

**Musculoskeletal Disorders**

DEVELOPMENTAL ORTHOPEDIC CONDITIONS

Developmental orthopedic conditions, e.g., hip and elbow dysplasia, osteochondrosis/osteochondritis dissecans of the shoulder, and hypertrophic osteodystrophy, are a frequent cause of lameness in young, typically large and giant breed dogs. However, depending on severity, signs may not be seen until adulthood.

The cause appears to be multifactorial and, depending on the condition, may involve genetic factors, over-exercise (causing “micro-trauma”), and/or gender.¹⁻³ Diet may play a role in developmental orthopedic conditions and in management of secondary osteoarthritis.

**Key Messages**

- Growing puppies have higher nutrient demands than adult dogs. However, nutrient excesses, especially of energy and calcium, should be avoided.
- Puppies, especially large and giant breeds who are more prone to rapid growth, grow too rapidly when fed a diet supplying excess calories. Excess calories result in excess body weight, and rapid growth rates can lead to reduced bone density. Extra stress is placed on the developing skeletal system, which may result in skeletal malformations and abnormal cartilage growth.
 - Puppies should be fed to maintain a steady, but not rapid, growth rate and a lean body condition.
 - Genetics determine size of the adult dog. Encouraging a slower, more controlled growth rate will not affect the final adult body size.
 - Feed all puppies a complete and balanced growth diet or a diet labeled for “all life stages” until they reach full skeletal maturity, i.e., adult life stage. Large and giant breed puppies may not reach full skeletal maturity until 18–24 months of age.
 - To reduce the risk of overfeeding, large and giant breed puppies should be fed a less energy dense growth diet labeled specifically for large and giant breeds.

DID YOU KNOW?

Purina research showed that maintaining dogs in lean body condition from puppyhood, by feeding 25% less food than littermates fed *ad libitum*, reduced the development and severity of hip dysplasia.⁴

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Key Messages (continued)

- Excess calcium intake (especially in the context of low levels of phosphorus, which increases the calcium to phosphorus ratio) can result in skeletal malformations.
 - When a complete and balanced growth diet or diet labeled for all life stages is fed, calcium supplementation is not needed and may be harmful.
 - A balanced calcium intake is key. Too little calcium in the diet may cause rickets or stress fractures.
- Developmental orthopedic conditions of the joints often progress to osteoarthritis. A multimodal management approach including targeted nutrition can help improve mobility in osteoarthritic dogs as well as slow the progression of joint damage.

References

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