Joints

Summary

- A joint is the part of the body where two or more bones meet to allow movement.
- Generally speaking, the greater the range of movement, the higher the risk of injury because the strength of the joint is reduced.
- The six types of freely movable joint include ball and socket, saddle, hinge, condyloid, pivot and gliding.
- Common causes of joint pain include inflammation (pain and swelling), infection and injury.

A joint is the part of the body where two or more bones meet to allow movement. Every bone in the body – except for the hyoid bone in the throat – meets up with at least one other bone at a joint. The shape of a joint depends on its function. A joint is also known as an articulation.

Generally speaking, the more movement that is possible through a joint, the higher the risk of injury. This is because greater range of movement reduces the strength of the joint.

Types of joints

Joints are described by how much movement they allow. The three broad classes of joints include:

- Immovable – the two or more bones are in close contact, but no movement can occur – for example, the bones of the skull. The joints of the skull are called sutures.
- Slightly movable – two or more bones are held together so tightly that only limited movement is permitted – for example, the vertebrae of the spine.
- Freely movable – most joints within the human body are this type. Motion is the purpose of the joint.

Freely moving joints

The six types of freely movable joint include:

- Ball and socket joint – the rounded head of one bone sits within the cup of another, such as the hip joint or shoulder joint. Movement in all directions is allowed.
- Saddle joint – this permits movement back and forth and from side to side, but does not allow rotation, such as the joint at the base of the thumb.
- Hinge joint – the two bones open and close in one direction only (along one plane) like a door, such as the knee and elbow joints.
- Condyloid joint – this permits movement without rotation, such as in the jaw or finger joints.
- Pivot joint – one bone swivels around the ring formed by another bone, such as the joint between the first and second vertebrae in the neck.
- Gliding joint – or plane joint. Smooth surfaces slip over one another, allowing limited movement, such as the wrist joints.

Types of movement

To achieve movement, the joint may:

- Slide one broad and flat surface across another – examples include the bones in the wrist or ankle.
- Increase or decrease the angle between the two bones – this only occurs in the long bones of the body (arms
and legs): for example, when the arm is bent or extended.

- Allow a circular movement – this is how ball and socket joints work: for example, the shoulder.
- Allow rotation without displacing the bones: for example, the head as it turns from side to side swivels the cervical vertebrae on top of one another.

**Structure of a joint**

Joints are held together and supported by tough bands of connective tissue called ligaments. Smooth cartilage prevents friction as the bones move against one another. In freely movable joints, the entire joint is enclosed inside a membrane filled with lubricating synovial fluid, which helps to provide extra cushioning against impact.

Muscles are attached to bones with thick, tough bands of connective tissue called tendons. Where tendons lie close to bone, tiny sacs called bursae sit between the tendon and the bone to reduce friction. A bursa is filled with synovial fluid.

**Joint conditions**

Common causes of joint pain include:

- **arthritis** – inflammation that causes stiffness and pain in the joints (rheumatoid arthritis or gout) or degeneration (osteoarthritis)
- **bursitis** – inflammation of the bursae (fluid-filled sacs that cushion and pad bones)
- **infection** – within the joint
- **tendonitis** – inflammation, irritation and swelling of a tendon that is attached to the joint.
- injury – including sprain or strain of a ligament or nearby tendon or muscle, or bone fracture.

**Where to get help**

- Your **GP** (doctor)
- **Physiotherapist**
- **Exercise physiologist**
- ESSA Exercise & Sports Science Australia Tel. (07) 3862 4122
- **Osteopath**
- **NURSE-ON-CALL**, Tel. **1300 60 60 24** – for expert health information and advice 24 hours, 7 days a week.