The hip-joint is an enthrodiial of ball-and-socket joint, which does not, however, have such considerable freedom of movement as the shoulder-joint since the head of the femur is located so deeply in the acetabulum, so that two-thirds of the head is covered by this cavity. For this reason it is also referred to as an enthrodiial joint (Art. copyla). The articular cavity has an incisure at the bottom (Incisura acetabuli) through which the blood vessels pass to the head of the femur. The incisure is sealed through a transverse ligament (Ligamentum transversum acetabuli), so that there are no gaps in the articular cavity. The acetabulum is enlarged through a fibro-cartilaginous joint lip, behind which the articular capsule is attached to the bone (Fig. 1).

Ligamentous apparatus of the hip-joint
The articular capsule (Capsula articularis) encloses the entire neck of the femur to the front and is here attached to the linea intertrochanterica (intertrochanteric line), whilst leaving the lower part of the neck of the femur free at the back. Nevertheless, the capsule attachment is everywhere approximately the same distance away from the cartilage edge of the head of the femur.

Ligaments of the hip-joint (cf. Fig. 2)
1. Ligamentum iliofemorale (ilio-femoral ligament) – This is a V-shaped ligament, which above all serves to strengthen the front wall of the capsule. It begins at the iliac crest and diverges fan-like down to the intertrochanteric line. The horizontal fibrous band (Fig. 2) restricts movements of adduction in the supporting leg, preventing the pelvis from tipping sideways. The vertical fibrous band extends down to the trochanter minor and restricts the backwards movement of the supporting leg, preventing the pelvis from slipping backwards.

2. Ligamentum pubofemorale (pubo-femoral ligament) – This band arises from the crest of the pubic bone and passes laterally and inferiorly into the anterior wall of the capsule.

3. The ligamentum ischiocapsular (ischio-capsular ligament) begins behind the ischium (Os ischi) and arches around behind the neck of the femur in an elongated screw turn above all to strengthen the back capsule wall.

4. The zona orbicularis (oribicular zone) is a ring-like ligament surrounding the neck of the femur into which all the other ligaments merge (Fig. 1).

The ligaments of the hip-joint, therefore, altogether form a fibrous screw which tightens when the
The leg is to an extended position and unscrews when the leg is in a flexed position or slightly abducted.

5. The ligamentum capitis femoris (teres femoris ligament) is concealed inside the joint and incorporates those vessels intended for the head of the femur (cf. Fig. 1).

**Functional mechanisms of the hip-joint**

The hip-joint permits of movements in all planes (joint with 3 axes of freedom). Movements of flexion and extension are possible through a transverse axis, movements of inward and outward rotation through a vertical axis and finally, movements of adduction and abduction through a sagittal axis. As a result of the opening of the ligamentous screw the freedom of movement is all the greater the more the joint is flexed. In conjunction with the development of the crotch gait the ligamentous apparatus has developed to be unusually strong (these ligaments are amongst the strongest ligaments in the body!), because the ligaments of the hip joint not only restrict extreme leg movements but must also keep the pelvis and thus the entire trunk of the body, supported on the fixed leg.

Figures 1 and 2 are taken from the text-book „Funktionelle Anatomie des Menschen“ by Professor Dr. Dr. Johannes W. Rohden, University of Erlangen-Nuremberg.

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**Notes on how to use the model**

One should first try out the possibilities of movement in the hip-joint in all three planes (ball-and-socket joint) and try to get an idea of how the ligamentous screw functions. In an extended position the vertical band of the iliofemoral ligament tenses, in the case of adduction the horizontal band. Inwards rotation is restricted through the ischio-capular ligamentous band. The articular capsule is least safeguarded on the inner and under side, so that it is here that luxations most frequently occur.