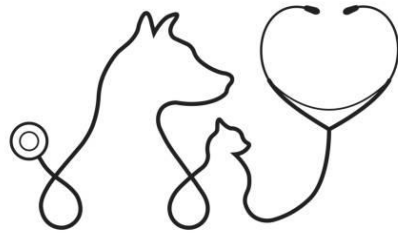


GROWTH OF THE PUPPY



Patrizio Donati DVM



The period of growth in a puppy is characterized by rapid development, regardless of the type of breed, small or large.

Did you know that:

SMALL BREEDS can increase their birth weight by 20 times? !

GIANT BREEDS can increase their birth weight by 100 times? !

The most of the growth is completed in the first 6-8 months in small breeds and in the first 12-14 months in giant breeds.

This is why it is particularly important to intervene immediately in case of growth problems, while the growth plates are still open, so that the body has time to recover and correct the "defects".



Puppies can face numerous orthopedic problems during growth.

These problems, in some cases, are caused by a genetic and hereditary predisposition (e.g., dysplasia).




For the most part they are the consequence of:

- **trauma and microtrauma** ! (to which the puppy is particularly exposed due to its natural exuberant temperament)
- **incorrect nutrition** !

Be aware that **skeletal growth diseases**, especially if they occur in **the first months of development**, can cause damage that will accompany the dog for life.



It is important that the **owner** and the **veterinarian** are particularly attentive to the **first signs or symptoms** of growth problems in order **to diagnose** and **treat** early the reasons that are the base of various disorders.

Always remember that **PREVENTION** is better than **CURE** . This is why we recommend **using DOGOJunior** right from the start, when the puppy is not showing any problems. This product should accompany the puppy until the end of development.





Today I will talk to you about **3 problems** that unfortunately, I frequently encounter within my professional practice:

- left-handedness due to ligamentous laxity of the carpus
- the angular deviations of the forelimbs and hindlimbs
- carpal hyperflexion

LIGAMENTOUS LAXITY



Let's start with the defects of **forelimbs** due to **ligament laxity**. The puppy especially if raised at home often plays on slippery surfaces and floors.

Furthermore, it often happens that a newly bought puppy is exaggerated to play and run by the various family members who often do not realize that these efforts can damage the **fragile joints**, causing distension of the capsule and the **ligaments**, which will stretch because they are not sufficiently elastic, and are often poorly structured due to a **poor quality of nutrition** which does not provide the high quality substances necessary for the synthesis of those proteins, that are **fundamental** and indispensable for the **structure of muscles, ligaments and joints**.



Substances that I briefly remind you:

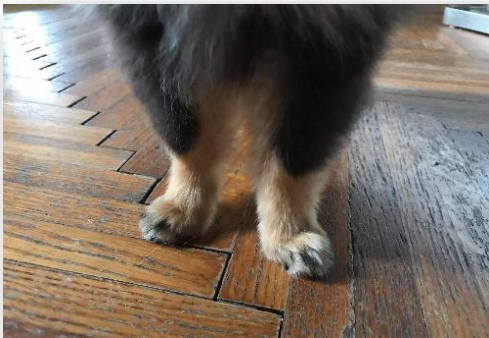
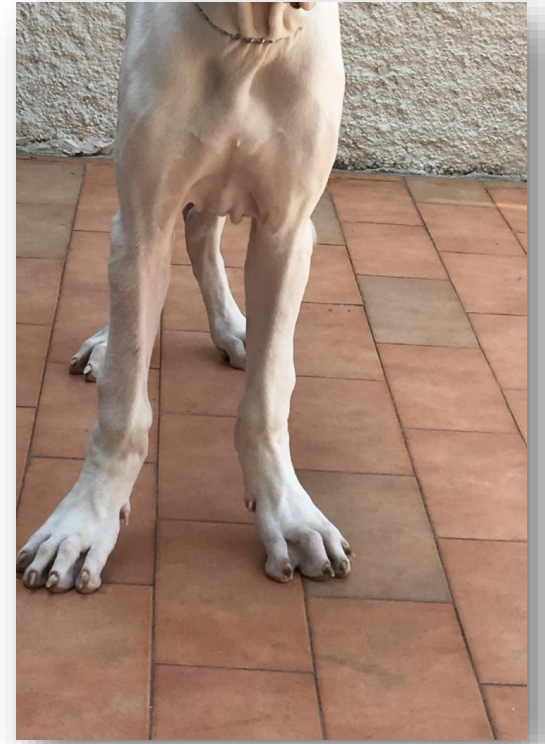
- **CHONDROTIN AND GLUCOSAMINE SULFATE** which contribute to the correct development of joint cartilages and prevent alterations due to joint movement
- **EQUISETUM ARVENSE, LAMINARY ALGAE AND SPIRULINA ALGAE** which counteract growth and ossification disorders
- **VITAMIN C** which activates the formation of collagen which is an essential protein for the healthy structure of the ligaments
- **SELENIUM** which strengthens the fibrous tissue of the ligaments
- **PERNA CANALICULUS**

All of these substances are contained in DOGOteka's **DogoJunior product**.



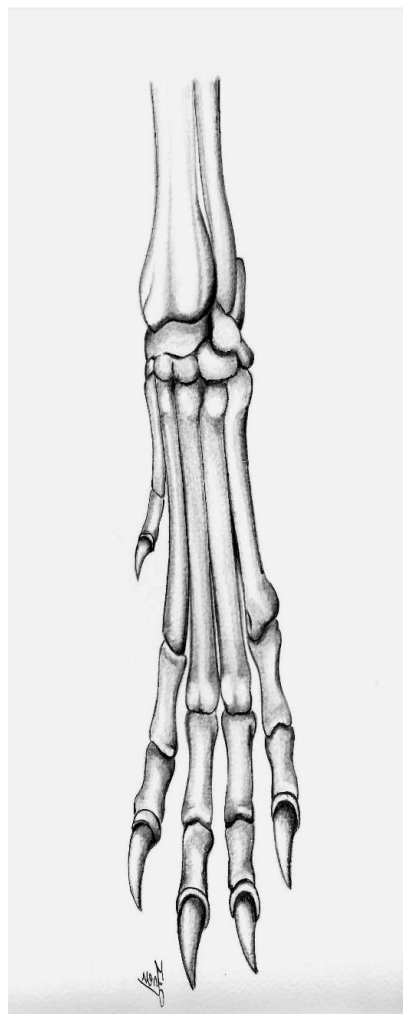
LIGAMENT LAXITY is a particular physical condition in which the ligaments are unable, to adequately support the joints because they are too stretched. In dogs it often happens in the joint capsules and the metacarpal ligaments. Here are some examples.





LIGAMENT LAXITY examples

VIZSLA - 4.5 MONTHS owned by Beata Wilonek, clinical case reported by Kasia Niemiec / Dogoteka Polska



This 4.5-month HUNGARIAN VISZLA has skeletally normal joints and its posture is due to the laxity of the capsule and carpal ligaments that present a lower tension than normal, that causes exaggerated joint motility with outward deviation of the forefeet.

The female named Saya Goraszka was followed by [Dr. Patrizio Donati](#) and [Kasia Niemiec](#) **Dogoteka Polska**.

The dog was photographed **every week** in the **same position** for **8 weeks** while administering the **DOGOMINI** supplement.

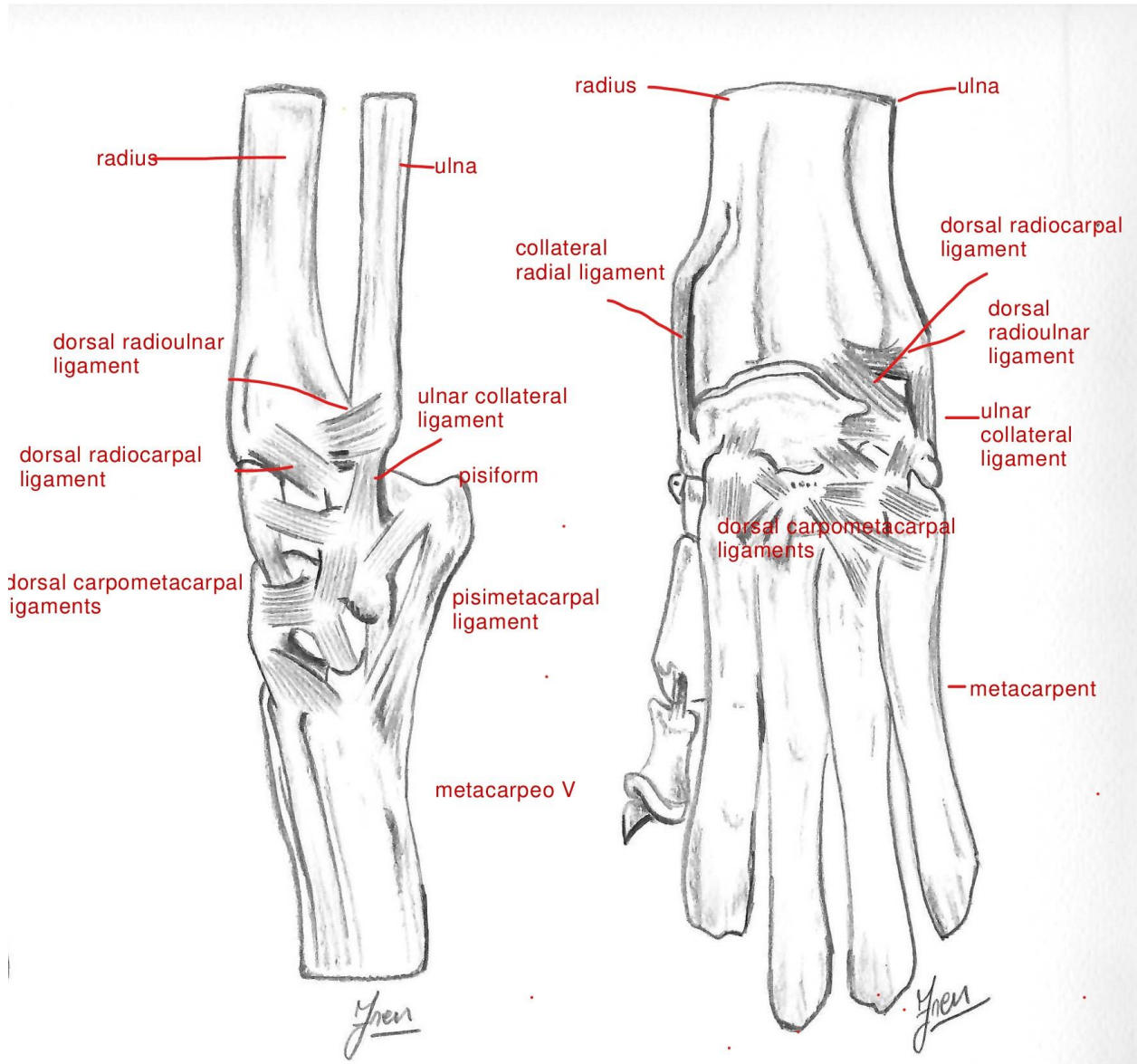
From the drawing it can be seen that, in the carpus, there are many ligaments that can experience laxity.





The photos demonstrate how the correct supplement can correct a puppy's growth failure.



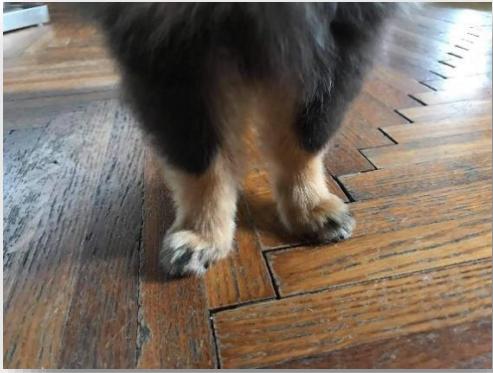


CONCLUSION

I want to repeat that it is very important that the **puppy's diet** brings the high-quality substances, necessary for the synthesis of those proteins which are fundamental and indispensable for the structure of the muscles, ligaments and joints through integration with the **DogoJunior**, even better when combined with **MultiAdapt** during growth.

On the **Dogoteka** website or on the social profiles Instagram and Facebook there are numerous cases with photos before and after that treat ligament laxity which is very well resolved with **Dogoteka** products.





Pomeranian example

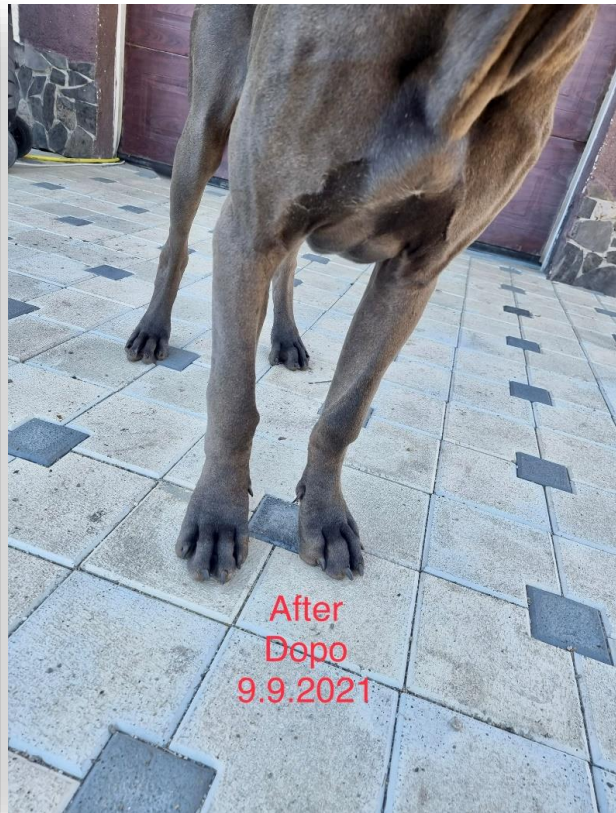


Chihuahua example

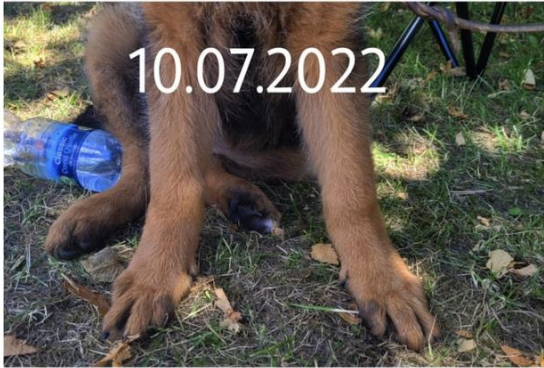


Siberian Huskey example





Great dane example

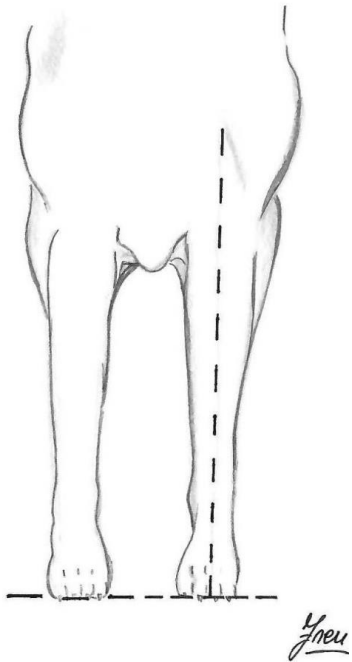


German Shepherd example

2. ANGULAR DEVIATIONS

Angular deviations are the alterations of the limbs seen in the frontal plane.

2.1. ANGULAR DEVIATIONS OF THE FORELEGS



FORELEGS

These alterations involve the two bones of the forearm: the radius and the ulna and can be the consequence of a traumatic, metabolic, or an infectious disorder that can cause the death of the growth plate cells, so that the growth of the affected bone stops.



Correct front view of forelegs in Great Dane
– Diamante della Baia Azzurra

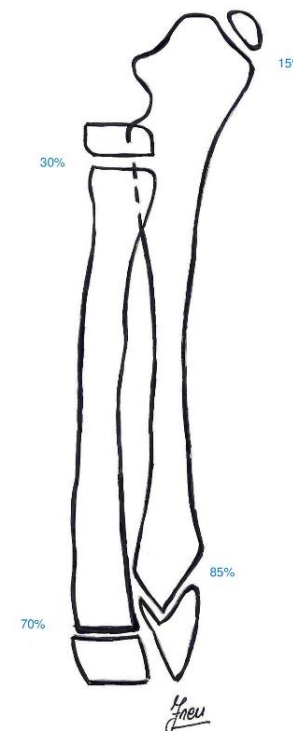
The **RADIUS** and **ULNA** are two distinct bone segments, but together they form a single anatomical region which is the **forearm**.

Only here we find two paired bones: this type of joint allows the pronation and supination movement of the hand that otherwise would not be possible.

This anatomical advantage, however, requires that their growth in length occurs synchronously, since a reduced development of one of the two segments in respect to the other would cause anatomical and functional problems to the forearm.

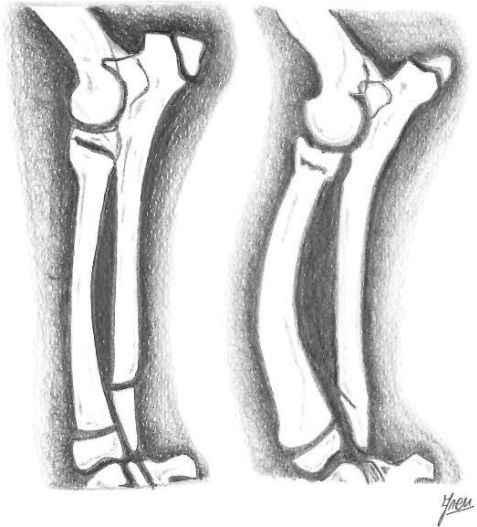
In dogs, the radius and the ulna each have two growth plates, each with a different growth rate. In particular, in the radius the distal physis contributes **70%** to the total lengthening of the bone, while the proximal one contributes to growth for the remaining **30%**. In the ulna the differentiation is even more marked as the distal growth plate contributes 85% of the ulna growth.

Therefore, the cessation or reduction of the growth of any of the three physis in question determines shortening and angular deformation of the forearm, since the lower growth of the affected bone limits, also, the development of paired bone.

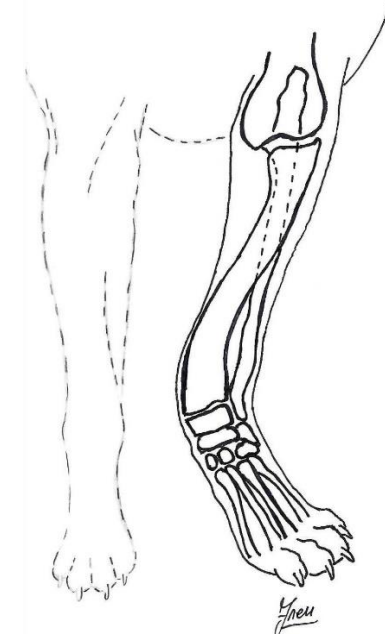


2.2 PREMATURE CLOSURE OF THE DISTAL ULNAR EPIPHYSEAL DISC

In dogs, this is the most common injury. As I have already told you, this physis is responsible for 85% of the longitudinal growth of the ulna. Hence, a delay or cessation of its activity produces a noticeable ulnar shortening. The shorter ulna acts like a bowstring on the radius and its tension causes a curvature of the radius (curved radius), an outward rotation and a lateral deviation of the foot.



In the drawing and radiography, on the left the radius and ulna with normally open growth plates, on the right, closure of the distal growth plate of the ulna which, by blocking the growth of the ulna itself, curves the radius.





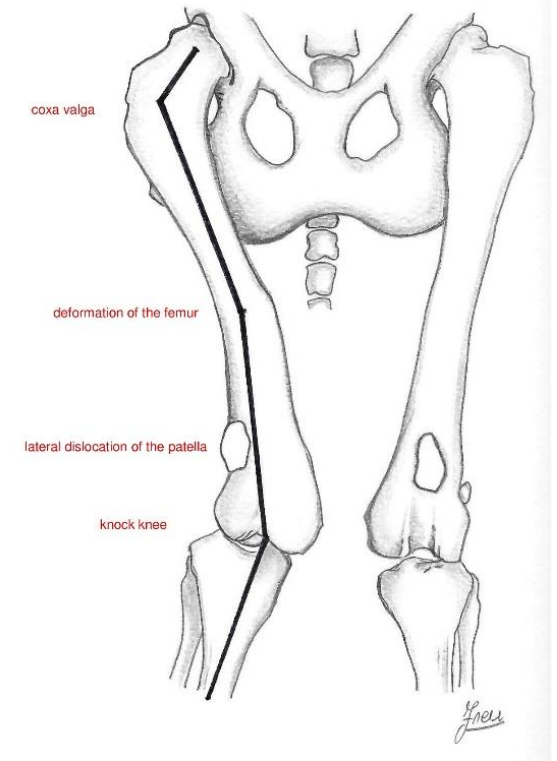
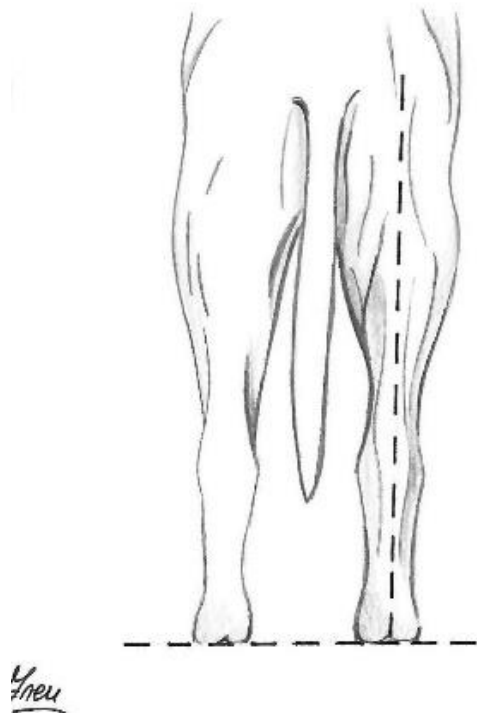
In addition to the easily intuitive aesthetic damage, the deformities of the anterior can be responsible for serious functional deficits, mainly linked to the modification of the relationships between the various bones and to the bad conformation of the articular surfaces. Joint damage, in particular, produces consequences that accompany the animal throughout its life; every joint injury, in fact, inevitably involves the development of osteoarthritis which is progressive and irreversible.

One factor, which greatly influences the entity of skeletal changes resulting from the premature closure of the forearm physis, is the age of onset of the disorder. It has been estimated that for example in Great Dane that 90% of bone length growth occurs in the first 9-11 months of life. A trauma that blocks the growth plates and that occurs at a very young age consequently causes severe axial deformations in forelegs.

On the other hand, the earlier the intervention or corrective interventions are, the less the deformations to be corrected will be and the more the dog's body and its growth margin will have the possibility to remedy the defect that was created.

2.3 ANGULAR DEVIATIONS OF THE HINDLEGS

Correct positioning of hindlegs assumes that the hip-knee-hock-foot are in the same sagittal plane. The alignment of all these structures is necessary and indispensable to maintain the correct action of the muscles and tendons of the leg and the stability of the knee.

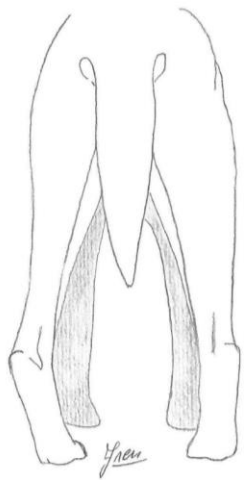


Hindlegs

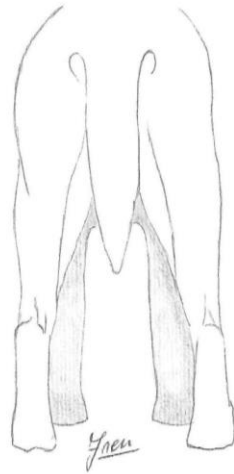
When these assumptions are lacking in the hindlegs, we can have angular deviations that we can broadly frame in this way:

Which we can basically attribute to two reasons:

1. Decreased inclination of the femoral head which is inserted at a lower angle into the acetabulum cavity.
2. An incorrect alignment of the femur and tibia resulting from their anatomical malformation.



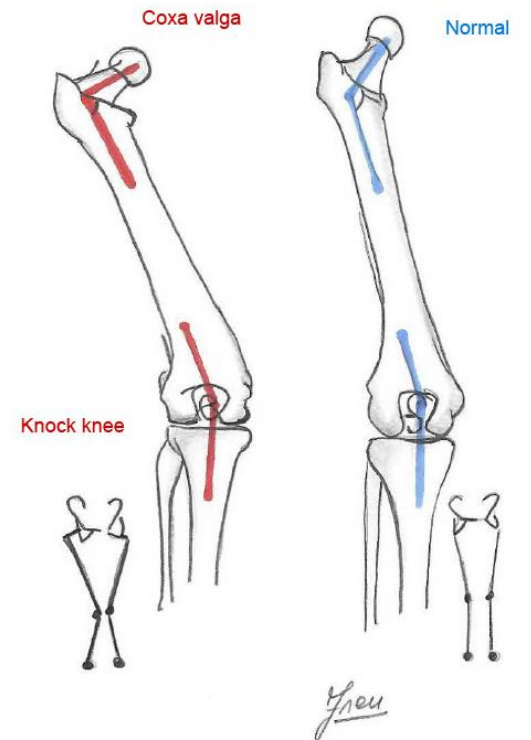
Incorrect barrel legs



Correct legs



Cow hocks



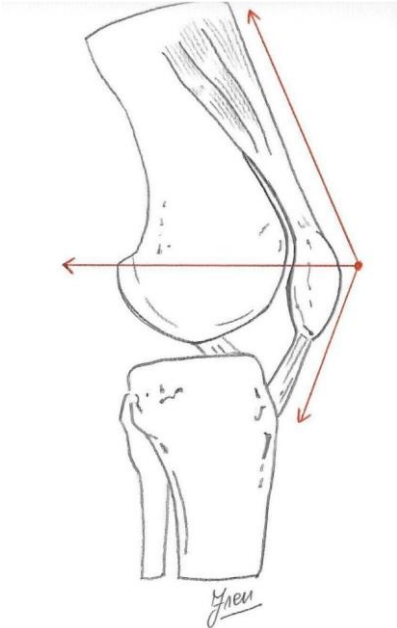
ON THE X RAY ON THE LEFT PATELLA IN POSITION



The result of these two situations results in an hindlegs defect with the patella dislocated laterally.

This small bone that assumes tremendous importance in determining normality or angular deviations of the hindlegs is called the **patella**.

If you want to know exactly where the **patella** is, place a hand on the tip of the knee. You did? That bone you feel is the patella.

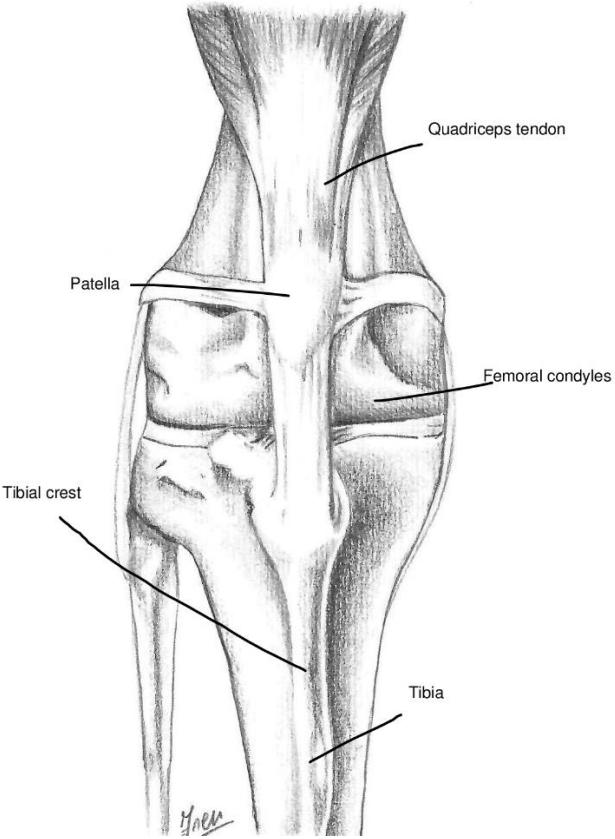


ON THE X RAY OF THE RIGHT LATERAL LUXATION OF PATELLA

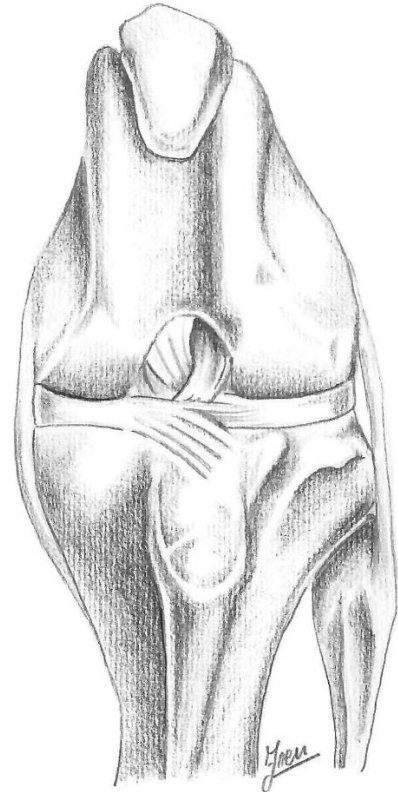


It is placed in the tendon of insertion of the quadriceps femoris muscle and acts by increasing the lever arm of the quadriceps muscle ensuring the extension of the leg, it also protects the anatomical structures located inside the knee (ligaments and meniscus).

Knee complete with muscles and tendons

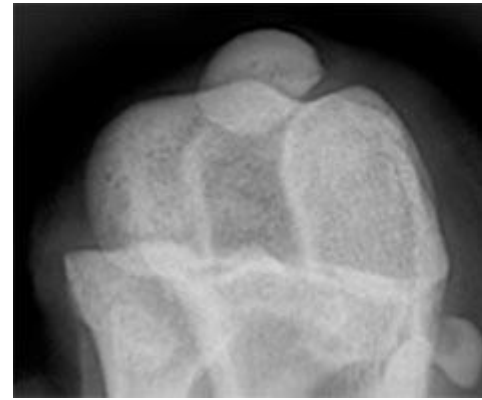


Knee showing the patella without muscles and tendons



As long as the patella remains in its place in the knee, the dog can walk, run, jump and move easily.

On the contrary, when the patella slips out of its track/groove the dog will suffer from pain and knee problems. If the patella slips out of its groove, the position of the hindquarters changes completely.

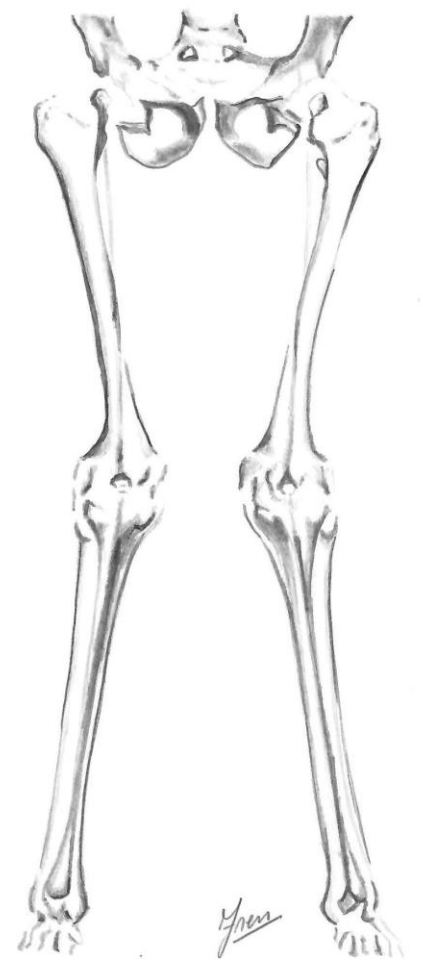
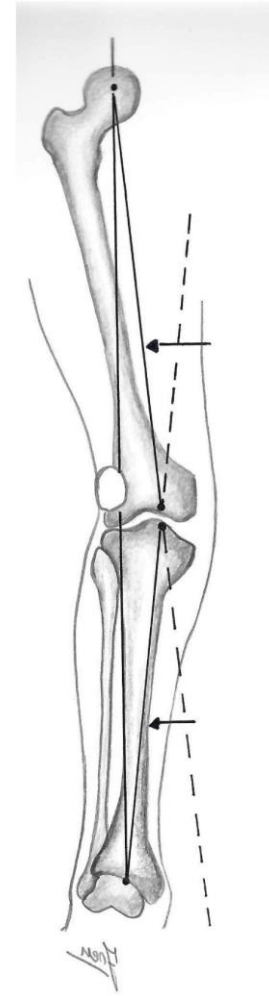
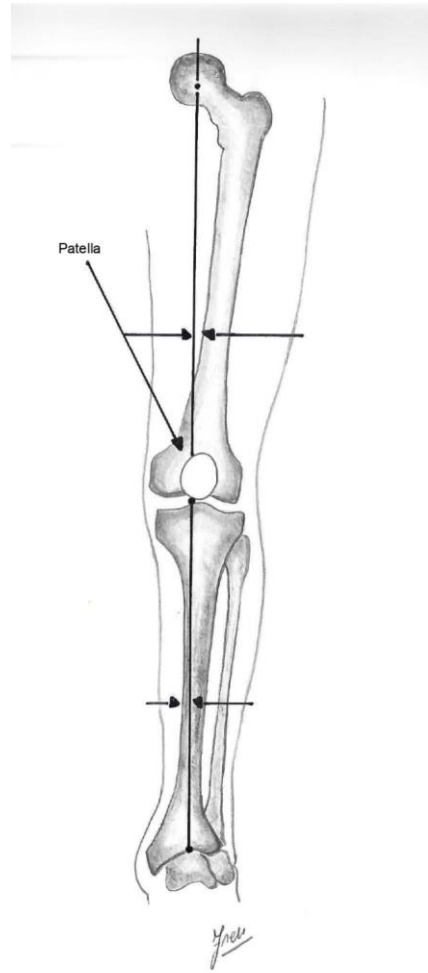
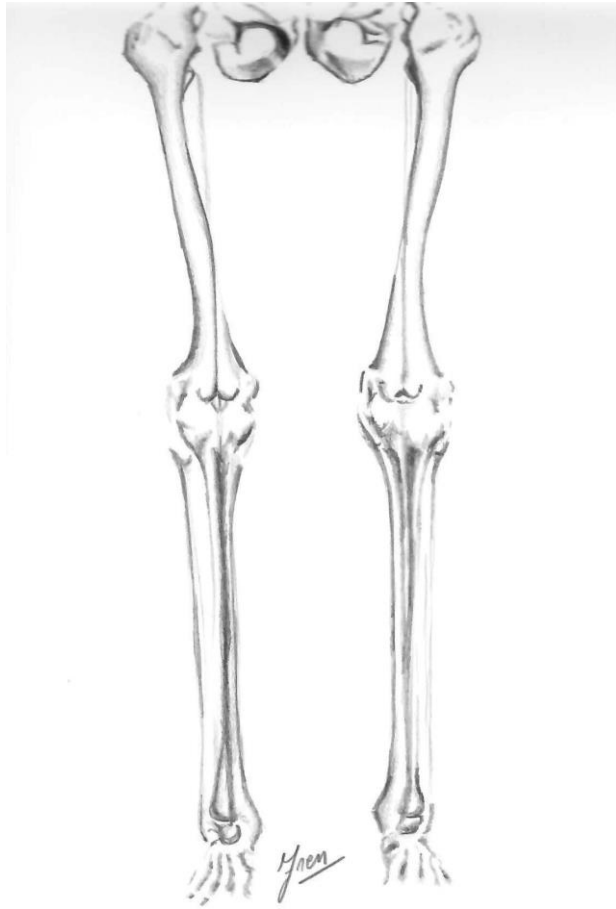


The left X-ray shows the patella in the correct position. ✓



On the right X-ray the patella is displaced to the left. ✗





Patella in normal position- correct position of hindlegs



Patella dislocated laterally - knees turned inside





Before-Prima

After-Dopo

Boxer



Great Dane



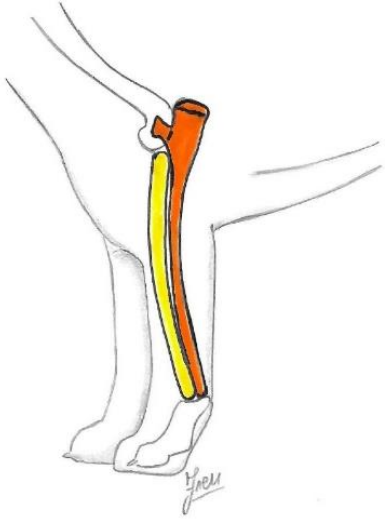
10.8.2021

31.10.2020

Great Dane

3. HYPERFLEXION OF THE CARPUS

Pathology caused by contracture of the ulnar flexor carpus muscle **THAT AFFECTS VERY YOUNG DOGS** and of medium to large and giant size, usually bilateral, (it is rare, when only one limb is affected).



Radius bone in yellow

Flexor muscles in red



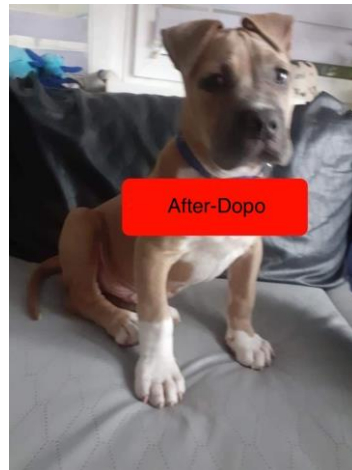
VIDEO BEFORE



VIDEO AFTER



The functions of both muscle heads are flexor of the carpus. If the bony part grows faster than the tendon/muscle part, the latter causes an exaggerated traction on the carpus which tightens the wrist. This problem is aggravated by the puppy's excessive weight and exaggerated movement.



All these cases and many others are visible on the [Dogoteka website www.dogoteka.si](http://www.dogoteka.si) these problems have been solved with the help of **DogoJunior**, **DogoMaxy** and **MultiAdapt**.

All breeds in which the lesion occurs, normally have a particular conformation of the carpometacarpal region with a very "closed" joint angle.



MAREMMA AND THE ABRUZZES SHEEPDOG

Breeds such as the German Shepherd, Maremma and the Abruzzes Sheepdog or the Newfoundland that have an “open” angle are potentially affected by the “carpal hyperextensory syndrome.

Here are some cases of carpal hyperextension in a Newfoundland and a German Shepherd, which were treated with Dogoteka products, and the problem was resolved in a short time.



DOGoteka



DOGoteka
ITALIA



At the end of this roundup of **ORTHOPEDIC PROBLEMS** I would like to talk to you about some important considerations for those who **BREED** or how these **DISEASES ARE TRANSMITTED** and how they can be avoided.

There are some subjects who are **PREDISPOSED** to get affected with these pathologies, they are subjects who have in their genetic heritage those characters for which they can potentially develop the problem. The possibility of the problem occurring in a genetically predisposed subject is increased or decreased by the influence that **ENVIRONMENTAL FACTORS** play on that subject.

For those who breed it is important to produce healthier dogs without losing those aesthetic results that characterize their breeding.

Therefore, given for certain that the genotype determines the heritability of a given trait and knowing the **genetic characteristics** of **TWO REPRODUCERS** we can **GENERALLY PREDICT** the result of their possible mating, let's give extremely different examples.

THE COLOR OF THE **EYES OR THE** COAT.



For example, these are not influenced by environmental conditions, they are traits that are transmitted in any case, in any environmental condition our subjects are found and therefore have a **HIGH HERITABILITY**, on the contrary, for example the physical ability to perform a certain exercise or to run faster are very influenced by the environment, the diet, the atmospheric conditions, these characteristics have a **LOW HERITABILITY**.

Developmental pathologies are in the middle of these two examples, indeed I would say downwards, HAVE A LOW HERITABILITY because the growth of a puppy is very influenced by the environment in which it lives, by the breeding method (at home on slippery surfaces, concrete box or free-standing lawn), from physical exercise (insufficient or exaggerated), from nutrition (especially in excess). These are all factors that significantly influence the growth and development of the musculoskeletal system.

The **environment** greatly influences the **PHENOTYPIC**, i.e., physical manifestations of the genetic patrimony of a single subject.

Seen from another point of view, we can say that an UNFAVORABLE environment can be useful to unmask the subjects with a certain pathology, while an extremely FAVORABLE environment can hide the problem entirely or in part.



NUTRITION is one of the important **environmental factors**. Proper nutrition is very important and brings all the **essential substances** for the:

- growth and development of joints,
- tendons
- Ligaments

With **Dogoteka** products we have succeeded in this intent. Proper nutrition supported by **DogoMaxy**, **DogoJunior** and **MultiAdapt** can achieve this goal.

Many orthopedic diseases begin subtly in **the first months of life** and then, if not diagnosed and treated in time, persist and worsen throughout the dog's life. Early diagnosis is therefore of considerable importance both for **breeders** and for the **owners** of individual subjects.

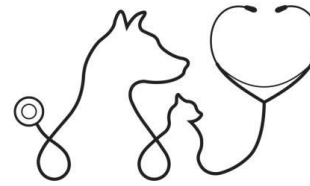
Breeders will be able to know early on what the genetic aptitudes of a puppy are, saving time and money for the owners who in turn will obtain information on the growth of the animal and on the need to resort to any **supplementary therapies** to guarantee, to their favorite, the well-being for a lifetime.



For the well-being of our dogs, it is therefore very important that **preventive medicine** becomes a "routine for everyone", and the use of **DogoJunior** and **MultiAdapt** are necessary for proper development and must be used even if the puppy grows without visible problems.

The **DogoMaxy** is added immediately in the event of **developmental problems** along with an accurate assessment of the diet.

So, let's see the so-called **GOLDEN RULES for the growth of a puppy**:



1. Early diagnosis can stop diseases or reduce the severity.
2. Do not underestimate any symptoms: **lameness** in a puppy that persists for more than a few hours/day must be thoroughly investigated before attributing it to a trivial cause.
3. Breed-Oriented Routine Surveys of the Puppy: There are different survey plans for different breeds.
4. When necessary, medical and/or surgical treatments must be targeted and tempestive but remember, once again that usually it is enough to act on simple environmental factors to solve serious problems.

An approach of this kind undoubtedly requires great attention from both the owner (or breeder) and the veterinarian; it is in fact very important to notice early symptoms or abnormal postures (**UNFORTUNATELY DOGS DO NOT SPEAK**) and to rely on a scrupulous veterinarian, who clearly indicates which are the diagnosis and intervention windows: some diseases can in fact be "seen" and treated only by certain ages.





Dr. Patrizio Donati DVM

veterinarian and one of the founders of **D** **G**OTeka