

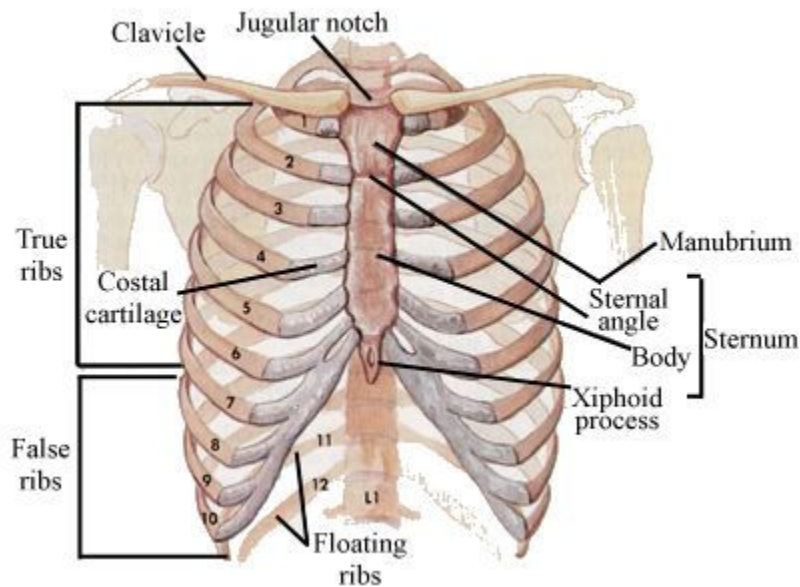
Rib Cartilage Injuries

Structure of the ribcage

The ribcage supports the upper body, protects internal organs including the heart and lungs, and assists with breathing. It consists of 24 curved ribs arranged in 12 pairs. Each pair is attached to a vertebra in the spine. At the front of the body, the first seven pairs of ribs are attached directly to the sternum (breastbone) by cartilage known as costal cartilage. These ribs are often called ‘true ribs’.

The next three pairs aren’t connected to the sternum. Instead, costal cartilage attaches these ‘false ribs’ to the last pair of true ribs. The remaining two pairs aren’t attached at the front of the body at all and are known as ‘floating ribs’.

The ribcage is supported by ligaments and muscles, including the muscles between the ribs (intercostal muscles). These muscles allow the ribcage to expand when you breathe in, and drop when you breathe out. Rib injuries include bruises, torn cartilage and bone fractures.



PHYSIO4ALL

revitalise – bounce – be healthy

Symptoms of rib cartilage injury

Symptoms of rib injuries depend on the type and severity of the injury, but can include:

- Pain at the injury site
- Pain when the ribcage flexes – for example when you breathe, cough, sneeze or laugh
- Pain when rotating or side flexing your spine
- Crunching or grinding sounds (crepitus) when the injury site is touched or moved
- Muscle spasms of the ribcage
- Deformed appearance of the ribcage
- Breathing difficulties.

Blunt force is the common cause of injury

Rib injuries occur when the chest is directly hit. These types of situations include:

- **Motor vehicle accidents** – eg, slamming the chest against the steering wheel.
- **Crush injuries** – eg, a heavy object landing directly on the chest.
- **Sports-related injuries** – eg, a heavy tackle.
- **Falling from a reasonable height** – eg, off a roof or ladder.
- **Assault** – eg, getting hit by a baseball bat.

Soft tissue injuries

Soft tissue of the ribcage includes the intercostal muscles and the costal cartilage.

Common injuries include:

- **Bruising** – the blood vessels rupture and leak blood into the surrounding tissues. Bruising of the chest wall is a common rib trauma.
- **Intercostal strains** – intercostal muscles allow the ribcage to move up and down. These muscles can be strained by any activity that involves extreme or forceful twisting of the body or swinging of the arms. Sports that commonly cause this type of injury include cricket, golf and tennis.
- **Costochondral separation** – the rib is torn loose from the costal cartilage and is detached from the sternum.

PHYSIO4ALL

revitalise – bounce – be healthy

Rib fracture

The curved design of the ribs makes them resistant to fractures. Their ability to flex helps the bone to absorb the force of a blow. However, any bone will break if the force exerted against it is stronger than it can structurally withstand. A rib is most likely to fracture at its outer curve, which is its weakest point.

Older people are more prone to rib fractures because bones thin with age. Children are less likely to break ribs because their bones are relatively flexible. To correctly diagnose a rib fracture a chest X-ray is necessary.

Treatment

Unlike bones of the arms and legs, broken ribs can't be set in a cast. Treatment aims to relieve pain while the injury heals, which can take up to six weeks (in the case of fracture) and 12 weeks or more if the rib has been torn from the cartilage. Treatment for bruised ribs is the same as for fractured ribs but with a shorter recovery time.

Treatment may include:

- Rest
- Prescription strength pain-killing medication
- Non-steroidal anti-inflammatory medication
- Strapping or bracing to support the injured area
- Avoiding activities that aggravate the injury, such as sport
- Icepacks – these may help to reduce inflammation in the early stages
- Mechanical ventilation (help with breathing) – this may be needed in cases of severe flail chest. Important to encourage normal breathing.

Differential diagnosis

- Costochondritis is a condition that causes chest pain due to inflammation of the cartilage and bones in the chest wall. Costochondritis occurs when there is inflammation at the junction of the rib bone and breastbone (sternum). The cartilage at this junction can become irritated and inflamed. Depending on the extent of the inflammation, costochondritis can be quite painful. However, this condition differs from rib cartilage injuries described above as it occurs without a preceding traumatic incident. This condition may be viral in nature.
- Pneumothorax or punctured lung – this is a medical emergency and needs to be managed in an Emergency Hospital Department
- Thoracic Nerve irritation

Shop No. P16, NorthPoint, 100 Miller St. North Sydney. NSW – 2060

T – (02) 99222212 F – (02) 99225577 W: www.physio4all.com.au E: info@physio4all.com.au

ABN: 77 548 297 578