

**Your daily  
round about  
way to  
healthier  
joints:**

**Controlled Articular  
Rotations (CARs)**



By Dr Christopher Notley DC, CAT(C)

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# About Dr Christopher Notley DC, CAT(C)

Dr Christopher Notley is Winnipeg's only dual credentialed chiropractor and athletic therapist.

In addition to being a chiropractor and athletic therapist, he is a certified strength and conditioning specialist, trained in the Functional Movement Screen (FMS), as well as, a provider of Acupuncture, FAKTR (Functional and Kinetic Treatment with Rehab), and Active Release Techniques (ART).

His practise is a musculoskeletal based practise focusing on spine and sports injuries. Treatments involve an integrated approach that may include chiropractic manipulation or adjustments, Active Release Techniques and FAKTR (two forms of myofascial release), acupuncture, rehabilitative/corrective exercises, and nutrition counselling .

Treatment plans are individualized and based upon the scientific literature and clinical evidence. Treatments are adjusted to your needs. You won't need to travel to different offices just to treat your aches, pain, sports injuries, motor vehicle injuries and workplace injuries. He also works closely with other healthcare providers, medical doctors, athletic therapists, physiotherapists, and massage therapists and will refer out my patients when needed.

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# Mission

My mission is to help the people of Winnipeg, and its surrounding areas, get out of pain so they can start/return to achieving a healthy lifestyle and continue that way throughout their lifetime. This will be achieved by evidence based, multi-modal care with the person's best interest in mind.

# Disclaimer

The information in this book is offered for educational purposes only; the reader should be cautioned that there is an inherent risk assumed by the participant with any form of physical activity. With that in mind, those participating in any exercise program should check with their chiropractor, athletic therapist, physiotherapist or physician prior to initiating such activities. Anyone participating in these activities should understand that such training initiatives may be dangerous if performed incorrectly. The author assumes no liability for injury; this is purely an educational manual to guide those already proficient with the demands of such programming.

# What are controlled articular rotations

To keep our joints healthy we need to move them, on a daily basis, throughout their full range of motion. This helps stress the ligaments and muscles supporting the joints, as well as, distribute the synovial fluid throughout the joint. The synovial fluid helps to reduce friction and provide the cartilage with the nutrients it needs to stay healthy.

Controlled articular rotations, CARs, are active, rotational movements performed at the outer limits of articular (joint) motion. These exercises are a simple way you can keep moving your joints and using the muscles that surround the joint. Dr Andreo Spina was the first to introduce the concept and the acronym of these types of exercise to me.

CARs allow you to explore the full range of motion that your joints can perform. This helps you maintain the range of motion that you have, aid in keeping the joint healthy and help you self assess for any problems that may be popping up.

## How to perform CARs

I recommend you perform these movements on a **daily basis**. Spend 10 minutes in the morning with a full body scan of each joint. If you find that you are struggling in a certain area perform these movements **randomly throughout the day**.

**Perform each movement slowly and actively.** Imagine that you are working against an opponent who is trying to resist you. Start by imaging someone is resisting you at 10 to 20 percent of your maximum strength. Take 30 seconds to a minute to perform each circle

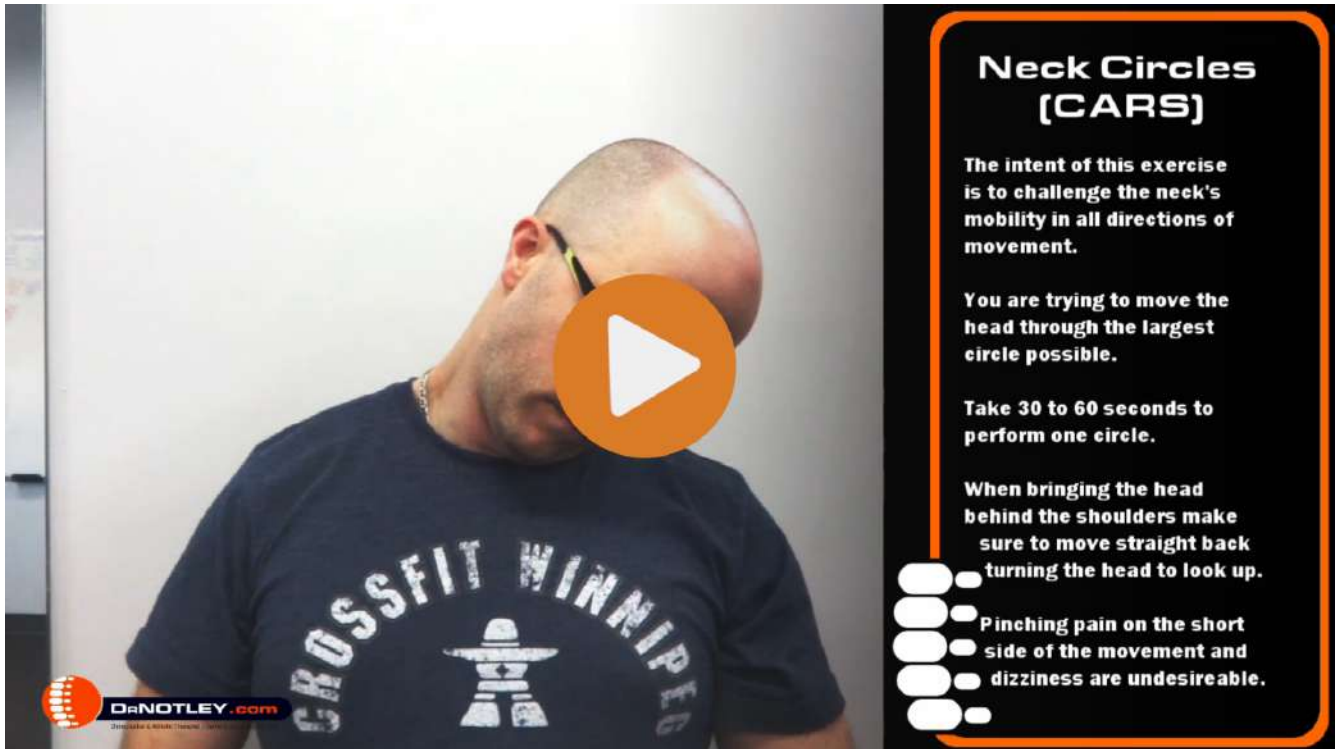
You will find that when you try and move only one joint other joints may be trying to move to help. What you may have to do is **tighten your other both parts to hold them still** as you add focus on only moving the joint in question.

For example, when you try and move your shoulders in a circle you may find that your body with twist and turn to maximize the circle. This twisting and turning only falsely makes the shoulder circle larger. We also see this is the hip cars where your may elevate the pelvis to make your hip circle larger. Keeping the opposite hip tight and the mid section tighter allows the movement to only move around the hip being moved.

**You should NOT experience pain**, especially pain that is on the short angle side of the movement. If you experience pulling and discomfort on the long side of the movement this isn't as concerning.

During your daily assessment of these movements you may experience short sided pain. Continuing into this pain may be a cause of irritation and pain. I tell my patients that when they experience this they should make an appointment to see me.

# Neck Circles



## How to perform:

Imagine, as you perform the exercise, that you are fighting against an invisible person trying to push you away from your end range of motion.

Pull your chin down to your chest

Pick a direction and roll to that side until your ear comes in line with your shoulder.

Continue to roll your head backwards as your head extends backwards to look at the ceiling.

Often, when performing this move, part of the circle is missed. As the head goes backwards the circle is cut short. To maximize the range of motion, as you get your ear to your shoulder reach the head back as far as you can before you start to look upwards.

## Be careful

Pain on the short angle of the movement, tingling/numbness, and dizziness are not desirable.

# Shoulder Blade Circles



I often have my athletes and my desk athlete's perform scapular circles if they have any problems in these regions. They are easy to do and can be done anywhere.

## How to perform

I will perform this movement, in the video, with my arms out in front of me and with only one arm so you can see how much the shoulder blade contributes to the movement. Keep in mind you can perform this exercise with both shoulders simultaneously. The easiest way to start is with hands on your lap.

Start by pulling the shoulder blades together.

Once you've hit your max then keep the shoulder blades and raise them up as high as you can. Cramping can often occur in the trapezius muscles at this point.

Once you have reached your max then round/reach the shoulder blades forward as far as you can,

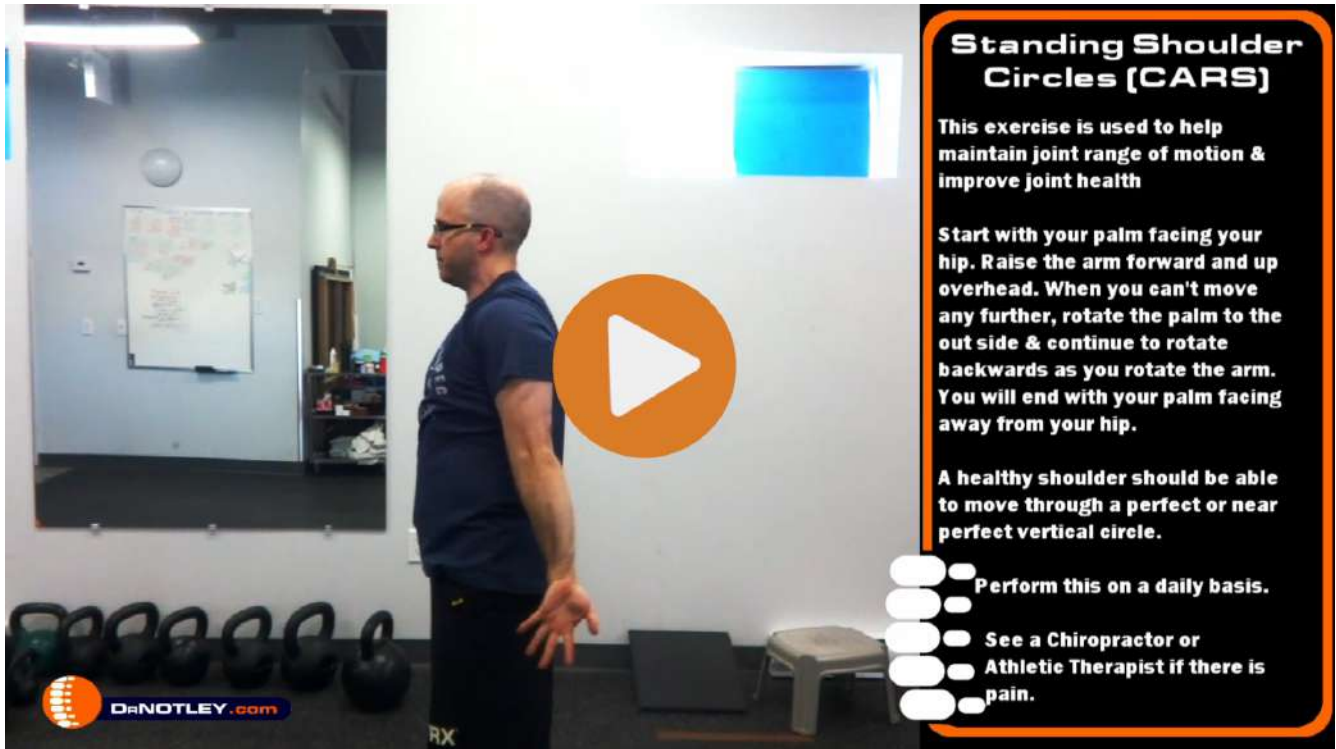
Once you are as far forward as you can lower your shoulders down back to the start position.

## Be Careful

A common error while performing this exercise is the head poking forward. Keep the head tall.



# Shoulder Circles



## How to perform

Begin with your palm facing your hip. Raise your arm out in front and overhead. As you continue to circle behind you there will come a point where you can't move any further. Rotate the palm to the outside and continue. As you continue the circle, the biceps rotates downward to be facing the floor. You should end with your palm facing away from your hip. You can also perform this in the opposite direction.

A healthy mobile shoulder should be able to move through a perfect or near perfect vertical circle. You won't see this in the video

Use a wall to gain an idea as to how vertical your arm travels. As you perform the movement, if you feel the arm touch the wall take a moment there and try and see if you can lift the arm away from the wall and continue on with the movement without touching the wall.

## Be Careful

A common error is side bending and rotating the body with you as you bring the shoulder behind. Keep the torso tight to minimize movement.

Pinching pain at the overhead position or pain in the shoulder as you roll the shoulder behind you is undesirable.

# Elbow circles



The elbow joint is actually made up of 3 joints. These joints allow the elbow to bend and straighten as well as pronation and supination (turning the palm down and up when the elbow is bent).

## How to perform

- Begin with your elbow straight and your palm facing forward. Begin to bend your elbow. During this time supinate (turning the pinky side of the hand up towards the ceiling) the forearm as far as you can.
- Once you have bent your elbow completely, turn the palm over towards the floor, attempting to rotate the thumb to the floor as far as you can (pronating).
- While you are pronating, straighten out your arm.
- You can perform this in the opposite direction

## Be Careful

Pinching in the front of the elbow when the elbow is bent or when the elbow is straight on the back of the elbow are both undesirable.

# Wrist and finger circles



## How to perform

### Wrist:

For the wrist, flex the wrist down as far as you can and then try and scribe out the largest circle possible.

### Thumb:

If you place your hand down on a table with the palm up your thumb can move up and down (abduction and adduction), in towards the pinky and out away from the pinky (flexion and extension) and it can rotate so that the pad of the thumb can touch each finger (opposition).

Start by lifting your thumb up towards the ceiling as far as you can and then towards your pinky circling around to the pads of the fingers and then away from the pinky finally ending up pointing back up towards the ceiling.

### Fingers:

The joint at the base of each finger is able to rotate in a circle while the other joints of the fingers only flex and extend.

# Thoracic circles



The thoracic spine is the region where your ribs are attached. If you experience mid back or upper back discomfort this is your thoracic spine

## How to perform

Round forward but not from the waist.

Side bend to the left

pull the right shoulder back in line with the left and then continue to pull the right shoulder backwards as you arch your thoracic spine

Start to side bend to the right. The shoulders should now be aligned with each other and your chest is arching up.

Side bend all the way to the right and pull the left shoulder forward as you flex your spine

return to the rounded forward positions

## Be careful

Keep your abdomen tight so your movement is restricted to your thoracic spine

# Lumbar spine CARs (Cat/cow)



The Cat Cow exercise is often used to begin gentle movement in the lumbar spine. It is frequently one of the first exercises that I give for those with back pain depending on spine tolerance.

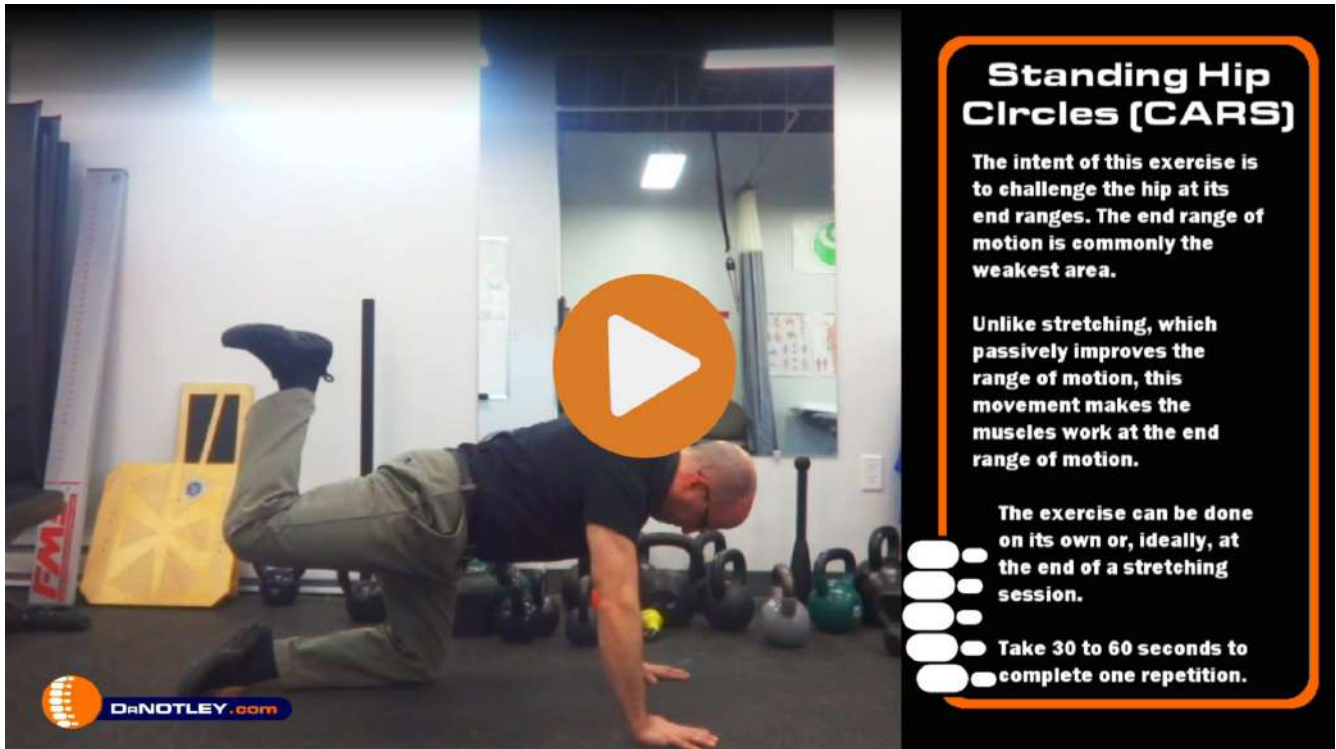
## How to perform

Starting in a quadruped position, first imagine you are trying to tuck your tailbone under like a scared dog, then imagine tilting the 5<sup>th</sup> lumbar vertebra, the 4<sup>th</sup>, the 3<sup>rd</sup>, the second and the first lumbar vertebrae. This rounds your lower back. This is the Cat position. Now tilt the tailbone up towards the ceiling allowing each vertebrae to drop down towards the floor. Imagine your belly dropping towards the floor.

## Be careful

For some people excessive arching and excessive rounding can aggravate the spine. If you find you feel worse after attempting this exercise, seek out care.

# Quadruped Hip Circles



## How to perform

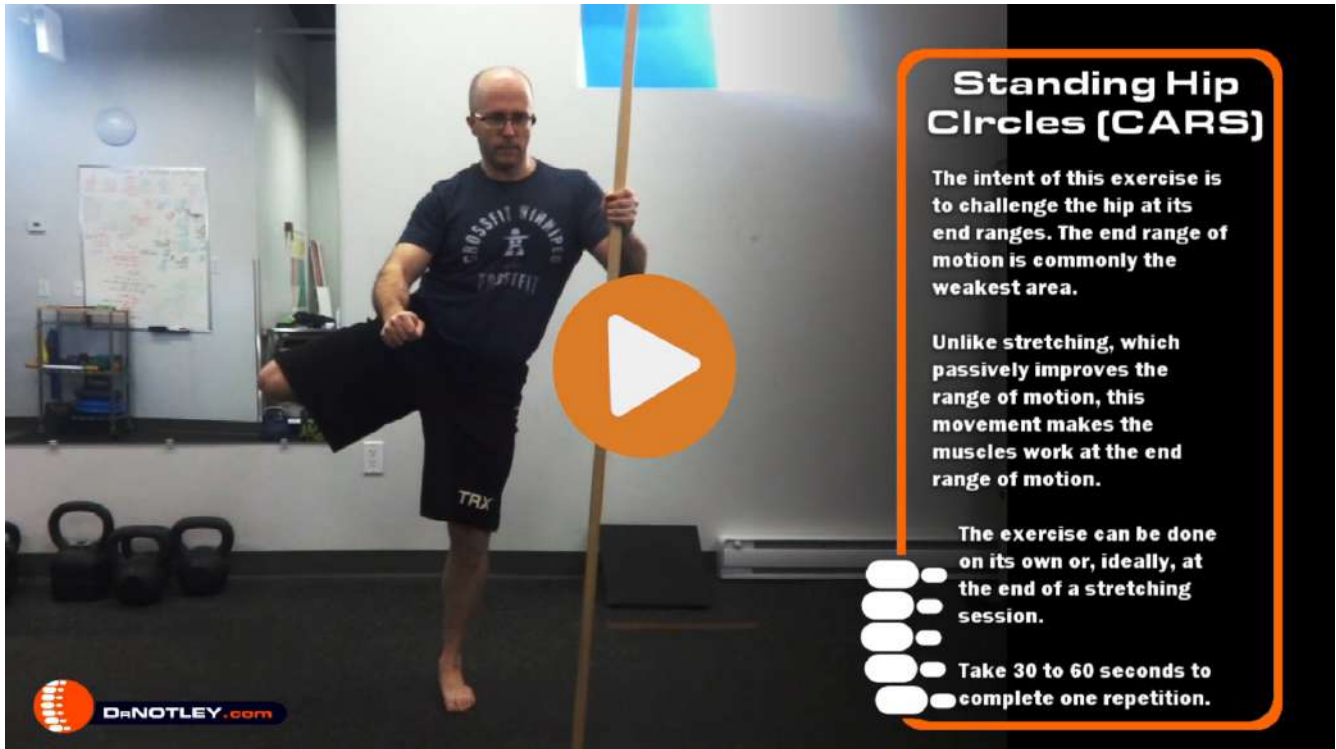
1. Start in a quadruped position, on all fours, lift the knee up towards your chest.
2. Keep the knee up and move the knee to the outside as far as possible.
3. Keep the knee there and rotate the hip inwards attempting to lift the foot higher than the knee.
4. Keep the leg up and bring it back behind you. Try not to over arch the back at this point in the exercise.
5. Return to the start.

You can also perform this exercise in the reverse order

## Be careful

A common cheat to this move is to round in the lower back as you bring your knee to your chest, arching over the lower back as you extend the hip backwards or rotate the pelvis as you bring the thigh out to the side. Do your best to keep your midsection tight.

# Standing hip circles



## How to perform

This exercise can be performed with a pole, stick, or just balancing on one leg. Using a pole helps you if you have balance issues. If you can stand on one leg but with movement you struggle a bit, the stick will add a little bit of support to help you perform the exercise. As you get better, you can work at balancing on one leg while performing the exercise.

1. Lift the knee up as high as you can without rounding the lower back.
2. Keep the knee up and move the knee to the outside.
3. Keep the knee there and rotate the hip inwards. The foot comes up to be inline with the knee. Try not to hike the pelvis up during this point in the exercise
4. Keep the leg up and bring it back behind you. Try not to over arch the back at this point in the exercise.
5. Return to the start.
6. This can also be performed in the reverse order

## Be careful

Excessive motion from the pelvis during the circles is undesirable.

# Closed chain knee circles



The reason these are called closed chain is that the chain of joints (toes, foot, ankles, knees, hips, stay in contact with the ground.

## How to perform

To perform this exercise start with both feet together. Bend your knees and then separate the knees out wide as far as you circle around the knee straightens out again.

Make sure you keep your feet from coming off the ground. If your foot comes up the rotation is occurring elsewhere. This knee circle emphasizes knee internal rotation.

To emphasize knee external rotation, which often is not a problem for people, separate your feet and this time flex your knees and bring your knees together as you circle around back to a straight leg.

## Be careful

Knee rotation, when the knee is flexed, is a mechanism of injury for the menisci of the knee. Perform this movement slowly.



# Open chain knee circles



The reason these are called open chain is that the chain of joints (toes, foot, ankles, knees, hips, are not in contact with the ground.

## How to perform

To perform this exercise begin by holding your thigh so your movement is coming from your knee rather than from your hip. Turn your foot to the outside and pull the heel up as close to your buttocks as you can. Make sure you keep your foot point out the entire time

Once you have reached as far up as you can turn the foot inwards and straighten your leg out. As you near complete straightening of the knee your foot will naturally end up losing the inward rotation of the foot so don't worry about that.

You can also perform this exercise in the opposite direction by first turning the foot in and then pulling up towards your buttocks.

## Be careful

Pinching in the back of the knee is undesirable.

# Ankle circles



## How to perform

Point the foot down as far as you can. While you are pointing the foot, turn the sole of the foot inwards without turning the knee or hip. Once you have turned it inwards as far as you can keep it inwards and pull the foot up towards your shin. Once you are as close to the shin as you can go then turn the sole of the foot outwards and then keep it there while you point the foot down.

## Be careful

Pinching pain in the front of the ankle when the foot is up near the shin or pain in the back of the ankle when the foot is pointing away from the shin is undesirable.

# Mid foot mobility



## How to perform

Keeping your feet planted on the ground, rotate your body to the left. What should occur is that the left foot will create an arch on the inside of the foot and the arm on the right foot will collapse. As you rotate the other way the left foot's arch collapses and the right foot creates an arch.

## Be careful

A common error is letting the inside of the foot come off the ground as you rotate to the same side as that foot. Make sure to keep the base of the first toe planted on the ground. It is not uncommon to experience cramping in the foot.

# Toe cars/toe yoga



The toes are often neglected when it comes to mobility. The joints in this area deserve to move just like the rest of the joints in our body. Rigid shoes limit how much the toes should move. The toes can bend up and down but can also spread apart. Using toe spreaders/spaces are a helpful addition to this exercise.

## How to perform

Try and lift off the big toe on its own. Try and do the same thing with the other toes as you press the big toe down into the ground.