

# Bone marrow edema in lower spine is common in young athletes

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New research indicates that young recreational and elite athletes commonly accumulate excess fluid in the bone marrow around the joint that connects the spine with the pelvis. The *Arthritis & Rheumatology* findings may help define what amount of fluid detected on imaging tests may be considered 'background noise' in physically active healthy individuals compared with patients who have axial spondyloarthritis (axial SpA), an inflammatory disease with low back pain as its main symptom.

The research was conducted to improve the diagnosis of axial SpA, which most commonly affects people in their teens and 20s, especially young men. Bone marrow [edema](#), or the accumulation of excess fluid in bone marrow, in the sacroiliac joint is an inflammatory process thought to play a major role in the disease. Magnetic resonance imaging (MRI) can detect bone marrow edema and structural changes in the sacroiliac joint when patients begin to experience pain, but there is ongoing debate about what constitutes a positive MRI for the diagnosis of axial SpA early in the course of the disease.

To provide some clarity, Ulrich Weber, MD, a researcher at King Christian 10th Hospital for Rheumatic Diseases in Gråsten, Denmark and his colleagues conducted a study of 20 recreational runners and 22 professional ice hockey players to determine the frequency of bone marrow edema and its distribution across eight regions of the sacroiliac joint. The runners received MRI scans of their sacroiliac joints before and 24 hours after a 6.2-km competitive run, and the hockey players

received scans at the end of their competitive season.

The average number of sacroiliac joint quadrants showing bone marrow edema in the healthy runners was 3.1 before and after running, and 3.6 in the [hockey players](#). The posterior lower ilium was the most affected region, followed by the anterior upper sacrum.

"Our study in individuals experiencing a broad span of mechanical strain intensity to the axial skeleton contributes several issues to refine a definition of about what constitutes a positive lesion signature on sacroiliac joint MRI," said Dr. Weber. "Limited specificity of sacroiliac joint bone marrow edema is highlighted by the study finding that one out of three healthy athletes would meet the currently most widely applied classification criteria for SpA based solely on bone marrow edema. This has impacts concerning where to set the threshold for between normal variation and disease." Dr. Weber noted that the finding that edema occurs in two anatomical regions of the sacroiliac joint in healthy individuals is also noteworthy. "The presence of solely low grade [bone](#) marrow edema, particularly if clustered in the posterior lower ilium or anterior upper sacrum, may not be sufficient to confirm axial SpA," he said. The study did not reveal any relevant structural changes in the sacroiliac joints of healthy individuals, despite high mechanical axial strain from their sport. Therefore, structural changes such as erosion may be key for discriminating [disease](#) from normal variations.

**More information:** Ulrich Weber et al, Frequency and anatomical distribution of magnetic resonance imaging features in sacroiliac joints of young athletes: Exploring "background noise" towards a data-driven definition of sacroiliitis in early spondyloarthritis, *Arthritis & Rheumatology* (2018). [DOI: 10.1002/art.40429](https://doi.org/10.1002/art.40429)

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