The sacroiliac joint was mentioned as a source of low back pain as early as 1905 but has largely been ignored in the athletic training and therapy literature. It has been documented, however, that as many as one third of all cases of low back pain arise from a sacroiliac disorder (Bernard & Cassidy, 1997; Slipman, Patel, Shin, Braverman, & Lenrow, 2000). In order to understand how to best treat the SI joint in the athlete, it is imperative that the athletic trainer or therapist know and understand the anatomy and the mechanics of the joints involved. This article explains the anatomy of the sacroiliac area, as well as the normal mechanics of SI joint. It also discusses the pathological mechanics that can be the source of low back and pelvic-girdle pain. Although this article discusses the SI joint in particular, the functional pelvic girdle actually includes L4 and L5, the two ilia, the sacrum, and the two femurs. It consists of at least 11 joints (Jackson, 1995) and 33 muscles. This area of the body is often referred as the lumbopelvic-hip complex (LPH). The LPH is commonly overlooked when evaluating the SI joint, but its importance to the SI joint is substantial when evaluating and treating low back and SI pain.

**Anatomy**

**Bones of the SI Joint**

The bony anatomy of the pelvis consists of the two innominate bones that meet at the midline anteriorly (pubic symphysis) and flare posteriorly. The innominate bones consist of the ilium, ischium, and pubic bones that fuse late in adolescence to form one bone (Schiovitz, 1991). The two ilia are usually symmetrical, but one might notice differences from one ilium to another in the same person, and many variations exist from patient to patient. The female’s ilia are shaped quite differently from the male’s and present in a more flared fashion. The innominate bones are joined posteriorly by the sacrum to form the sacroiliac joints (Figure 1). The ilium forms a crescent-shaped convex–concave relationship with the sacrum. Geringer, Jackson, and Martin (1988) reported that the ilial articulation is primarily convex, whereas the sacral articulation is primarily concave. The convex–concave relationship exists at the upper and middle portions of the kidney-shaped articulation, and the lower portion is described as being a more flat, planar surface.

The sacrum is an unpaired bone consisting of the five sacral vertebrae. It is wedge shaped and has often been described in the literature...
as "keystone" or inverted-triangle shaped. Its surfaces are a collection of concave and convex areas that articulate with the opposing bone. Its anterior surface is concave, whereas the posterior surface is convex and contains palpable spinous tubercles (Figure 2). The sacrum is lined with hyaline cartilage on the sacral side and fibrocartilage on the iliac side. The inferior lateral angles of the sacrum, as well as the sacral sulcus, can be identified through palpation and are useful landmarks in determining dysfunction. The angle between the superior and inferior poles of the sacrum varies from 0–90° among individuals but is typically 42–43° (Franke, 1999).

The sacrum is connected to the lumbar spine through the lumbosacral-hip-complex conjunction, also known as the L5-S1 joint. L5 and its disc actually sit within the pelvic girdle, and L5 is tethered to the ilia by the iliolumbar ligament (Jackson, 1995). The iliolumbar ligament is responsible for maintaining the stability of the lumbosacral junction in the coronal and sagittal planes.

The SI is considered a combination diarthrosis/syndesmosis joint. It is classified this way because the capsule is attached only to the anterior portion of the joint and does not follow to the posterior side. The synovial membrane is lost posteriorly into the posterior interosseous ligament. Jackson (1995) indicates that the sacral articulation is primarily concave, whereas the ilial articulation is primarily convex. The articulating surfaces are roughly kidney shaped, but large differences in the surface shape exist from patient to patient. The multiple forms and contours account for the diversity of motions at this joint, which is held together and stabilized by ligaments that can be classified as either intrinsic or extrinsic.

**Ligaments of the SI Joint**

The intrinsic ligaments include the anterior SI ligament, the short and long posterior SI ligaments, and the posterior interosseous ligament (Figures 3 and 4). The anterior SI ligament is the weakest and thinnest of the intrinsic ligaments. This ligament has been reported to be a source of pain in SI hypermobility. The short posterior SI ligament runs obliquely both from medial to lateral and lateral to medial and connects the sacrum to the ilium (Jackson, 1995). The long posterior SI ligament restricts anterior ilial rotation. It attaches the posterior superior iliac spine (PSIS) to the sacrum. The posterior interosseous ligament is reported as being the strongest ligament in the body. It is made of short fibers that connect the posterior aspects of the sacroiliac joint.

The extrinsic ligaments consist of the sacrotuberous, sacrospinous, and iliolumbar ligaments (Figures 3 and 4). The sacrotuberous and sacrospinous ligaments function to stabilize the pelvis by controlling posterior rotation of the ilium and forward flexion of the sacrum and by resisting sacral rotation. The sacrospinous ligament runs from the sacrum and coccyx...