Quadratus Lumborum = QL ~ connects the top of the pelvis to the lower rib and can be the source of lower back pain where it becomes a postural stabilizer where the TVA are dysfunctional.
 - c. Psoas ~ connects from T12 through the 5 lumbar vertebrae & pelvis into the inner thigh bone. Its primary function is to flex the hip. It also can become very tight and postural where the TVA is weak. Tightness in QL & Psoas pushes the abdominal organs forward and effects digestion & breathing (respiration).
 - d. Abdominal Organs ~ can be pushed out by tight psoas and QL and weak External Obliques
 - e. Erector Spinae ~ this is a complex group of 3 paired muscles (Medially = Spinalis / Centrally = Longissimus / Laterally = Iliocostalis) and further divided into 3 (capitis / cervicis / thoracis). They run through the whole spine and can be felt

either side of the spine. They hold the spine erect and extend, laterally flex and rotate the spine, and anterior tilt the pelvis.

f. Transversus Abdominus TVA or Trans Abs ~ Deepest muscle that wraps horizontally around the cylinder of the waist like a tube. Stabilizes the spine and support the internal organs.

g. Obliques

a) Internal ~ pull your ribs down and prevent flaring.

b) External These muscles have multiple functions, allowing flexion of the spine, torso rotation, sideways bending, and compression of the abdomen.

h. Rectus Abdominals = RA ~ flex the torso

i. Fat & Skin

VI. **Sacrum** - Triangular Bone. Thickest bone in the body. Fused. Mass of ligaments and fascia. Sacroiliac Joints (SI). Kyphotic. (in flare / out flare).

VII. **Pelvis** - Anterior (forward) Posterior (backward) Tilt. The pelvis can also be adversely rotated. (in flare / out flare). And higher or lower on either side.

VIII. **Thighs** ~ imbalanced in strength

IX. Hamstrings can be tight pulling the pelvis into posterior tilt. Front quad too tight pulling the knee out of alignment.

X. Knees both types of hyper flexion

XI. Feet ~ pronation supination flat footed ness.

Kinesiology

Flexion - closing the joint, moving two bones closer together

Extension - opening the joint, increasing angle between bones.

Axial skeleton -

Appendicular skeleton = movement of joints around the midline = adduction – abduction

Circumduction - movement around a joint.

Scapular elevation depression protraction retraction

10.30

Postural Exercises | Assessing Posture

SUPINE ABS

Given that the TVA is the most important postural muscle in the body, it is usually the one that is least active and rarely prone to over tightness. This will often be due to our more sedentary lifestyles and where we are seated most of the day if we drive and work in an office and watch telly in the evening. This means that the other muscles at the centre take the strain. These would be the QL and hip flexors, that become stabilizers and become short and chronically tight, pulling the lumbar spine and pelvis out of alignment.

- i. Exhale pull navel in
- ii. Ex.1. ~ lifting the feet to check strength
- iii. Ex.2. ~ toe taps with stable position of spine. Avoid pushing abs out
- iv. Ex.3. ~ obliques
- v. Ex.4. ~ RA from Apanasana

PELVIS

- i. Anterior Tilt
- ii. Posterior Tilt
- iii. Into bridge – feet / hams / glutes / hips / shoulders / leg lifts
- iv. Wide feet Rotation – could be higher or more forward (inflare / outflare)
- v. SI Joints in Badha Konasana
- vi. Psoas (hip extension & flexion).
 - a. Leg lowering ~ For extra stretch use block under pelvis. Always tighten glutes to give psoas support to lengthen
 - b. Hold leg in space to isometrically lengthen while engaging

LEGS

- i. Hips
- ii. Knees with hamstrings.
- iii. Ankles
- iv. Feet
- v. Pronated
- vi. Supinated

vii. Arches

11.15 PRONE

- i. Point Feet and clench toes to increase strength in the arch
- ii. Turn toes out and squeeze glutes to strengthen
- iii. Bend knee and lift foot to strengthen (stable pelvis)
- iv. Both Legs
- v. Rest knees bent to stretch psoas
- vi. Tilt pelvis back pull in navel push down with pubic bone and try to bend the knees
- vii. Slow cobra lifts to strengthen extensor muscles
- viii. Stretch thighs ~ might need straps
- ix. Stretch chest ~ Pulling arms behind back Y T W
- x. Core lift
- xi. Dolphin Planks

11.35 SEATED

- xii. Foot arch & Thigh & Calf Strength for knees

11.40 ON CHAIRS.

1. Head ~ Basic movements from good alignment

FHP = Forward Head Posture – where the weight of the head is pulled forward and down under the stress of gravity. The muscles in the back of the neck tighten. The head is bearing the weight of the body

11.50 STANDING

1. Rag doll forward fold – spinal inversion
2. Side bend

Shoulders may roll forward = tight pectoral muscles

Shoulders may be higher on one side = depending on handedness

shoulder blades may be jutting out = over stretched rhomboids /
kyphosis / scoliosis

depressed rib cage (sunken chest) = shallow breathing

Lifting coracoid drawing scapular back will help to strengthen the lower part of the trapezius which is often weak.

3. Hand behind back side bends

12.00 CORRECT STANDING

Spinal Alignment and posture begin with the head.

- i. *ideally = head positioned lightly and the weight of the head help by the (SCM) front postural muscles, not the muscles in the back of the neck.*
- ii. *Upper Back (Thoracic Spine) & Shoulder Alignment – slightly curved out (Kyphotic) with shoulder blades (scapular) lying flat. Check for spondylosis. One shoulder blade may jut out.*
- iii. *Lower Back – slightly curves in (Lordotic).*
- iv. *Pelvis – neutral, (neither posterior (backward) or anterior (forward) tilt).*
- v. *Knees – centred, (neither hyper extended or internally externally rotated).*
- vi. *Ankles - neutral*
- vii. *Feet – neutral, neither supinated or pronated. Turned in or out noticeably.*
- viii. *Side View – plum line.*
- ix. *Good posture has the head balanced over the torso such that an imaginary line will run from the ear down past the shoulder, hip joint, and knee as in the diagram. The vertical line of gravity will run as follows:*
 - x. *approximately 5 cm in front of the ankle joint*
 - xi. *just in front of the center of the knee joint*
 - xii. *through the hip joint or just behind it*
 - xiii. *just in front of the shoulder joint*
 - xiv. *just behind the ear through the mastoid process*

12.05 WALKING

- i. **Normally**
- ii. **Supinate / Pronate / pigeon toe / duck**
- iii. **Rising up on toes – tighten glutes**
- iv. **Center of heel**
- v. **Leave back foot on the floor**

- vi. Push off on back foot
- vii. Stretch legs from waist
- viii. Squeeze glutes / pelvic floor / abs
- ix. Lift chest drop rib cage lift shoulders up and back
- x. Head in line with spine
- xi. Lean back
- xii. Swing arms
- xiii. COME TO WALL

12.10 COME TO THE WALL

Stand naturally against the wall and edge back until any part of you touches. Assess. Stand on tiptoes helps to bring the body into balance.

12.15 BALANCE

Being able to stand comfortably on one leg is important to staying injury free. For you to stay up on two feet, a delicate interplay occurs between your eyes, ears, brain, and muscles. Your inner ear is also involved in the balancing process. Among its tiny, delicate mechanisms is the semi-circular canal. This fluid-filled tube alerts your central nervous system as to the position of your head. As we get older, our eyesight tends to diminish, (vision). Muscles tend to shrink, and your reaction time may be a bit slower. Standing on one leg does in fact improve balance, prevent falls, and even improve independent living.

- i. Hip limber as a balance assessment. Off balance core movements.
- ii. Check knees for hyper extension of both kinds.

12.35 BALANCE ASSESSMENT

- i. Eyes focused ~ standing on 1 leg
- ii. Eyes closed ~ standing on 1 leg
- iii. Walking down the mat heel toe
- iv. Thigh Strengthening
- v. Lunge – ankle strength
- vi. {classical balances}

12.55 SUPINE FASCIAL RELEASE

1.15 DEEP RELAXATION

using level floor & mat as alignment tools in a balanced symmetrical posture where awareness in the back of the body may identify asymmetry.

Namaste ~