

VETERINARY ORTHOTICS & PROSTHETICS

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Advances in veterinary medicine continue to enhance the quality of life of our patients. It is an exciting time to be in this profession! There are many new options available to improve quality of movement and function for our pets. Orthotics and prosthetics for animals have become realistic options for many conditions. Light wraps and supports can provide basic structural assistance for patients who have not progressed to needing more advanced, custom devices. Many assistive devices can be easily applied to general practice patients too, such as harnesses and wheelchairs or carts. Other simple environmental changes can do wonders in making life easier for our patients too.

Orthotic and Prosthetic Devices:

Customized veterinary orthotic and prosthetic (V-OP) devices are now more readily available than ever. These devices can truly change a patient's future through providing support for dysfunctional joints, stabilization or fixation when needed or potentially replace missing anatomy to provide more normal function. Patients who are potential V-OP candidates are carefully evaluated to determine what the underlying diagnosis and secondary problems affecting a patient to ensure the best V-OP plan and device design. Close collaboration between the client, regular veterinarian, the rehabilitation veterinarian and any specialists involved is essential to obtaining good outcomes for these patients. V-OP devices are not simply applied to the patient without guidance and education for both the client and patient. Animals need to be taught to adapt to their device, to perform transitions properly (sit, stand, down, stand), to walk, to exercise, to play and finally to run without a care. Without proper rehabilitation guidance and client compliance, V-OP care will fail and be no better for the patient than the heartworm preventative that is never given.

Orthotic Devices or Orthoses:

Orthosis (brace) = any medical device attached to the body to support, align, position, immobilize, prevent or correct deformity; assist weak muscles or control and improve function.

Orthotic devices can be:

- static (immobilizing joint) or dynamic (supporting joint while allowing function)
- planned to be adjustable for more or less range of motion as a patient progresses
- adjunctive care to surgical intervention (pre-operative or post-operative support)
- used to provide interim support, protect a limb and minimize disuse atrophy
- a safe, effective and dynamic alternative to casting following surgery (example – for Achilles and other tendon surgeries)
- potentially an alternative to surgery depending on the individual case - usually for patients who are not good anesthesia candidates or who have concurrent medical issues or advanced age

- life-changing, as they can provide clinical options for patient whose conditions previously had no good options

Prosthetic Devices or Prostheses:

Prosthesis = any medical device which can be attached to the body to provide balance support for missing or congenitally deformed limbs with the intension of preserving or restoring normal (or near normal) ambulation.

There are significant structural consequences of a missing limb or limb segment that were previously not recognized. The general thought was that dogs and cats do fine with 3 limbs, and many do, but why not go for great? Active research in the kinematics and biomechanics of locomotion have revealed different gaits for a forelimb “tripod” vs a rear limb “tripod”. The secondary effects on the spine, muscular compensations and long term effects on the limb contralateral to the amputation or defect are now better understood. Re-establishing a quadruped structure should be the goal whenever possible. Prostheses, like orthoses, are often readily accepted by veterinary patients with proper guidance. These devices can significantly improve the quality of life for animals with congenital limb deformities as well as by those requiring an elective level amputation. In human medicine, amputation at the hip for a catastrophic ankle injury would be unthinkable, but elective level amputation is a recent development in veterinary medicine. Why amputate an entire limb if only the distal portion cannot be saved? It is time to question the older recommendations of complete amputation and promote the best possible veterinary care for animal and maintain a quadruped lifestyle if at all possible.

Types of cases in which V-OP options may be useful:

- ✓ Orthopedic cases
- ✓ Neurologic cases
- ✓ Arthritis care
- ✓ Support for contralateral joints for amputee patients
- ✓ Chronic wound care
- ✓ Potentially fracture management (if planned well)

Benefits of V-OP Care include:

- ✓ Offering treatment options that previously were not available
- ✓ Providing viable support alternatives to long term casting
- ✓ Improving biomechanics and decreasing secondary or compensatory pain
- ✓ Improving quality of life and functional independence
- ✓ Maintaining mobility and reduce compensatory problems
- ✓ Returning to active lifestyle which reduces obesity and comorbidities
- ✓ Preventing premature decisions to euthanize

V-OP is a hands-on, unique branch of veterinary medicine, so each case should be managed carefully from diagnosis to device orientation using a cohesive team approach. The ideal team includes the pet owner, the family veterinarian, a certified rehabilitation therapist and a V-OP specialist skilled in custom design, fabrication and fitting of devices for quadrupeds. These patients will need follow-up care and monitoring to avoid and fit issues or problems along the

way. This growing subset of veterinary medicine has made options available to animals with mobility issues that did not exist previously. As veterinary professionals, we owe it to our patients and clients to be familiar with orthotic and prosthetic device options and how they can be used to improve the quality of an animal's life.

Evidence-based medicine is important. Thousands of veterinary patients have been treated world-wide with orthotic devices with apparently good success. Several studies are under way and/or recently published to quantitatively evaluate effectiveness of stifle devices for CCL tear patients.

- University of Georgia (Steven Budsberg, DVM) - a gait study of canines to evaluate the Hero Brace's effectiveness.
- University of Louisville (Gina Bertocci, PhD) – performed simulated CAD model using the OrthoPets stifle orthosis and presented positive results at the 2014 STAAR conference.
- Veterinary Orthopedic Sports Medicine Group/VOSM (Sherman Canapp, DVM, MS, CCRT, DACVS, DACVSMR) - a live force plate study using K-9 Orthotics brace.

Other limb care items include bandages, splints, sports wraps and light joint supports.

- Advantages: beneficial for short term use or minor laxity issues; inexpensive; readily available through veterinary office or online.
- Disadvantages: not be enough support for carpal hyperextension or Achilles tendon tears alone; may cause problems if not fitted properly or left on too long, especially if they get wet and result in dermatitis issues.

Useful Website Links:

Orthotic & Prosthetic Manufacturers:

Animal Ortho Care, LLC - Chantilly, VA: www.animalorthocare.com/

Hero (formerly Ace Ortho Solutions) - NE: www.goherogo.com

K-9 Orthotics and Prosthetics - Nova Scotia, Canada: www.k-9orthotics.com/

OrthoPets – Denver, CO: www.orthopets.com

Wraps and Therapeutic Joint Supports:

DogLeggs: www.dogleggs.com

Thera-Paw: www.therapaw.com

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