

# 10 FREQUENTLY ASKED QUESTIONS ABOUT FEEDING PUPPIES

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From a nutritional standpoint, growth is the most critical time in a dog's life. Nutritional inadequacies during growth can lead to problems which persist throughout the dog's entire life. This article will answer the most common questions asked about feeding puppies.

## 1) WHEN IS THE MOST CRITICAL TIME FOR A GROWING PUPPY?

The most rapid growth rate (and hence the most critical time nutritionally) occurs early in the puppy's life, from birth until about 4 months of age. By six months, growth rate has slowed considerably. Diet has its greatest effect on growth and development during the most rapid growth phase. Altering the puppy's diet after this time will not correct problems caused by improper feeding early in the growth period. Similarly, changing to an inappropriate diet later in the growth phase is less likely to contribute to problems or negate the positive effects of proper nutrition earlier on.

## 2) CAN HIGH ENERGY (CALORIE DENSE) PUPPY FOODS INCREASE THE RISKS OF SKELETAL DISORDERS?

Yes. Several studies, dating back to work in the mid 70s by Hedhammar et al (1974), demonstrate that "overnutrition" (excess energy, ie calories) can accelerate growth rate. Using X rays and bone measurements, Dammrich (1991) showed that accelerated growth rate caused by overnutrition resulted in less dense and structurally weaker bones. These weaker bones must support a heavier body mass and this increases the risks of skeletal defects such as hip dysplasia and osteochondrosis (OCD). Care must be taken when feeding calorie dense puppy foods since the risks of overfeeding calories is increased with these diets.

## 3) SHOULD PROTEIN BE RESTRICTED IN GROWING LARGE BREED PUPPIES?

No. It is believed by many people that large breed puppies will experience accelerated growth and abnormal skeletal development if

fed high protein diets. A study by Nap et al (1991) clearly refutes this. In Nap's study, young Great Dane puppies were divided into three groups. Each group received diets with similar nutrient and calorie contents, except that protein levels were quite different. The three diets in this study contained 31.6%, 23.1% and 14.6% protein respectively, but all delivered the same calories. The researchers found that "the differences in protein intake per se had no demonstrable consequences for skeletal development" and that "a causative role for dietary protein in the development of osteochondrosis in dogs is unlikely".

It is important to remember that it has been clearly shown in all species including dogs, that an animal's protein requirements are much higher during growth than they are during adulthood. Not only does a puppy's growing muscles and internal organs need additional protein, but the puppy is also developing several protein dependent systems such as the immune system (antibodies and lymphocytes are largely protein), the digestive system (digestive enzymes are composed of protein) and endocrine system (many hormones are proteins). A protein deficiency during growth could not only impair muscle and organ development, but could also affect the development of these critical body systems. It is very important that a puppy receives adequate protein during the growth.

## 4) WHEN SHOULD I CHANGE TO A MAINTENANCE DIET?

Again, a great deal of controversy exists on this topic. There is really only one rationale for changing to an adult diet early and that is to reduce the amount of energy (calories) being consumed by the puppy in order to slow the growth rate. In fact, it is far more appropriate to achieve this goal by feeding a lower energy growth diet, rather than changing to a maintenance food.

Growth diets have been formulated to meet the increased requirements of puppies. The more reputable brands have been fed to

growing puppies to ensure that they support healthy growth. In addition, the very best companies will ensure that their growth diets are also specifically tested with giant and large breed puppies under carefully monitored conditions. Maintenance diets are not tested on growing dogs and there is no assurance that they will meet the higher requirements of puppies.

## 5) DO LARGE BREED PUPPIES NEED A SPECIAL LARGE BREED PUPPY DIET?

Recent studies have shown that large breed puppies have more stringent requirements than do small breed puppies, in particular with respect to mineral levels and balance (Waltham Researcher, 1996). A diet which has been shown to support normal growth in a giant breed will also support normal growth in a toy breed, but the reverse is not necessarily true. Testing a growth diet using only beagles for example (a common practice), does not ensure that the diet is also suitable for large breed puppies. Large and giant breeds do not need a special large breed puppy diet as long as the puppy food they are fed has been tested using large and giant breed puppies to confirm that the diet meets their additional requirements.

## 6) HOW SHOULD I DETERMINE HOW MUCH TO FEED MY GROWING PUPPY?

Puppies have quite variable appetites and feeding behaviour. Some puppies may consume more than their requirements in two or three 15-20 minute feedings, while others may not consume enough. A great deal of research has been done to try to establish a puppy's energy requirements during growth. Although these are still guidelines and will vary somewhat from one puppy to another, they provide a more accurate way of estimating the energy requirements for growing puppies. Using this information and the calorie content of the puppy food, it is possible to determine more precisely how much to feed the puppy.

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### 7) HOW DO I KNOW IF MY PUPPY IS GROWING AT A HEALTHY RATE?

A difficult question. Puppies which are growing too rapidly do not look unhealthy and often do not show signs of abnormal skeletal development until after they have reached maturity.

While this is not an exact science, one method which can be quite helpful involves using standard growth curves to compare your puppy's growth to the established standard for puppies with the same expected mature weight as your puppy. Regular weighing and monitoring is critical, especially during the first few months.

### 8) SHOULD I BE RESTRICTING EXERCISE (CRATING) MY PUPPY?

Restricting exercise during growth may increase the risks of skeletal disorders. In a study by Lavelle (1989), growing Great Dane puppies were fed very high energy diets during growth but did not develop the same skeletal disorders seen in puppies fed a similar diet in Hedhammar's study. One of the key differences between these two studies was that Lavelle's puppies were kept in conditions allowing considerable activity, while Hedhammar's dogs had very limited opportunities for exercise. Lavelle concluded from his study that "activity could be a significant mode of energy expenditure. The greater amount of energy available for growth in Hedhammar's dogs was reflected in their greater growth rates, which were above the levels reported in the present study."

Calories burned in puppy play are calories which are not available for growth. Puppy play also helps to develop stronger bones and ligaments. These combined effects help minimize the risks of skeletal disorders in growing puppies.

### 9) SHOULD I BE FEEDING SUPPLEMENTS OF ANY KIND?

No. Mineral intake and balance has been clearly shown to have a major impact on skeletal development. Reputable pet food manufacturers know this and ensure that the mineral content and balance of their puppy diets are appropriate for large breed growth. Companies further confirm this through

growth feeding trials specifically using large breed puppies.

Supplementation is therefore not only unnecessary, but also risks upsetting the careful balance provided by the diet. In particular, calcium supplementation should be avoided since excessive calcium intake "results in severe pathological consequences for the modeling of the growing skeleton and subsequently for locomotion. In addition, high calcium intake goes together with disturbed enchondral ossification causing clinical entities such as radius curvus syndrome and osteochondrosis" (Hazewinkel, 1989).

### 10) AS A BREEDER OF A LARGE OR GIANT BREED, IS THERE ANYTHING I CAN DO, BESIDES ENSURING PROPER NUTRITION AND ADEQUATE EXERCISE, TO HELP MINIMIZE SKELETAL DISORDERS DURING GROWTH?

One significant thing be aware that growth rate has a relatively high heritability. For years, farmers have selected their breeding livestock on the basis of how quickly they grow to market weight, knowing that the heritability of growth rate is 40-60%. Breeders of large and giant breeds should appreciate that not only is there a genetic component to skeletal disorders such as hip dysplasia, but there is an even greater genetic component to growth rate, and accelerated growth rate is a significant risk factor for the development of these skeletal disorders.

So, beware of the puppy who matures very quickly he or she is a high risk puppy who may produce high risk puppies. And don't despair of your late bloomers they may be more structurally sound and may pass that soundness on to future generations.