

KEY POINTS

BLUE Natural Veterinary Diet W+M Weight Management + Mobility Support food for dogs:

1

Is clinically proven to improve mobility scores in dogs with arthritis

2

Provides a comprehensive approach to mobility support with added:

- Omega-3 fatty acids EPA and DHA
- Glucosamine and chondroitin sulfate
- Vitamin C and Vitamin E¹⁻³

Dietary Components to Promote Joint Health

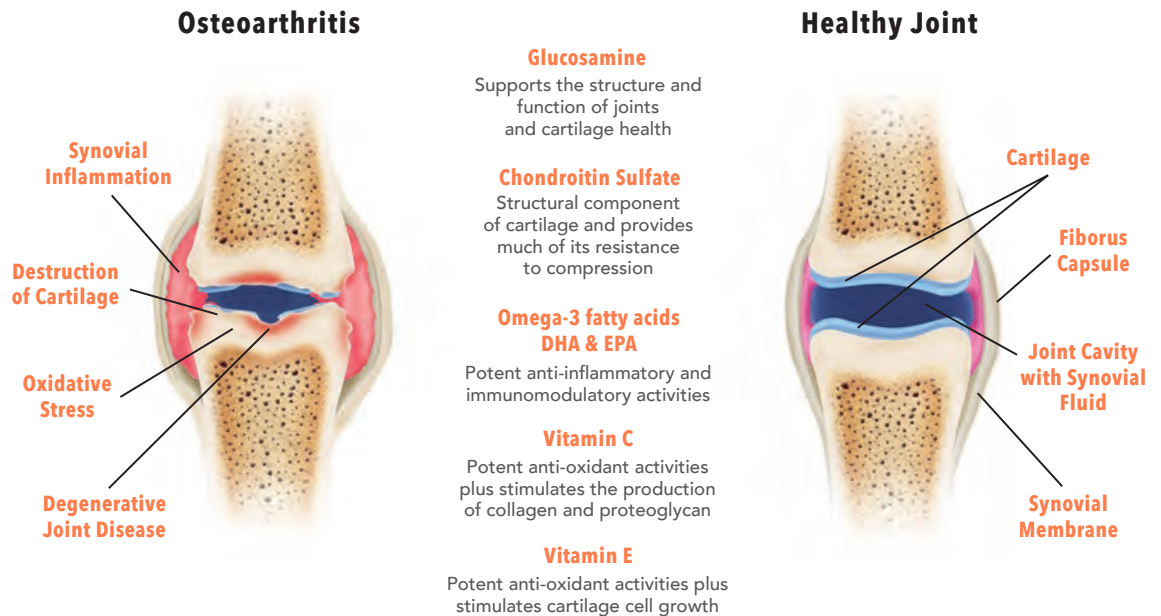


Figure 1. Nutrition and Joint health.

Canine Osteoarthritis

Osteoarthritis (OA) is a complex, slowly progressive and degenerative disorder of synovial joints that results in joint pain, restricted mobility and reduced quality of life. According to the 2012 Banfield Pet Hospital™ State of Pet Health Report, nearly 1 in 4 (22 percent) geriatric large and giant breed dogs are diagnosed with arthritis.⁴

Osteoarthritic patients can be managed satisfactorily in most situations with optimization of body condition, exercise modification, anti-inflammatory therapy and the use of chondro-protectant agents. This approach is primarily palliative, focusing on controlling joint pain, improving mobility, slowing joint degeneration and supporting cartilage health.^{5,6} Although traditional nutritional

management of OA concentrates on weight loss, experts are learning that the role of nutrition may be far greater than weight control alone. Appropriate nutritional management can help reduce inflammatory mediators, promote cartilage health and repair, and reduce damage caused by oxygen-derived free radicals. Therefore, it is critical that the veterinary health care team appreciate how diets containing omega-3 fatty acids, glucosamine, chondroitin sulfate and antioxidants may enhance therapeutic management of dogs with OA.

CHOOSING THE RIGHT FORMULA

The goal of nutritional management for dogs with OA is to provide nutrients to support overall health and a healthy body

weight, improve cartilage health, decrease inflammation, increase mobility and address the underlying factors contributing to the condition.

BLUE Natural Veterinary Diet W+M Weight Management + Mobility Support food for dogs is formulated for the nutritional management of OA as well as body weight and condition, with high levels of omega-3 fatty acids, glucosamine, chondroitin sulfate and antioxidants (See Figure 1).

(For more information regarding the NVD W+M weight management benefits and supporting data, ask your Veterinary Clinic Specialist for a copy of the Blue Buffalo Clinical Report, Clinical Evidence for: Weight Management).

CLINICAL STUDIES

PURPOSE

Two clinical studies were conducted at Ontario Nutrition Lab, with oversight from a Diplomate of the American College of Veterinary Surgeons (ACVS), to show that feeding BLUE Natural Veterinary Diet W+M Weight Management + Mobility Support dog food can result in improved mobility in dogs with osteoarthritis.

STUDY DESIGNS

The first study evaluated 32 dogs that showed signs of lameness and were diagnosed with osteoarthritis in 1+ limb(s) via radiographic evidence and evaluation by a veterinary orthopedic surgeon. Based on sex, weight and orthopedic score, dogs were allotted to 2 groups, control (fed a commercial maintenance food) or test (fed NVD W+M). Dogs were maintained in

standard, species-appropriate housing and managed consistently during the study, including 28 day NSAID washout period, no NSAIDs throughout the study and access to activity/exercise. The study protocols were reviewed and approved by the research facility's institutional animal care and use committee. Dogs were fed the study diets for 56 days to maintain body weight and were scored and assessed by the orthopedic specialist, using the ACVS Canine Orthopedic Index[®] scoring system, at Day 0, 28, and 56. One dog was removed from the study for a non-trial-related health issue.

The ACVS Canine Orthopedic Index is a questionnaire that measures four assessment domains: stiffness, function, gait and quality of life in dogs with orthopedic disease.⁷ Based on questionnaire results, the ACVS board-certified veterinarian assigned each dog an overall arthritic score

of 0-4, with 0 = no arthritis, 1 = mild arthritis, 2 = moderate arthritis, 3 = severe arthritis, 4 = extreme arthritis. Data were analyzed using Minitab statistical software and chi-square methodology.⁸

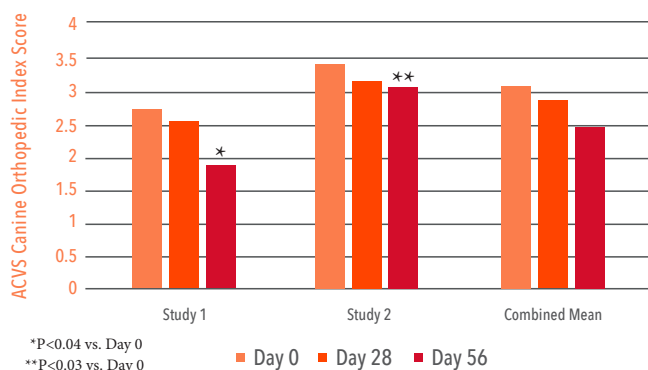
The second study evaluated 41 dogs that showed signs of lameness and were diagnosed with diagnosed with osteoarthritis in 1+ limb(s) via radiographic evidence and evaluation by a veterinary orthopedic surgeon. All 41 dogs were placed on a test food (NVD W+M.) Dogs were fed for 56 days and scored by an orthopedic veterinarian using the ACVS Canine Orthopedic Index scoring system at Day 0, 28, and 56. Three dogs were removed from the study for non-trial related health issues. Data was analyzed using Minitab statistical software and chi-square methodology.⁸

RESULTS^{9,10}

In Study 1, the test group (dogs fed NVD W+M Weight Management + Mobility Support food) showed significant improvement in orthopedic index scores, with a mean score of 2.75 at Day 0, 2.56 at Day 28, and 1.9 at Day 56 ($P < 0.04$ vs. Day 0). The control group, fed a commercial maintenance dog food, did not show any significant change in mean score vs. Day 0.

In Study 2, test group dogs showed significant improvement in orthopedic index scores, with a mean score of 3.45 at Day 0, 3.16 at Day 28, and 3.08 at Day 56 ($P < 0.03$ vs. Day 0). The combined average of orthopedic index scores from the two studies also showed improvements with mean scores of 3.1 at Day 0, 2.86 at Day 28, and 2.49 at Day 56. The results of these studies demonstrate that BLUE Natural Veterinary Diet W+M dog food improves mobility in dogs, as indicated by improvements in ACVS Canine Orthopedic Index scores.

CHART 1. ORTHOPEDIC INDEX SCORES OF DOGS FED NVD W+M



CLINICAL IMPACT

The findings from these clinical studies support that BLUE Natural Veterinary Diet W+M dog food provides a clinically effective approach to nutritionally manage mobility in dogs with arthritis. Dogs fed NVD W+M showed significant improvement in overall ACVS Canine Orthopedic Index scores over time.

For more information about Blue Buffalo Quality Assurance Testing and Clinical Research please visit TrueBLUEVets.com or call 1-888-323-BLUE.

REFERENCES

1. Kao J, Huey G, Kao R, Stern R. Ascorbic acid stimulates production of glycosaminoglycans in cultured fibroblasts. *Exp and Mol Path.* 1990 Aug; 53(1):1-10. 2. <https://ods.od.nih.gov/factsheets/VitaminC-HealthProfessional/>, updated Mar 2018.
3. Li X, Dong Z, Zhang F, Dong J, Zhang Y. Vitamin E slows down the progression of osteoarthritis. *Exp Ther Med.* 2016 Jul; 12(1): 18-22.
4. Banfield Pet Hospital™ State of Pet Health, 2012 Report.
5. Fox SM, Johnston SA. Use of carprofen for the treatment of pain and inflammation in dogs. *JAVMA* 210(10):1493-1498, 1997.
6. Fox SM, Millis D. Multimodal management of canine osteoarthritis. London: Manson Publishing Ltd; 2010.
7. ACVS Canine Orthopedic Index <https://www.vet.upenn.edu/research/clinical-trials/vcic/pennchart/canine-orthopedic-index>.
8. MINITAB Statistical Software 2017.
9. Blue Buffalo Co., Ltd., data on file, 2017.
10. Blue Buffalo Co., Ltd., data on file, 2017.

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NATURAL
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BLUE BUFFALO CLINICAL REPORT

W+M for Dogs