ANATOMY - YOUR FRAME

SUPER YOU!

Super you - your skeleton provides the levers for sport – and levers are critical in every sport. You have strong bones - most are rigid but you also have joints for flexion. Keeping your joints mobilised is key to being a successful athlete. Some joints are less flexible (e.g. spine & pelvis) but they need to be to provide stability. Spine and pelvic flexibility is very important for rowers to maximise stroke length & reach without over extending the back/hamstrings. So we'll be talking about that a lot.

Posture – so apart from legs and arms (essential in rowing) posture, balance and stability in your hips & lower spine are crucial as you start to row competitively. 'Core strength', as it is often described, is the wider process of 'tying' the muscles listed on the next page, to work together. Stabilising these core muscles links the levers (arms & legs) together & helps focus on flexing your pelvis (hips). Particularly important to maintain full compression without 'collapsing' and still connecting with the flow from the leg drive.

FACTS

Growth spurts in your early teens can alter the balance & relative strengths of bones & ligaments.

Lengthening bones may cause loss of flexibility until ligaments 'catch-up'.

Stretching is essential for teenagers.

Load bearing/impacts helps improve bone density & prevent fractures.

FACTS

Core Muscles include:

Abdominals
Obliques
Pelvic floor
Longissimus
Diaphragm

SUPER YOU

- → ANATOMY
- → MOBILITY
- → STABILITY
- → STRENGTH

ANATOMY - MUSCLES

SUPER YOU!

You don't have to 'bulk up' your big muscles with heavy weights yet. HerMoJo is all about building 'functional strength' using a combination of muscles and levers. Not BULK!

Here's some of the muscles we will be talking about - try to imagine where they are in your body and how they work. The best way to develop young muscle groups is resistance training. 'Destabilising' your core to test it is the best way to develop Core Strength & efficient posture.

FACTS

CORE Muscles include:

- Abdominals
- Obliques
- Pelvic floor
- Longissimus
- Diaphragm

ANATOMY - YOUR SPINE

Transfer Energy – whatever your sport, you rely on your spine and trunk for the transfer of energy between limbs. So the more effective the trunk is, the more easily energy can be transferred efficiently. Imagine your vertebrae as a string of beads. Try to hold them vertically at the base and the beads collapse. If you 'pinch' the string at the base – tension supports the beads in the vertical positon. Just like the beads, there is a string of core muscles (particularity abs, pelvic floor, longissimus and multifidus) which support your vertebrae, provide stability and help efficient transfer of energy..

Shape up – think about touching your toes - check in a mirror – are you flexing from your hips? Don't let your back 'sag' into a 'C' shape in an attempt to touch toes. Stretch slowly and pivot from the hips extending over several 'reps' and feel tension in your hamstrings. Your spine, along with your core holds everything together – make sure you look after it. Not just for sport . . . but for life.

Compare these pictures with the shapes on page 41 – spot the similarity?

SUPER YOU!

FACTS

Spine is 'S' shaped
33 'stacked' vertebrae
Protects spinal cord
Shock absorbing discs
Cervical – 7 Neck
Thoracic – 12 Ribs/Chest
Lumbar – 5 Lower back
Body has 206 bones

MOBILITY - NEUTRAL SPINE

Mobility is all about control of your spine and hips. It is vital to mobilise before any exercise to loosen tight muscles and 'wake up' the weaker, underutilised muscles. Particularly your core muscles as this will help improve performance and reduce injury. Your body will tend to compensate for any imbalance or restricted range of movement – increasing the chances of injury. So where to start?

Start in Neutral – A neutral spine is about establishing the most effective relationship between all the 'components' of your body. You can find your neutral spine whilst standing. You will have some natural curvature as can be seen in the diagram.

Stand up – Relax and imagine somebody is gently tugging at a tuft of your hair. Let your head and shoulders move up to follow the 'pull'. Your chin lowers and your shoulders will drop away from your neck. And your chest will have opened a little. Tummy comes in and your pelvis sits level under your ribs.

Lie down – try to find it lying down. Midway between an arched & flattened spine – tail bone on the floor, pelvis is lengthened and a small 'arch' appears in your spine.

Firing up! - Lying down in the neutral 'rest' position. Breathe in gently, hold for three seconds, then breathe out slowly. Now gently draw up 'inside' with the pelvic floor muscles as if you were trying not to pee! Do this at 30/40% of maximum muscle contraction and still maintain the neutral spine. This helps 'activate' all the 'core' muscles.

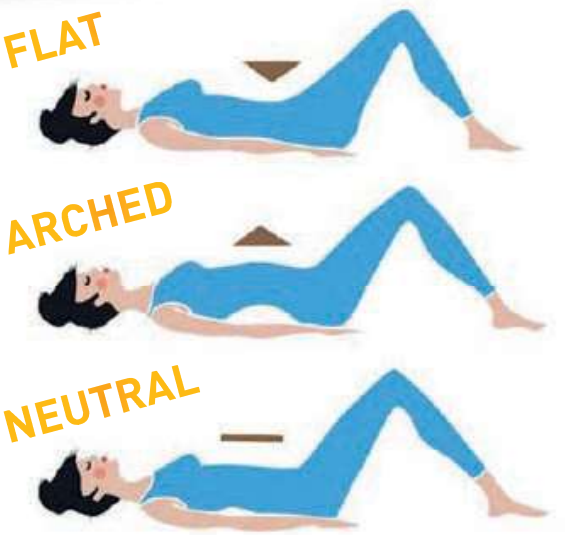
Your pelvic floor – lie on your back with a neutral spine. Press the small of your back onto the floor and tilt your pelvic bone up from the base. Try to focus on the muscles you use to control when peeing . . . and you've found your pelvic floor.

SUPER YOU!

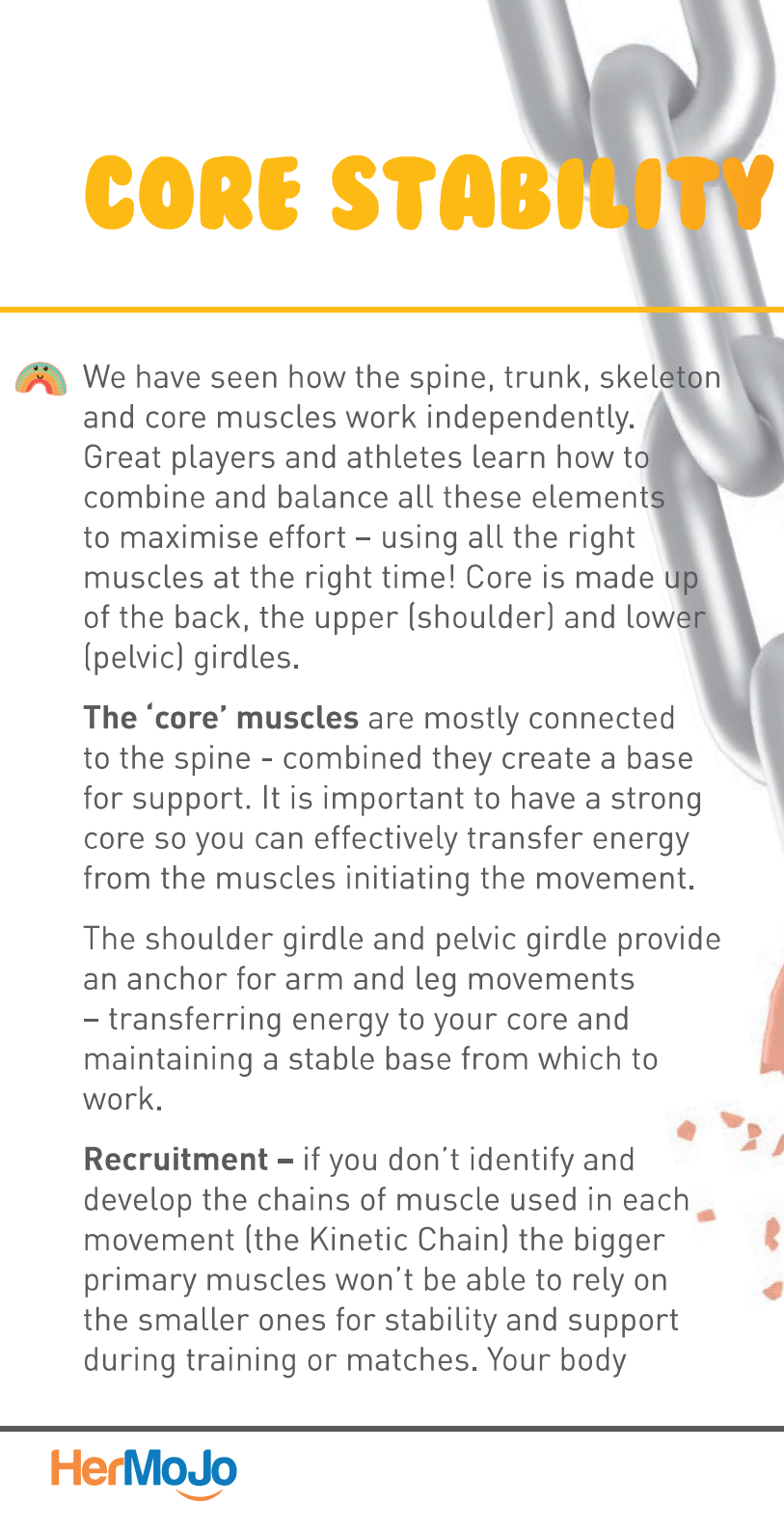
TOP TIPS

What are ABS?

Four sets of muscles between the ribs and pelvis – essential for maintaining good posture and a Neutral Spine and 'asymmetric strength when twisting. Includes what are know as the 'six pack'



CORE STABILITY



We have seen how the spine, trunk, skeleton and core muscles work independently. Great players and athletes learn how to combine and balance all these elements to maximise effort – using all the right muscles at the right time! Core is made up of the back, the upper (shoulder) and lower (pelvic) girdles.

The 'core' muscles are mostly connected to the spine - combined they create a base for support. It is important to have a strong core so you can effectively transfer energy from the muscles initiating the movement.

The shoulder girdle and pelvic girdle provide an anchor for arm and leg movements – transferring energy to your core and maintaining a stable base from which to work.

Recruitment – if you don't identify and develop the chains of muscle used in each movement (the Kinetic Chain) the bigger primary muscles won't be able to rely on the smaller ones for stability and support during training or matches. Your body will compensate and try to find other ways to transfer energy. Leading to loss of posture, inefficient movement and risk of injury.

Your 'Kinetic Chain' – is only as strong as its weakest link – make sure you find it and eliminate it before trying to build bigger muscles. No matter how strong your big (primary) muscle[illegible] can't transfer energy your 'kinetic chain' will loose efficiency... or fail!

FACTS

All movement in your body emanates from your core. It's the centre of power - so a strong core means confident movement when you kick, ride, swing a bat or just pick something up.

A weak core leaves you susceptible to poor posture, lower back pain & injuries, which occur as other muscles take up the load from a weak core – even if you don't play sport.

SUPER YOU!

TRY THIS!

Stand erect holding a large bottle of water

Lift the bottle to shoulder height, keeping the arms straight

Lift & lower the bottle several times & note what happens in your body

- Does your trunk & head stay steady? You may notice that your head tilts forwards slightly
- Pay attention to the muscles in the front of your neck? Feel them contracting as they work to keep the head stable
- Feel what is happening in your feet. As you lift the bottle you will notice a subtle backwards weight shift onto your heels

You're finding your CORE!