Contribution of pelvic floor muscles to stiffness of the pelvic ring.


Source

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Abstract

STUDY DESIGN:

A biomechanical study in embalmed specimens, on the relation between applied tension in the pelvic floor muscles, stiffness of the pelvic ring and generation of movement in the sacroiliac joints.

OBJECTIVE:

To gain insight into the effect of tension in the pelvic floor muscles on stiffness of the pelvic ring. Background. According to a model on selfbracing pelvic floor muscles have the capacity to stiffen the sacroiliac joints. However, this capacity has not been demonstrated in vitro yet.

METHODS:

In 18 embalmed specimens an incremental moment was applied to the sacroiliac joints to induce rotation of the innominate bones in the sagittal plane. After assessment of the relationship between rotation angle and moment, springs were applied to the pelvis to simulate tension in the pelvic floor muscles. During the simulated tension the measurements were repeated. Differences in stiffness before and after applying springs were tested for significance.

RESULTS:

In females, simulated tension in the pelvic floor muscles stiffened the sacroiliac joints with 8.5% (P < 0.05). In males no significant changes occurred. In both sexes a backward rotation of the sacrum occurred due to simulated tension in the pelvic floor muscles (P < 0.05). The sacroiliac joints of female specimens were more mobile in comparison to male specimens (P < 0.05).

CONCLUSIONS:

In females, pelvic floor muscles have the capacity to increase stiffness of the pelvic ring. In addition, these muscles can generate a backward rotation of the sacrum in both sexes.
RELEVANCE:

The ability of pelvic floor muscles to increase stiffness of the pelvic ring is of importance in patients with impairment of pelvic stability, especially in pelvic pain patients. Increased activity of these pelvic floor muscles might compensate for loss of pelvic stability by stiffening the pelvic ring and restoring proper load transfer through the lumbopelvic region.

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