

## The Importance of X-Rays in the Standing Position

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### History

The patient is a 15 year old female rower who has excelled in crew for the past 2 years. Her severe low back pain began approximately 2 years ago as well. Her first year of crew, the patient was a “skuller” (one oar in each hand, seated in middle) and her second year she became a “sweeper” (one oar in 2 hands, rowing on one side only). This produces significant demand of the low back and trunk.

In November, 2010, the patient went to her orthopedist who ordered x-rays in the lying down position. The front to back view (Fig. 1) and the side view (Fig. 2) are seen here. Upon viewing the x-rays, Dr. Orthopedist said they were negative (nothing wrong).



Fig. 1



Fig. 2

His recommendation was to rest for 6-8 weeks while getting physical therapy. The patient went to approximately 8 physical therapy visits and felt mild improvement. She refrained from most activity until the Spring of 2011, and then began crew again. By early April, the pain was back in full force, and the patient was again ordered to stop rowing and get an MRI.

The MRI showed 2 disc bulges in the lowest joints of the spine. At this point, the orthopedist recommended quitting crew. Unfortunately, this young girl was one of the better athletes on the team, and the team had just gone to the Nationals in 2010. Needless to say, this recommendation to a 15 year old athlete, especially with no hope for improvement, is quite harsh.

### Biomechanical Exam

The patient came into our office for a biomechanical exam on July 22, 2011. The exam showed abnormal restriction in multiple key joints, which is very bad for a 15 year old girl. Loss of normal joint mobility is typically a result of abnormal joint loading, or biomechanical imbalances. Standing x-rays were taken of the low back, which now allows the influence of gravity to be seen. The front to back

view in the standing position (Fig. 3) shows a significantly different impression than the view that was taken lying down (Fig. 1). Likewise, the side view in the standing position (Fig. 4) shows a significantly different impression than the view that was taken lying down (Fig. 2).



Fig. 3



Fig. 4

### Standing X-Ray Findings

In Fig. 3, the vertical line in the center represents the patient's center of gravity. We can see there is a severe misalignment between the spine and the front of the pelvis. Secondly, the horizontal lines at the top of the pelvis show an imbalance between the right and left pelvis, causing low back, hip, knee and leg length imbalances. Finally, the arrows are pointing to the obturator foramen, which actually are the same size, but appear differently due to the abnormal rotations of the pelvis.

In Fig. 4, the long vertical line represents the center of gravity from the side. It's supposed to be going through the short vertical line, but this patient's weight bearing is in the back of the spine, with abnormal weight going through the back of the discs and the nerve roots (predictably causing disc bulges).

### Conclusion

The imbalances between right and left make the vulnerability for low back/pelvic problems proportionately higher. These imbalances, coupled with the demands of crew, will keep this athlete sidelined until she begins the appropriate rehabilitative care. The first phase of care consists of therapies and treatment that will help reduce the disc bulging, spasms and inflammation that accompany this condition. Once the symptoms are reduced, a re-education of the postural muscles and alignment of the body is needed. This process can take up to one year, however, if this young girl doesn't go through this process, it's safe to assume her future will consist of limited physical activity.