QUESTION 1 | IS THERE A DIRECT CONNECTION THROUGHOUT THE SPINE TO THE LOWER LIMBS?

There is evidence of fascial connections throughout the body, from head to toe. Some of them have been described as ‘slings” that provide connections between the trunk and upper and lower limbs.

As we live in a gravitational field there are forces impacting on all movements and positions of the human body, to which the body responds. Hence the need for mechanical connections between the different regions that combine stability (a certain degree of stiffness) with the ability to move in a pain-free controlled fashion.

The basic platform for load transfer is the lumbo-pelvic region. The thorax in turn transmits load from the pelvic platform to the upper extremities (think of a javelin throw or a baseball pitch, where distance or speed originate in the leg drive).

Several musculo-fascial slings have been identified, which brace the trunk and allow force transmission safely. These slings assist in the transfer of force created by muscle actions and ground reaction forces (i.e. gravity). Injury to any component of a sling (muscle, ligament, fascia) creates a dysfunctional system, and the body develops compensation strategies to deal with it. However this situation can lead to overuse of the compensating mechanism, and the source of further injury, pain or limitation of function.

QUESTION | CAN YOU EXPLAIN MORE ABOUT MAKE-UP AND FUNCTION OF SLINGS?

The following slings have been described in relation to lumbo-pelvic bracing:

- Anterior oblique sling, comprising external oblique, across the symphysis and contralateral adductors
- Posterior oblique sling: lattissimus dorsi, thoraco-lumbar fascia, contralateral gluteus major,
- Lateral sling: quadratus lumborum, gluteus medius and minimus, Tensor fascia lata and contra-lateral adductors.
- Longitudinal sling: Spine erectors, deep layer of the thoraco-lumbar fascia, sacrotuberous ligament, hamstrings and peronei
In addition, there is continuity in most individuals between the sacro-tuberous ligament and the hamstrings. The sacro-tuberous ligament limits sacrum excessive nutation, but this could also place excessive load on hamstring tendons.

These compensation strategies are often the first sign of pathology, but not the origin of the problem: what I call “the passenger”.

**QUESTION | WHERE DO YOU BEGIN THE ASSESSMENT OF THE SPINE? DOES IT CHANGE IF THE AIN IS IN DIFFERENT REGIONS?**

**Assessment**

The presenting problem needs to be assessed, obviously, but bearing in mind that the original problem is elsewhere, and therefore the whole body needs to be “looked at”.

The lumbo-pelvic segment should always be assessed, as the main’ force transmitter’ between the lower limbs and the trunk. The Active Straight Leg Raise test is the best choice to examine load transmission through the sacro-iliac joint and pelvis. A normal ASLR is a good start.

My usual practice is to look initially at the presenting problem, and then at the rest of the spine/trunk, beginning with the pelvis/SIJ. Positive signs for SIJ incompetence that improve with increased stability of the thorax/ribs may suggest that the thoracic spine is involved and may be the ‘driver’. Response to treatment is also part of the assessment.

There is not a lot of literature on thoracic rings, and more research is required on different modalities of mobilisation (both active and passive) that may affect the “stacking”. It is a relatively new and exciting area of musculoskeletal medicine.

**Treatment**

The goals of treatment are good motion control without pain. The following need to be achieved

1. Optimal lumbo-pelvic function
2. Ability to maintain a ‘neutral spine’ with the thorax and the adjacent segments
3. Ability to move from a neutral spine in all functional directions with appropriate motor control of both local and general systems, without pain.

Dr Mel Cusi