pacing should be carried out where this facility exists. High dose adrenaline 5 mg may be given after three loops, although its efficacy is debated.

In summary, the key to successful ALS is the rapid detection and early treatment of VF/VT. In all cardiac arrests, but especially non-VF/VT arrests, a reversible cause should be sought and promptly treated.

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**Further reading**

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# Is the sacroiliac joint mobile and how should it be treated?

Depending on the stage of your medical training, the sacroiliac joint is variably mobile.

Way back in the anatomy lab, I remember being taught that this large joint was practically immobile. The sheer strength of the interosseous ligament together with the accessory ligaments and the roughened articular cartilage ensured maximal stability. The bulky metal bolts holding the joints together in the skeleton suspended with a watchful eye socket over our laborious studies only served to reinforce the message: sacroiliac joint—a strong stable joint.

All was to change on the orthopaedic ward, however, where we were led to believe that all joints—natural or replaced—were mobile and, if not, could be gently (or otherwise) encouraged by the omnipresent physiotherapist through varying degrees of movement. No particular significance was placed on the sacroiliac joint, and I presumed it was just as mobile as the dislocating hips and shoulders of the tiny frail old ladies and the leather clad bikers who resided in the ward.

And then on to the Sports Injuries Clinic where, amidst the minutiae of biomechanics, I began to realise the potential for the sacroiliac joint to move, to move excessively or get stuck!

Normally there are small anteroposterior movements during flexion and extension of the trunk with some rotation at end range.

These movements may be exaggerated in a variety of sports, particularly if there is unilateral loading as in kicking or throwing. The surrounding ligaments may be sprained if there is a twisting or jarring injury or a direct fall on to one ischial tuberosity. Minor subluxations of the joint are known to occur particularly in young athletes with hypermobility or if there is ligament laxity. Similarly during pregnancy and sometimes premenstrually, hormonal changes allow greater than normal movement.Conversely, there may be a restriction of movement, and this can be noted by the trained eye as an abnormal or absent movement of the posterior superior iliac spine. This dysfunction can be caused by acute or chronic injury: the athlete complains of pain which may be localised or radiate to the buttock.

In the management of the sacroiliac joint, electrotherapy is used to reduce pain and to stimulate repair. Mobilisation and manipulation aims to correct any restricted movement by rotational manoeuvres. Thereafter the athlete is encouraged to continue stretching and strengthening exercises at home with particular emphasis on stretching tight hamstrings and strengthening the abdominal and trunk muscles.

Once settled, it is important to look for a cause in the absence of acute injury. Often there is a training error or overtraining with unilateral loading; astroturf is known to exacerbate jarring type injuries and may have to be avoided. There may also be a chronic injury pattern if there is some anatomical imbalance such as leg length discrepancy or muscular imbalance about the hips or lower back or secondary to childhood hip problems. Associated problems such as pubic stress injury and Achilles tendonitis may have to be addressed.

Athletes with hypermobility have to be managed carefully to avoid excessive movement; an acutely disrupted joint needs bed rest or occasionally surgical fixation. In the extreme case, sclerosant injections or even external frame fixation can treat chronic ligamentous laxity.

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