Move UNLEASHED

Canine Amputation

Helping your dog live fully

Dr Ilona Hudson
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Contents

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I am a veterinarian qualified in Animal Biomechanical Medicine including Animal Chiropractic, Acupuncture and Traditional Chinese Medicine and Rehabilitation. I also teach Animal Biomechanical Medicine.

Move UNLEASHED

Supporting Your Canine Amputee for a Full Life

A full limb amputation in canines is almost always a life-saving procedure, allowing you to spend many more years with your dog. With some preparation and knowledge, you can help your dog live a full, functional and pain-free life for many years following an amputation.

Dogs were, of course, designed to walk on four legs. After an amputation, they will experience significant changes in their balance, leg and back function, and will need your help and support to relearn how to perform everyday activities in a way that protects their bodies in the long run from further injury and degeneration.

Despite the huge internal adjustments required, dogs on three limbs can be happy, healthy and fully functional. The amputation and recovery period is often harder for us, their owners, than it is for our dogs. I hope that in these pages, you will find the tools and advice you need to make your dog's recovery simple and smooth, and to take the steps that will enhance their post-amputation quality of life.

Post-op Recovery Period

Prepare your home environment

When your dog comes home from the hospital after their surgery, they are going to need an environment that allows them to rest, feel safe, and build their confidence as they recover. Their post-op recovery could take four to eight weeks, although your veterinary surgeon will advise you on the exact time period you need to plan for, and the specific requirements for your dog's post-op care. You will want to ensure that during their rest and recovery period, they don't perform certain activities like jumping on and off of furniture.

Your dog will thank you if you're considerate enough to have these areas ready for his or her homecoming:

1. A comfortable bed is essential, and needs to be both comfortable and accessible to get into and out of. The bed should be flat, even, and relatively firm. An orthopedic bed is highly recommended, especially for larger dogs or dogs with arthritis in other areas of their bodies. These beds are an investment that your dog will benefit from for the rest of their lives.

2. Non-slip flooring is incredibly important for your dog. While they are learning to balance and move functionally, they are more likely to slip and fall. Carpets are great in the initial post-op recovery period, as they provide traction and a soft surface should your dog lose balance and fall. Every time your dog slips, they will become more cautious and afraid, and their bodies will compensate. If you don't have carpets, you can put down yoga mats or runners to create a pathway for your dog through areas of tiled or laminate flooring.

3. There should be easy access from your dog's resting area to a safe outside area. During the initial recovery period, you want to avoid steps as far as possible. Try to make it easy for your dog to get in and out of the house to relieve themselves.

Equip yourself to support your dog.

The key piece of equipment for post-op care is a good quality **support harness or sling**. A good harness will allow you to support and stabilise your dog as they learn to balance themselves on three legs.

Both **ice** packs and **heat** packs have the effect of reducing pain and inflammation. Make sure you have an icepack that is moldable rather than solid. Both ice and heat packs should be large enough to cover the stump of the leg.

Post-surgery pain management strategies

Your vet will provide you with pain medication during the initial post-op recovery phase. If you find that the prescribed pain medication is not enough for your dog, please go back to your vet and discuss additional pain medication with them. The better pain is controlled in the initial phases of healing, the better your dog's long-term outcome will be.

In addition to rest and pain medication, your dog will benefit from regular ice applications around the incision site, together with massage of their back and their remaining legs to reduce any compensation pain or tension. Gentle movement of the skin around the incision site can help prevent excessive scarring, which can also improve their long-term comfort and mobility.

Ice

Ice reduces pain and inflammation, and is especially useful during the first few days after an injury. You can apply an icepack for 10 to 15 minutes at a time, 2 x per day for the first week of your dog being home. A towel or cloth can be placed between the icepack and the skin to ensure your dog stays comfortable during application. Feel the area beneath the icepack with your hand to make sure that it is cold, and watch your dog's behaviour to check if they are comfortable during the process. If they try to get away from the ice, remove it or add an extra layer of towel between the ice and your dog's skin.

Heat

Heat is a fantastic way to reduce muscle tension, spasm and pain in the muscles that are working harder to support your dog. Apply a heat pack to the lower back, the opposite upper limb, or the area behind the shoulder. These are all areas that become painful when our dogs are compensating and changing the way that they carry themselves as they navigate the world.

Scar Massage

To reduce scarring around the incision site and to reduce the sensitivity in this area, you can use a gentle mobilising technique known as TTouch circles. Gently place three fingers on your dog's skin with light pressure. Use your fingers to move the skin in a half-inch diameter circle in a clockwise direction, then gently release and move to the next position to repeat. Do this over the entire area on either side of the incision. These gentle circles move the skin over the muscle underneath, improving fluid mobility, reducing sensitivity, and helping your dog to heal with minimal scar tissue formation.

Massage

A gentle full body massage can really help your dog remain comfortable and pain free during this period. Focus on the back, the remaining front or hind limb, and the shoulders. As your dog learns to perform functional activities in his daily life, he will be compensating for the limb he is missing. His muscles will take time to adapt to being used in a new way, and will become painful.

Early exercises to help your dog adapt to three legs

In the first two to four weeks after your dog's surgery, allow them as much rest as they need, gradually introducing a few simple exercises to help them find their balance and adapt to movement. Every dog will have different challenges depending on their age, the reason for the amputation, the leg that was amputated, and their own unique personalities. These are some of the exercises that might help. Ultimately, though, a personalised rehabilitation programme will always be the most effective.

Core strengthening is an important part of your dog's life at this stage to help prevent the risk of future injuries and to improve their function.

Supported walking

The first exercise is simply walking. Supporting them in the early days with a harness will allow them to feel safe as they find their balance. Once they are confident on their feet, you can allow your dog to set the pace and offer them less support. It will be easier for your dog to run unsupported than to walk! Walking requires far more balance and intentional control of the body, making it essential as an exercise and also requiring that we provide additional support.

Cookie stretches

Cookie stretches are a great core activation exercise, and an introduction to balance for your dog with three legs. If your dog is unsteady on their feet, perform the exercise in a lying down position for a few days, then progress to a standing position. The basic exercise is this:

1. In a standing position, initially with support, use a cookie to bring your dog's nose to his chest, so that he flexes his neck. Hold this position for three to five seconds at a time.
2. Next, bring your dog's nose to their forelimbs about halfway between their chest and the ground and hold the position for three to five seconds at a time.
3. Now, bring the nose as close to their front feet as they can while they remain standing straight, and hold for three to five seconds.
4. Finally, with a hand on their chest, bring the nose as far forward and up into a spinal extension as they can comfortably perform, and hold for three to five seconds.

These spinal flexions and extensions can be repeated two to three times before doing the next part of the exercise.

The next part of the exercise involves lateral flexion of the spine.

1. With your dog standing, use a treat to guide their nose around to their left shoulder. It will help if you are standing on their right side, or have a hand on their right hip. Hold the position for three to five seconds.
2. Using a treat, guide their nose towards their left hip – only as far as they are comfortably able to go while maintaining their balance – and hold for three to five seconds. You can keep a hand on their right hip during this movement to help them balance.

Repeat the lateral flexions two to three times towards the left and the right.

During all of these movements, only go as far as your dog can go while keeping their balance and remaining comfortable. The goal is to build confidence during the initial phases. As they strengthen and find the movements easier, you can increase how far they go – closer to the hip in the lateral flexions, for example. You can also increase the number of repetitions of each movement. Once they start to find the movements difficult or start to avoid any of the movements, it's time to stop and give them a break.

Making the most of life on three legs

Once your dog's incision has healed and they are confidently navigating their environments, you can start to prepare them more fully for their new life ahead. A big part of this will be geared towards preventing future injuries or degeneration in the remaining limbs by managing their weight and keeping them strong.

Diet and weight management

Keeping your dog at an optimal weight will provide them with the best chance of remaining strong and pain free in the years to come. With only three legs, any excess weight will lead to more stress on the joints and the development of arthritis, inflammation and increasing pain.

If you need advice on developing a weight loss plan for your amputee, please book a consultation so that we can help you on your pet's weight loss journey. In amputees, hydrotherapy can be one of the most effective forms of exercise for weight management as the stress on the joints will be reduced during exercise and we can therefore protect the joints from degeneration and developing arthritis. However, as your amputee's balance will be very different with three legs than with four, hydrotherapy becomes much more difficult and needs to be performed with additional safety measures in place.

Joint protection supplements or a joint support diet can help reduce inflammation in the body and protect the joints from developing arthritis. As your dog needs to adapt his biomechanics and movement patterns, arthritis will inevitably develop in his remaining limbs over the course of his life. Starting them on a joint support diet can slow the development of arthritis and reduce its severity once they start to develop it.

Exercise do's and don'ts

Exercise is incredibly important for your amputee to help them maintain mobility, strength and endurance. While they will love going for walks just as they did before their amputation, you might find that they fatigue more easily and want to run instead of walk.

This is completely normal – balancing while walking is much harder for your three-legged dog than slow running, where they can use momentum to maintain balance. Even so, their body is working much harder on three legs than it did on four, and taking frequent rest breaks will be necessary. Pay attention to where your dog's current stamina level is, and slowly build it up over time.

Going out for regular walks is wonderful for your dog, but walking alone will not build strength. Specific balance, coordination and strengthening exercises will help to maintain good body biomechanics and prevent injury and joint degeneration.

Three exercises to strengthen your dog

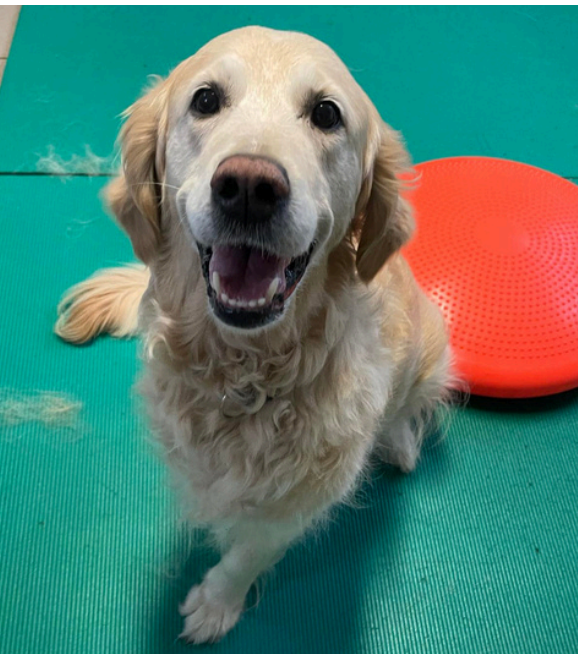
Your dog is an individual and will be coping with their amputation in their own specific ways. Therefore, the exercises suggested below will not necessarily apply to every dog. The same exercise can be medicine or the cause of further degeneration, depending on the way it is performed. Performing any exercise with good form, posture, and muscle recruitment will ensure that the movement helps to build and strengthen the body. If the movement is performed with bad form, posture, and muscle recruitment, an exercise can lead to further degeneration of joints and muscles that are under stress.

A simple way that you can tell whether or not an exercise is helping your dog is to look at their behaviour. Are they happy to exercise with you, or do they become overly excited or anxious, or try to leave you? Pay attention to how your dog moves and feels after exercise. If you notice that they are in pain or struggling to move more than usual after exercises, then the exercises are not helpful to your dog.

Book a consultation with us to develop an exercise programme specifically for your dog.

Here are three exercises to try:

1 Sit-to-stand transitions



This exercise improves hindlimb strength and your dog's ability to perform functional activities.

With your dog standing in a neutral posture, ask them to slowly lower themselves to a sit, and then slowly back up into a stand. A hindlimb and forelimb amputee will perform this exercise differently, and it will be harder for a hindlimb amputee to do it correctly.

If this exercise is difficult for your dog, you can have a second person assisting by kneeling behind the dog. As they come down into a sit, the second person supports the dog through the movement and bring them down to sit on their lap instead of the ground.
Repeat the exercise in a slow and controlled way until your dog starts to show signs of fatigue, or for three to five repetitions.

2 Down-to-stand transitions

This is a great exercise for strengthening the forelimbs and shoulders, as well as the hindlimbs. It will also help to improve your dog's ability to do functional activities at home.

With your dog standing in a neutral posture, ask them to slowly lower themselves into a lying-on-the-stomach position, and then slowly back up into a stand. If they can't go directly into a lie-down, ask for a sit, then a lie-down, and then have them move straight up on all four limbs into a stand.

Repeat the exercise in a slow and controlled way until your dog starts to show signs of fatigue, or for three to five repetitions.

3 Stepping up and down from a target or raised pad

This exercise is great for developing balance, coordination, and strength in the limbs. You will need a stable platform that your dog can step onto with one or two feet. Make sure the platform cannot tip, slip or move. It can be between 5 and 10 cm high – a yoga block, or a block of wood.

Start with your dog standing in a neutral posture with the block straight in front of their front paws. Ask them to step onto the block with one or both front paws. From this position, you can do a few different things:

- Ask them to hold a neutral posture for a few seconds at a time;
- Perform the same cookie stretches as described for the early post-op period;
- Step down in either a backwards direction, or to one side and then the other.

Step down off the block and repeat. You can perform this exercise with the front feet/foot on the block, as well as with the hind feet. Try to stick to one variation of the exercise in a single session, instead of combining them or jumping between them in one session.

This exercise offers many opportunities for increasing the challenge over time and can be adapted to your dog's ability level.

Additional support and devices

There is no one way for our dogs to cope with an amputation. Some dogs will have a harder time without the fourth limb than others, and may need additional support from us. This can come in many forms, from a prosthetic limb to a cart, or simply support braces for the joints that are taking the most strain.

Let's discuss a few of these support devices and when you might want to use them for your dog.

Support braces

The joint you will want to support most often is the carpus on the front limb. In a forelimb amputee, a carpal brace may be used to support and protect the carpus on the remaining limb soon after the amputation, if needed. The carpus is prone to over-extension, which can cause strain in the tendons and eventually laxity of the joint. This can happen as a result of the additional weight placed on the limb during movement.

Carpal hyperextension is difficult to treat and will affect your dog's mobility. A variety of carpal braces are available. Simple neoprene wraps or sleeves can provide support to a joint that is still functioning correctly or is starting to show signs of mild strain.
When hyperextension is already present, a custom orthotic brace will be necessary to protect the joint from further damage and to allow time to heal.

Prosthetics

A prosthetic is an artificial limb that allows your dog to bear weight on it and maintain a more normal gait with less compensation. Every patient needs to be individually evaluated as a candidate for a prosthesis. If this is an option for your dog, it should be discussed before the amputation takes place. The more of the limb that can be left behind, the better a prosthesis will work. If the entire limb needs to be removed, a prosthesis cannot be fitted.

They require extensive management and are not the right option for everyone. There are also full-limb prosthetic options for forelimb amputees that provide a rigid crutch, which can help improve weight distribution in some cases.

Wheels

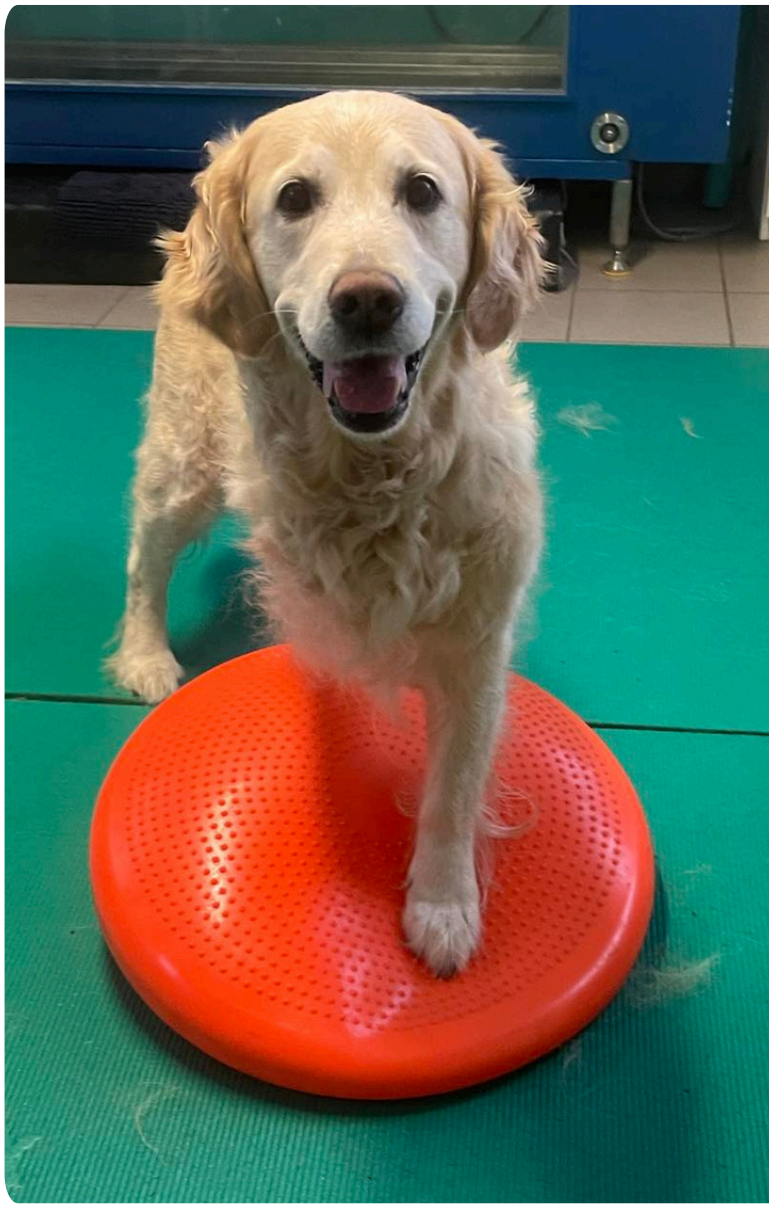
Dogs that have two limbs amputated or suffer from additional health issues like arthritis or orthopedic conditions might need the additional support of a wheelchair. Wheelchairs provide a greater degree of support, allowing dogs to maintain their mobility while protecting them from further injury.

If you would like to learn more about the best mobility aids for your dog, please book a consultation. Every dog is an individual – there are many potential solutions to your dog's mobility challenges. We would love to help you find the best way to support your dog in the long run!

Recognising compensation

In the years ahead you will get to know what is normal for your dog. Here are a few common compensation patterns that can help you recognise that your dog is starting to struggle, and that it's time to offer them a little extra help.

The difference between a fore and hindlimb amputation



While dogs carry their weight on four limbs, not all four limbs are the same. Dogs carry 60% of their weight on their forelimbs and 40% on their hindlimbs.

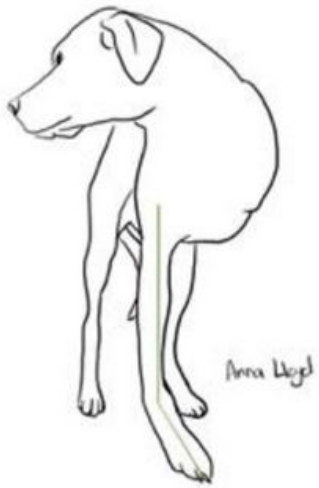
The limbs also have different functions: the hindlimbs are important for forward propulsion, while the forelimbs are important for changing directions, slowing down and balancing.

Together, these points mean that dogs generally cope and adjust more easily to a hindlimb amputation, taking a little more time and requiring a little more help when it comes to a forelimb amputation.

Recognising compensation that can lead to injury

There are a few key areas where you can pick up compensation and biomechanical adaptations that can lead to an increased risk of injury. Let's look at some of these key areas and how you can recognise when they are starting to fail.

The carpus

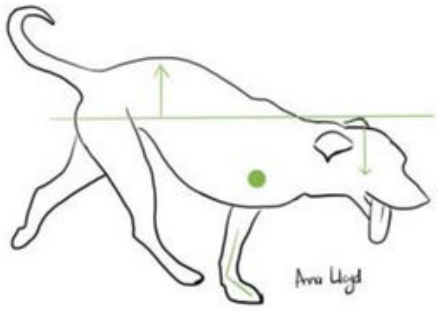


In a hindlimb amputee, there is a significant increase in braking force and weight on the opposite front limb. In a front limb amputee, the forces acting on the opposite front limb increase to cause more extension of the carpus.

You will want to look at your dog from the side and from the front. Notice the carpal joint and how much bend there is in it. In this illustration, the carpus is bending to bring the paw towards the centre of the body. When looking from the side, the carpus can over-extend, appearing closer to the ground.

When the carpus starts to bend excessively either from the side or the front, discuss carpal support braces with your veterinarian and rehabilitation team.

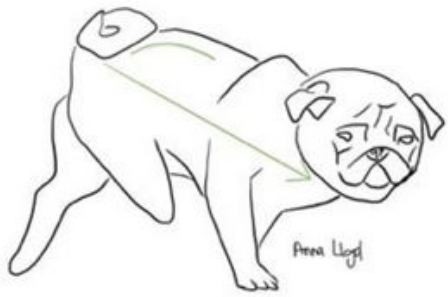
The thoracic sling



These are the muscles that attach the forelimbs to the body. When they become weak or painful from overuse, they can start to fail. This is especially relevant for forelimb amputees. In this illustration, you can see how much the head and chest drop down to the ground when the dog places their weight on the front limb. At the same time, the hindquarter stays high.

This compensation puts a great deal of strain on the front limb and the spine. Keeping your dog's core strong can help to prevent this from happening. When you start to see this dramatic drop in the thoracic sling, it's time to check in with your vet and rehabilitation team, as your dog might need pain management and strengthening work to help them cope with the compensation.

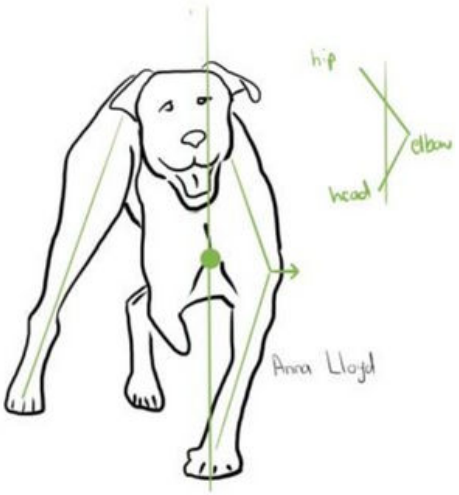
The lumbosacral junction



In this illustration, we can see that the lower back or the lumbosacral region is rounded. You can also see that the dog is dropped through their thoracic sling – these two things will often go hand in hand, but not always.

Excessive rounding of the lower back is a sign of pain and discomfort. When you start to see it in your dog, it's time to check in with your vet and rehab team.

Curvature of the spine



In this illustration, we can see that the dog's hips lean towards his right, the shoulders and elbow towards his left, and the head and neck towards the right. In amputees, the spine will naturally start to curve to help the dog maintain balance in movement without a fourth limb. You will want to find what is normal for your dog, and keep a lookout for when that curve in the spine changes or becomes more extreme.

What to do about it

Pain and dysfunction from compensation can be minimized and managed when your dog stays strong and fit, and maintains a healthy body weight. I highly recommend that you work with a rehab team during the initial phases of adaptation and relearning following your dogs' amputation, to prevent compensatory patterns from becoming entrenched. It is best to schedule regular check-up appointments with your vet and rehab team. This will help you to learn what is normal for your dog, catch any abnormal movements early, and most importantly, keep them healthy and pain free for years to come.

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