Greenman's Dirty Half-Dozen of Back Pain

Greenman's half-dirty dozen of back pain represents 6 common, recurrent, mechanical somatic dysfunctions that lead to back pain. They are called 'dirty' because they cause chronic pain and 'half dozen' because there are six of them. These include Pubic Shears, Sacrum-Innominate Shears, Sacral Nutation Failures, Short Leg Syndrome, Postural Muscle Imbalances, and Type II Lumbar Somatic Dysfunctions.



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Non-physiologic Somatic Dysfunction

Pubic Shear

Pubic Shears

Normally, the pubic symphysis glides superiorly and inferiorly during a person's gait cycle and helps distribute the force from the femurs bilaterally through the pelvis and sacroiliac joint. A pubic shear, typically, is caused by hypertonic abdominal muscles and results when one pubic bone is either displaced superiorly or inferiorly in relation to the other. This displacement alters how the force is distributed and puts more stress on the SIJ (sacroiliac joint), causing low back pain. Practitioners will find that both bilateral ASISs and PSISs are in level but that a 'step off' is noted over the pubic symphysis, as one of the pubic bones will be superior or inferiorly displaced. In addition, patients will have a positive standing flexion test and a positive ASIS compression test on the same side as the affected pubic bone.

Sacrum-Innominate Shear

Sack-rum Innominate-inn with Shears

Both the sacrum and the innominates are susceptible to shear somatic dysfunctions. A Sacral Shear is a group of dysfunctions commonly known as unilateral sacral flexion/extension. The four dysfunctions include unilateral right or left sacral flexions and unilateral right or left sacral extensions. Each of these dysfunctions is determined by a combination of specific static and dynamic findings, including sacral sulcus depths, ILA measurements, positive seated flexion tests, and Spring Tests. Similarly, an Innominate Shear is a group of four dysfunctions that include superior right or left shears and inferior right or left shears. These four dysfunctions are determined by a combination of pelvic dysfunction findings, including measuring the heights of the ASIS and PSIS, leg length discrepancies, ASIS compression test, and standing flexion tests. Depending on the findings will determine the type of Sacral or Innominate dysfunction present and the following treatment necessary.

Other Somatic Dysfunction

Sacral Nutation Failure

Sack-rum Nut-rotation Fail-sign

The sacrum moves around multiple axes in the human body. When functioning normally, the sacrum alternates about the transverse axis between an inferior/anterior position (nutation) and a superior/posterior position (counternutation). Sacral nutation failures occur when the sacrum improperly rotates about this axis in the sacroiliac joint. In this dysfunction, the sacrum is stuck in counternutation and is positioned posteriorly and superiorly. Failure of the sacrum to move into nutation can be seen with a positive spring and sphinx test and with no signs of improvement in spinal flexion. Dysfunctions resulting in nutation restrictions include backward sacral torsions and bilateral sacral extensions. Commonly, S1 and L5 will be rotated in opposite directions, with L5 side-bending on the same side of the sacral axis.

Short Leg Syndrome

Short Leg

Short Leg Syndrome can result from functional or anatomical causes. Functional causes, such as a hypertonic psoas muscle, create an apparent short leg that is not actually short at all. Anatomical causes, such as a recent hip replacement, cause the affected leg to actually be shorter. In both cases, the body will compensate for the misleveling with anterior rotation of the innominate on the side of the short leg in order to lengthen it. It will also posteriorly rotate the innominate on the side of the long leg to shorten it. The sacrum will drop on the side of the short leg, and the pelvis will shift to the contralateral long leg side. The lumbar spine will side-bend away and rotate toward the short leg. Ultimately, chronic compensation due to short leg syndrome can result in functional scoliosis.

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Postural Muscle Imbalance

Postural Muscle-man Imbalance

Postural stability is a dynamic process that requires antagonist forces to keep the body functioning properly. These opposite forces are provided by different muscle groups. When these muscle groups lose balance, it is a common cause of lower back pain. A frequently seen pattern of muscle imbalance is Lower Cross Syndrome which results from a sedentary lifestyle or poor posture mechanics. In this syndrome, some muscles become tight and facilitated (psoas, hamstrings, adductors, piriformis, quadratus lumborum, gastroc/soleus) while other muscles become weak and inhibited (abdominal muscles, gluteal muscles, vastus lateralis/medius). The muscular imbalance causes decreased core stability and abnormal muscle firing patterns.

Type II Lumbar Somatic Dysfunction

(2) Tutu Lumber Sumo-tick Dysfunctioning

Another common cause of lower back pain are Type II non-neutral somatic dysfunctions involving a single vertebra of the lumbar spine. These dysfunctions can be in flexion or extension, with side-bending and rotation occurring in the same direction. A majority of these patients develop these dysfunctions at L4 and L5 and may subsequently develop sacrum dysfunctions as well.

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