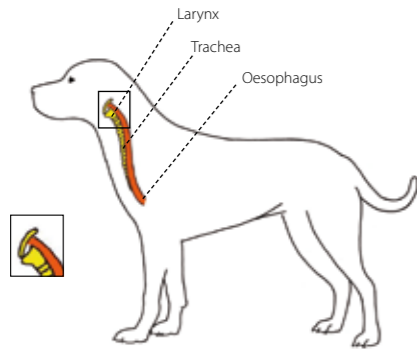


## Trachea

or windpipe is a tube reinforced by C-shaped cartilage rings.

**Collar damage:** the cartilage rings can flatten or break, resulting in a narrower diameter and thus respiratory problems.



## Larynx

sits at the top of the trachea and holds a very important valve. This valve closes to keep food from sliding down to the lungs

**Collar damage:** difficulties swallowing, choking, pain.

## Oesophagus

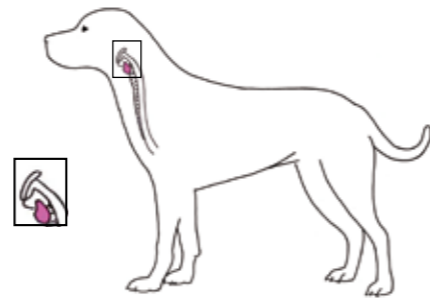
or gullet, is a muscular tube, transporting food from the mouth to the stomach.

**Collar damage:** difficulties swallowing, pain.

## Thyroid

This is one of the largest hormone secreting organs in the body. It has a very important role in regulating metabolism, body temperature, heart and respiratory rate, brain development, cell growth and mood.

**Collar damage:** mechanical trauma caused by a collar can lead to hypothyroidism.



## A Well Fitted Harness

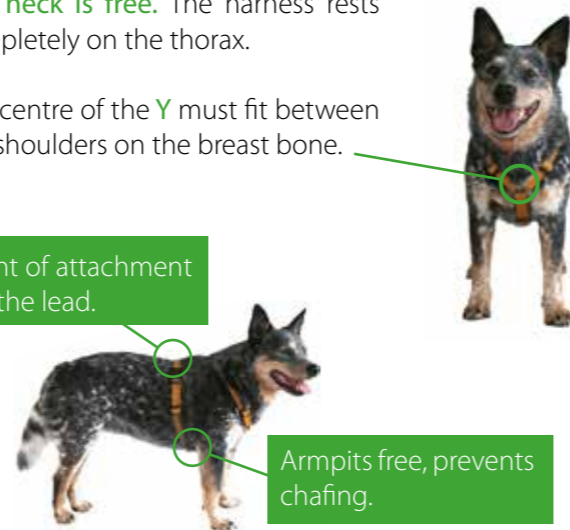
**Y-shaped** harness, keeps shoulder joints free.

**The neck is free.** The harness rests completely on the thorax.

The centre of the **Y** must fit between the shoulders on the breast bone.

Point of attachment for the lead.

Armpits free, prevents chafing.



# Did you ever stop to think about what happens under the collar?



For humans we know that **only 1 whiplash** accident can cause long-term pain and suffering.

The dog's anatomy is basically the same as ours. A collar damages the vital organs of the neck and causes **pain**, just like it would for us.

**Pain always affects behaviour.**

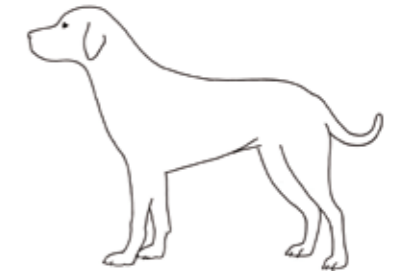
Content developed by Freedogz.be

## Vital Organs of the Neck

### Skin

A dog's skin is mostly covered with hair, which protects it against sunburn and to some degree against mechanical forces. The skin is a vital organ, forming an important barrier between the external environment and the internal body.

**Collar damage:** hair loss, irritation, bruises, wounds, pain.



### Muscles

The dog's neck muscles are constantly working against gravity to keep its head up. Unlike ours the centre of gravity of the dog's head falls outside its base of support. During movement the muscles of the neck keep the head balanced, to keep the line of vision and the organ of equilibrium in the inner ear level.

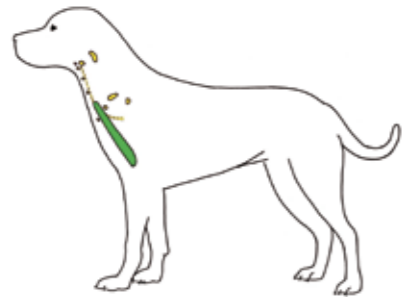


**Collar damage:** contusions, strains, pain, injury to the muscles of the neck influences the whole body movement.

### Lymph Duct & Nodes

Lymph is the fluid that surrounds all cells. It is collected in lymph capillaries and transported to the lymph glands. The nodes are important organs in the immune system they filter the lymph before the duct takes it back to the heart where it is reabsorbed in the blood.

**Collar damage:** swelling of glands, damage or rupture of the duct, impaired immunity, pain.



### Thymus

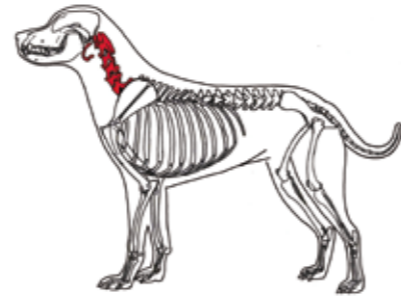
Another important organ of the immune system, in which the T-cells mature. T-cells are a type of white blood cells that play a central role in immunity. The thymus can be large in puppies, but atrophies (reduces in size) after adolescence. So only in puppies and young dogs can it be damaged by a collar.

**Collar damage:** mechanical damage to the thymus can result into a decrease in T-cell amount.

### Tongue Bone

Small horseshoe-shaped bone, where muscles of tongue and lower mouth attach. It is important in movements of the tongue and swallowing.

**Collar damage:** can lead to difficult and painful swallowing.



### Vertebrae and Intervertebral Discs

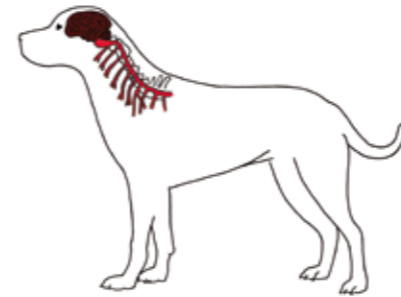
7 vertebrae form the cervical spine of the dog. The intervertebral discs consist of cartilage and collagen fibers.

**Collar damage:** tension on the collar results in a shear force causing unnatural movement that accelerates degeneration, causing osteoarthritis of the spine and possibly herniation of the discs.

### Spinal Cord

The spinal cord is a nervous tube that extends from the brain and passes through a canal formed by the vertebrae.

**Collar damage:** tension on the collar results in abnormal shearing stresses between vertebrae, that may result in narrowing of the spinal canal and impingement of the spinal cord.



### Nerves

Peripheral nerves branching out from the spinal cord exit the spinal canal in between two vertebrae. These nerves conduct motor impulses from brain to muscles and sensory impulses from skin to brain.

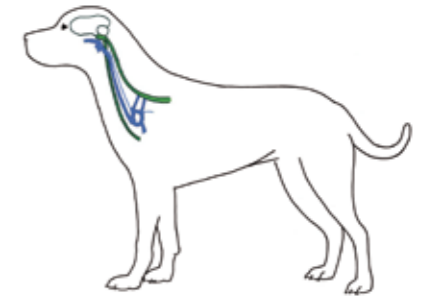
**Collar damage:** osteo-arthritis and herniated discs can impinge the nerves causing pain and impaired neurological functions.

### Sympathetic and Parasympathetic Nerves

These nerves are part of the autonomic nervous system, which controls the involuntary actions of the body

(heart rate, digestion, respiratory rate... ). They are the neurological communication between the brain and the organs of the body.

**Collar damage:** mechanical trauma can cause direct damage to these nerves or indirect due to swelling and pressure from surrounding tissues.



### Arteries and Veins

The blood vessels in the neck carry the blood to and from the head and brain.

**Collar damage:** pressure on the veins causes higher blood pressure in the brain and raised intra-ocular pressure, long-term effects may be impaired blood circulation in brain and glaucoma.

