CUSTOM ORTHOSIS-ASSISTED RECOVERY FROM ACHILLES COMPLEX INJURY

Purpose of Orthosis:

The purposes for the use of custom external coaptation in these cases are 1) Avoid unrecognized wounds that may occur beneath serial rigid splints; 2) minimize bandage changes and impact of wet bandages; 3) provide stability in extension (165-170 degrees) during tendon healing phase; 4) provide a predictable, controlled, variable, and secure approach to reloading the tendons; 5) allow for return of digital dorsiflexion and normal movement of the superficial digital flexors; 6) provide a sports brace to be used whenever there is high impact activity and the risk of re-injuring the tendons once healing is complete (12-18 months advised).

1. Detailed Plan for 3 Device-Specific Goals:

Goal 1 rehabilitation of digital dorsiflexion: The device provides a heel and motion limiter strap on the paw segment to allow body weight and normal ambulation to assist in gradual improvement in functional range of the flexor tendons. As this occurs, the heel wedge will be decreased and the motion limiter strap will be loosened and eventually removed. The intended outcome is a full range of motion of the digits with eventual removal of the paw segment if possible. If the digits are already normal, the paw segment is removed earlier in the process.

Goal 2 facilitate healing of the Achilles complex: The initial level of complete immobilization of the tibiotarsal joint will be maintained pending evidence to support safety in tendon loading (6-10 weeks or longer in severe cases); the shorter the better in terms of muscle atrophy. This may be based on ultrasound or on clinical testing. If the tendon heals appropriately, gradual, controlled reloading of the tendon will occur over weeks to months. During this time the device is to be worn like a cast, 24/7 with breaks as noted below. These breaks are one of the advantages over the use of a cast or rigid splint bandage, or surgical implants.

Goal 3 short and long-term protection of the healed tendon: After full recovery of the flexor tendons (paw is flat on the ground) the paw segment is removed. After full recovery of the Achilles complex tendon the orthosis allows a functional range of flexion and extension with a flexion stop to limit the risk of reinjury. Studies show full tendon strength cannot be regained and even at 1-year post injury the tendon may only achieve 70-80% of its original strength. Because of this, the final configuration of the orthosis is called a sports brace and is to be used whenever any explosive activity may occur. This includes running, jumping, trotting, quick lateral movements, etc.

To maximize the potential for complete healing, the device is to be worn 24/7 with 10-15 minute breaks 3-4 times per day. During these breaks absolutely no weight bearing is to occur. Until released to do so, **at no time during this process should the patient be allowed to bear weight on the affected limb**.

Exercise is allowed as follows: Absolutely no off leash activity; outside for potty breaks on a leash only; absolutely no running, playing with buddies (human or otherwise). Frequent short daily walks on a short leash are recommended and highly encouraged.

1. **2. Adjustments are expected and are a normal part of the custom orthosis process.**

   The device is custom-made for your dog. Every effort is made to accurately fit the device. Importantly, significant swelling can occur in the firs 48-96 hours after a bandage is removed and the device will become tight. It is important to follow all instructions for managing this issue (see handout). Also, increased activity and activity intensity can

expose fit issues requiring further adjustment. Please follow exercise plan carefully. Additional adjustments if needed are most commonly required in the first month. Please follow all instructions with regard to monitoring the leg and contact Walking Paws promptly if you have concerns.

3. Follow-up is critical to success. An orthosis is considered a "durable medical device." This means that proper use is necessary to meet therapeutic goals and to ensure its safe application over the duration of recovery. Typical schedule (may vary based on individual health status, activity level, surgical or nonsurgical case, etc.)

1. **DVM visit 1**: Fitting and custom alignment
    a. Ultrasound recommended if not already performed
    b. Ancillary procedures that may be useful: PRP, stem cells
2. **DVM visit 2**: 2 week fit check and reassessment/paw segment adjustment
3. **DVM visit 3**: 4-6 week fit check and reassessment/paw segment adjustment +/- load Achilles tendon
4. **DVM visit 4**: 8 week recheck (+/- Achilles tendon loading and paw segment adjustment)
5. **DVM visit 5**: 10 weeks recheck (+/- increase in Achilles tendon loading)
6. **DVM visit 6**: 12 weeks: recheck (+/- increase in Achilles tendon loading).
7. **DVM visit 7**: 14-16 weeks: recheck for final adjustment to a sports brace with protective flexion stop at 120 to 130 degrees). Release from 24/7 use of device to day use only.
8. **DVM visit 8:** 3 months after 6th visit to provide an additional 20 degrees motion final Sports brace configuration to be used during heavy activity
9. **DVM 9:** 1 year recheck for fit and function of device as well as discussion of continued use.

Please be aware that the above schedule does not address additional adjustments as needed for best fit nor does it address regular physical therapy appointments. Some dogs will require multiple adjustments, because of the continuous use (24/7) for an extended period. The advantage of the custom orthosis over casts, splints, and bandages is the ability to recognize skin irritations early rather than waiting for the next bandage change. A further advantage is the ability to remove the device daily for skin breaks and for the purpose of performing rehabilitative exercises (stretching and range of motion).

4. Rehabilitation, a key to success. Most dogs adapt quickly to wearing an orthosis. Behavioral techniques can facilitate this. Also your dog will need to learn basic skills while wearing the device. These include: transitions (sitting, lying down, and getting up), stairs, getting into vehicles safely, managing on different types of surfaces (ground, carpet, hardwood floor, etc.). Finally, orthopedic injury leads to compensatory abnormal movement and associated muscle strain and weakness. The best way to ensure the highest level of success is to follow the recommended rehabilitation schedule and techniques. Each patient's condition and abilities are unique and as such an individualized rehabilitation program is needed. Recovery from an Achilles tendon injury is prolonged and rehabilitation is essential to regain strength and balance in order to return to full activity and reduce the risk of reinjury.

PLEASE NOTE: At no time during this recovery process should the patient be allowed to bear weight on the affected limb without the device until directed to do so.