

# LIGAMENTS

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Ligaments are strong bands or cords of fibrous tissue, similar in structure to tendons but generally less elastic. They hold together bones where they form a joint, help to support joints, join tendons to bone and hold tendons in position.

Ligaments can be classified according to their position:

***Capsular Ligament;***

Forms the joint capsule which is attached around the margins of the joint surfaces. It is composed of two layers: the outer fibrous layer and the inner synovial layer.

***Collateral Ligaments;***

Situated at the sides of joints holding bone to bone. These ligaments are immensely strong and will tear away from their attachment before they break themselves.

***Periarticular Ligaments; (Peri-Around).***

These form part of the fibrous layer of the joint capsule.

***Intra-articular Ligaments; (Intra: within.)***

These are situated within the joint cavity.

***Interosseous Ligaments;***

Connect directly opposed surfaces of bone together e.g. - the 2nd and 4th metacarpals to the Third Metacarpal bone. They have very short fibres which allow limited movement.

## Ligaments associated with Tendons

***Annular Ligaments;***

Flat fibrous sheets, that passes around tendons to "hold" them in positions, e.g. - palmer annular ligament of the fetlock joint.

***Check Ligaments;***

These join bone to tendon to prevent over extension of the joint and tendon and so prevent damage to the muscle.

## Functions of Ligaments

Ligaments can fasten bone to bone, allowing little or no movement.

e.g. **interosseous ligament**

Ligaments can fasten bone to bone, allowing directional movement.

e.g. **collateral ligament**

Ligaments can wrap around joints and contain fluid.

e.g. **capsular ligament**

Ligaments can hold tendons in position in the area of a joint.

e.g. **annular ligament**

Ligaments can fasten tendons to bone, preventing damage from over extension.

e.g. **check ligaments**

They can form independent parts of the stay apparatus.

e.g. **suspensory ligament**

Ligaments can hold cartilage in place.

e.g. **Chondroungular ligament**

Ligaments can form a Scutum.

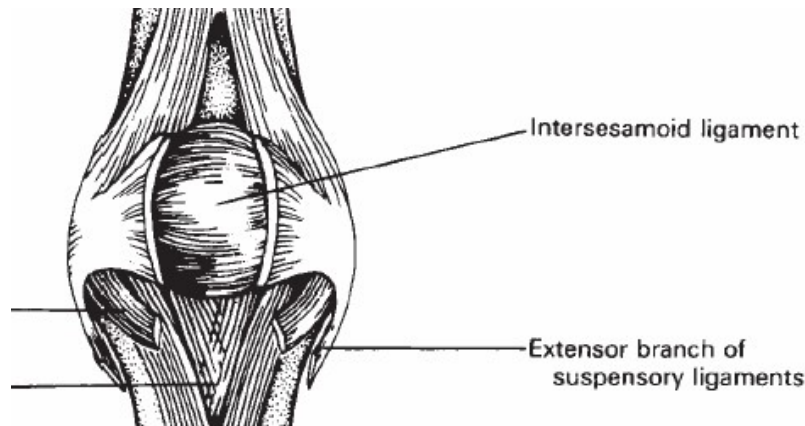
e.g. **palmer Intersesamoidian ligament.**

## Ligaments of the Lower Limb

### METACARPO-PHALANGEAL JOINT (FETLOCK)

#### Palmar Intersesamoidian Ligament

A deep ligament that connects the proximal Sessamoids together and covers the palmer surface of the sesamoids for the smooth passage of the deep Digital Flexor Tendon that passes over it.



#### Collateral Sesamoidian Ligament

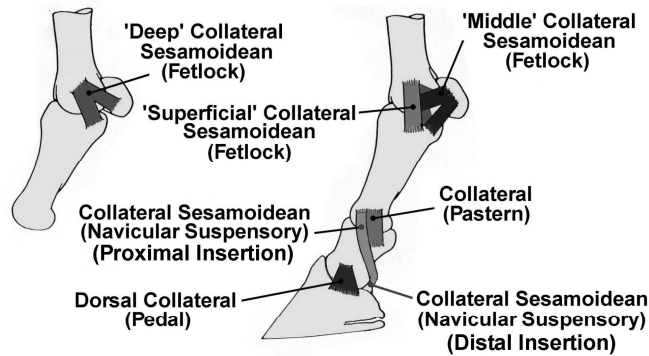
These ligaments are attached to the proximal abaxial surface of the Proximal Sesamoids, this ligament divides into two branches, and the proximal branch attaches to the distal extremity of the Third Metacarpal, the distal branch to the proximal extremity of the Proximal Phalanx.

#### 2 Collateral Ligament of the Fetlock Joint

(These are in two layers)

- (i) The Superficial Layer passes vertically from the distal extremity of the Third Metacarpal to the proximal extremity of the Proximal Phalanx.
- (ii) The Deep Layer which originates beneath the superficial in the pit of the distal extremity of the Third Metacarpal and passes one branch downwards and backwards to attach to the abaxial surface of the Sessamoid Bone and one branch to the proximal extremity of the Proximal Phalanx.

## COLLATERAL LIGAMENTS



*Figure 2 collateral ligaments*

### **Straight Sesamoidian Ligament**

This ligament is attached proximally to the palmar distal border of the Proximal Sesamoids and distally to the complementary fibro-cartilage of the Middle Phalanx.

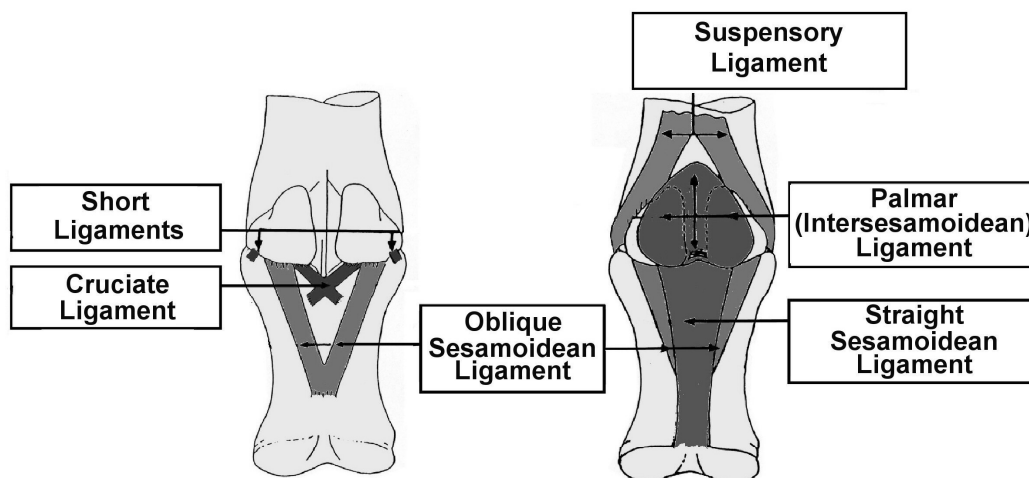
### **Cruciate Ligaments**

These are attached to the distal border of each sesamoid and cross over and interleave with each other to their attachments at the palmar proximal border of the Proximal Phalanx.

### **Oblique Sesamoidian Ligament**

This ligament is triangular with thick outer borders and a thin central portion. It is attached to the base of the sesamoid bones and to the triangular area on the palmar surface of the proximal phalanx.

## LIGAMENTS OF THE FETLOCK



*Figure 3 ligaments of the Fetlock Joint*

### PROXIMAL INTER-PHALANGEAL JOINT (Pastern)

#### **Collateral Ligaments**

These are short ligaments that are attached proximally to the sides of the distal extremity of the Proximal Phalanx and distally to the sides of the proximal extremity of the Middle Phalanx.

#### **Suspensory of the Distal Sessamoid \***

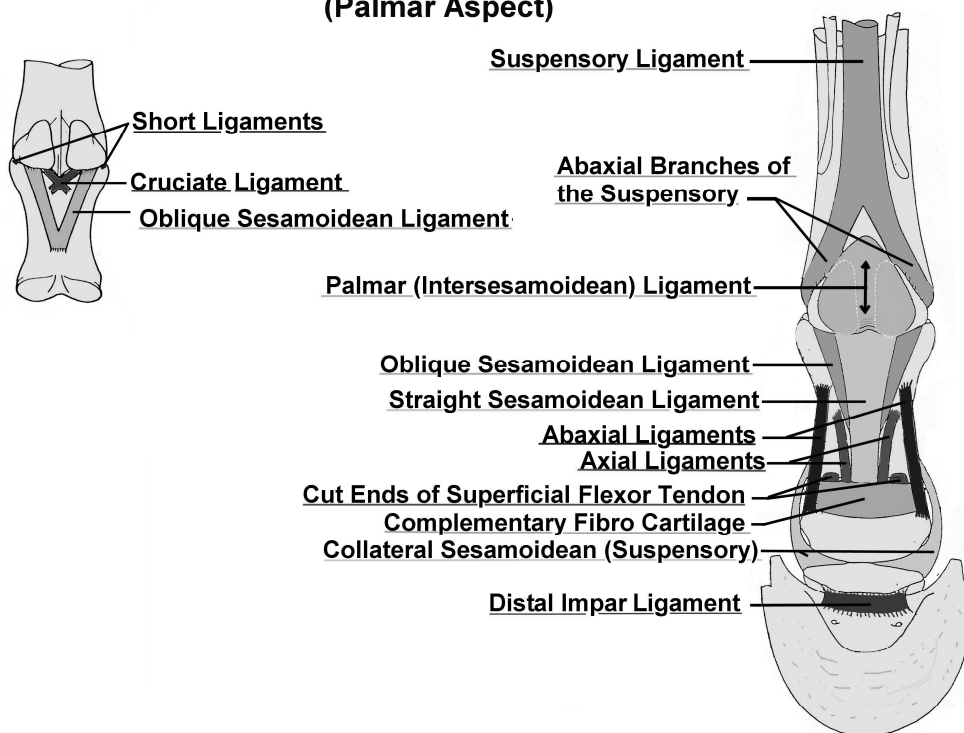
(Collateral Sesamoidian Ligaments of the Proximal Inter-phalangeal Joint)

These are attached to the sides of the distal extremity of the Proximal Phalanx, they run downwards and backward passing inside each lateral cartilage, onto which short fibres attach themselves, down to their attachment at the extremities and border of the Distal Sessamoid Bone.

### Palmar Ligaments - (2 Pairs)

1. Abaxial Ligaments pass from the palmar lateral aspect of the Proximal Phalanx to the Plate of Complementary Fibro-cartilage.
2. Axial Ligaments are shorter; they pass from the palmar aspect of the Proximal Phalanx to the fibro-cartilage.

### LIGAMENTS OF THE DIGIT (Palmar Aspect)



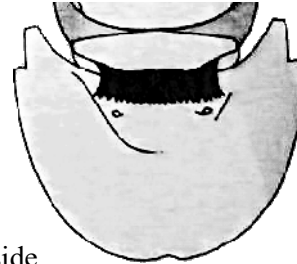
*Figure 4 ligaments of the digit including the middle interphalangeal joint palmar aspect*



## DISTAL INTER-PHALANGEAL JOINT (Pedal Joint)

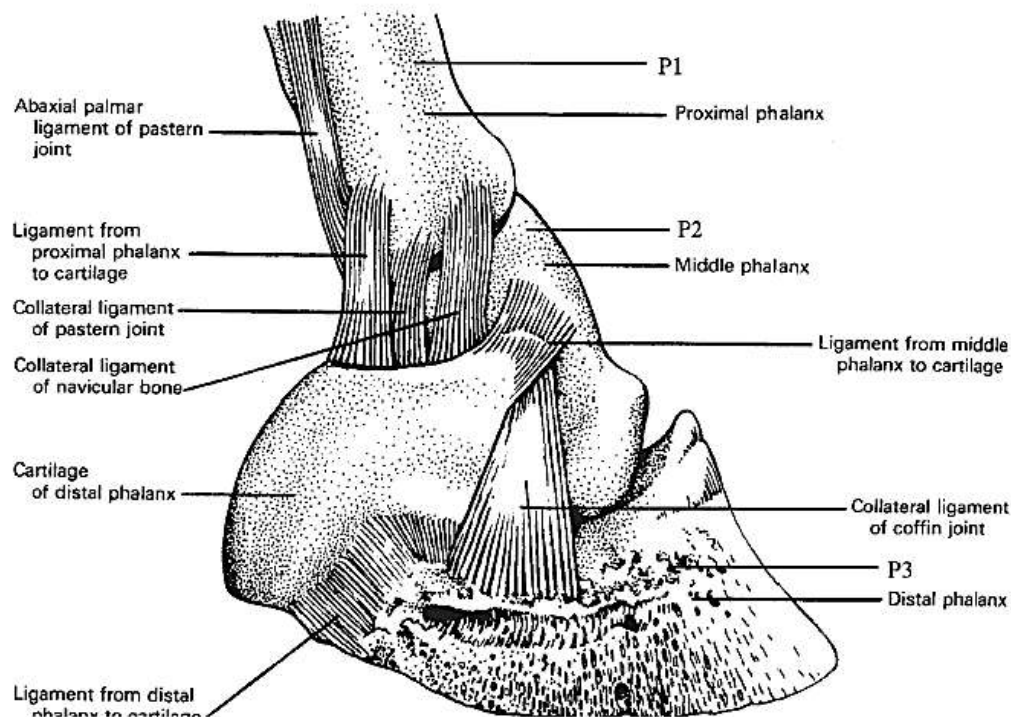
### Interosseous Ligament (Distal Impar Ligament)

This is a short ligament connecting the distal border of the Distal Sesamoids to the adjacent surface of the Distal Phalanx.

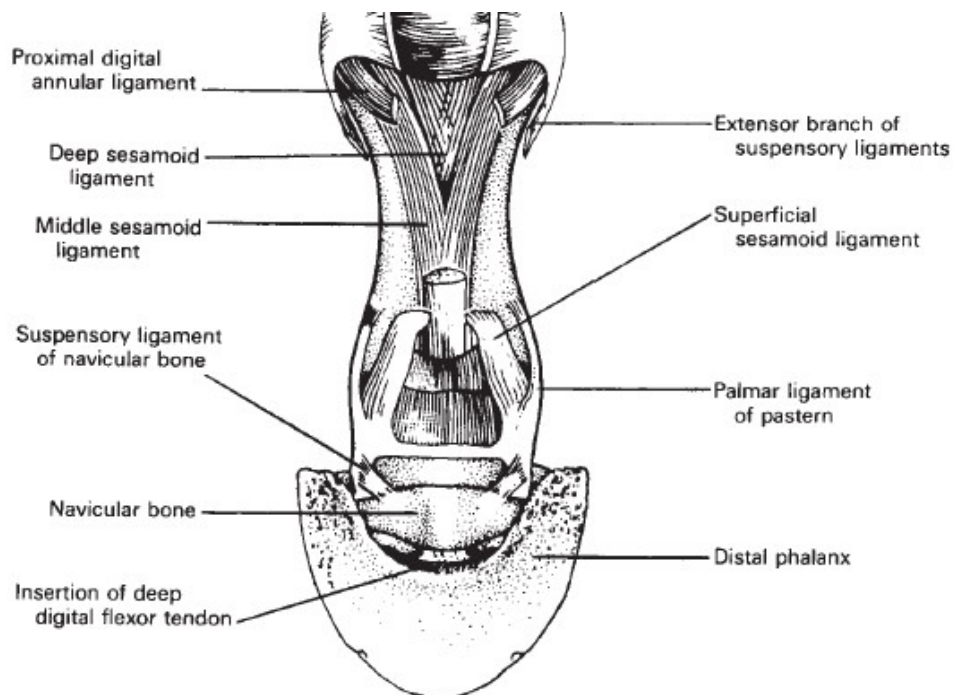


### Dorsal Collateral Ligaments

These pass from the side of the Middle Phalanx to the pit at the side of the extensor process of the Distal Phalanx.



*Figure 5 ligaments of the digit including the middle and distal interphalangeal joints lateral aspect*



*Palmar view of the ligaments of the distal forelimb of the horse*

*Figure 6 ligaments of the digit including the middle and distal interphalangeal joints palmar aspect*



## LIGAMENT SPRAINS

An injured ligament is usually called a sprain. A sprain can include the stretching or rupturing of the ligament, and the chances of complete recovery without hampering scar tissue being present are very low.

Ligaments consist of bundles of fibres made from fibrils of collagen that possess a limited capacity of elasticity so they can stretch a small amount and return to their original length.

## CAUSES OF LIGAMENT SPRAIN

By over stretching of the ligament when the limb is over extended, twisted or rotated excessively, more common in front limbs due to the higher weight-bearing ratio. A long sloping HPA or back at knee conformation may increase the likelihood of this type of injury.

- a. Fast work.
- b. Poor going/uneven surfaces.
- c. Unfit horse.
- d. Hard surfaces.
- e. Muscle fatigue (tired horse).
- f. Poor foot balance