

A background image showing a person's leg being held and examined by two hands, one of which is wearing a ring. The scene is set against a dark blue background.

# What are the Causes of Leg Swelling?

## What You Should Know

### **OVERVIEW:**

Not only are swollen legs unsightly, but they are also uncomfortable and painful. In my experience seeing patients with leg swelling, this leg heaviness and discomfort can really detract from someone's health and enjoyment of life. There many causes of swelling - some are easy to diagnose and others more obscure.

I see patients each day of the week with swelling and this ebook reviews the causes of leg swelling so that you can get some insight and guidance on what might be causing the swelling in your legs.

You may notice that one leg swells more than the other or that both swell equally. Let's start with causes of leg swelling that affect both legs, and later look into swelling in only one leg.



## POSSIBLE CAUSES WHEN BOTH LEGS SWELL

### 1. TOO MUCH SODIUM IN YOUR DIET

One of the most common causes of swelling in both legs is excess consumption of sodium. Sodium is present in salt, also known as sodium chloride, monosodium glutamate, known as MSG and as an additive in foods such as soda. When excess sodium causes swelling in your legs, it occurs in both legs and usually causes puffiness in the rest of your body, especially your hands. Swelling in the feet and difficulty getting rings off the fingers are a common experience with this problem.

When you take in more sodium than you need, your body regulates the concentration in your bloodstream by retaining water. It then slowly gets rid of the salt, but this takes days. The solution when you feel puffy or swollen

isn't to dehydrate yourself by drinking less water - it will actually just make you all the thirstier. The cure for this cause of swollen legs is to consume less sodium, and your body will naturally shed the sodium and the fluid. To do so requires some dietary changes.

The biggest source of sodium is in the processed food you buy, not in the fresh food you cook. It has less to do with the salt you put on your food. Common problem areas include fast food, junk food, canned food, frozen meals, restaurant food and snack food. It may not taste salty but there is usually a lot of sodium in these foods. Sodium is added by food manufacturers since it makes the food more flavorful and desirable. Often people notice swelling when their lifestyle and eating habits change such as going on vacation, eating more junk food at work or eating out more than usual. Put away the saltshaker and eat fewer processed foods. Get in the habit of reading labels and you see that most processed



foods and beverages are high in sodium.

A home cooked diet for a week will help sort this out. It takes about three days for your kidneys to clear the excess salt out of your system after an exposure. Because of this timeline, I recommend that people stay away from processed foods for a week and rely on home cooked, unprocessed and fresh foods to sort out if their diet is the source of the swelling. It doesn't taste good to have a salt free diet, so while on this diet, reduce the salt you cook with and add to your food. If you can do this for a week and your swelling goes away, then the answer is in your diet.

## 2. HOT WEATHER OR WORKPLACE

For some people, summer heat brings swollen legs and feet. When the cause of leg swelling is hot weather, both legs are always affected. The problem resolves when the weather cools off again.

The reason heat causes swollen legs is the body's

attempt to cool off. The arteries, which carry blood from the heart down to the legs and feet, increase their blood flow by dilating when the body senses it is overheating. Expansion of the arteries increases blood flow to the skin surface where sweat cools the skin. But as more blood flows into the legs, there is a natural tendency for fluid to leak out into the tissues of your leg.

One way to decrease this cause of swollen legs is to stay cool and elevate your legs - if you are able. Spend a day by the air conditioner to see if that makes a difference, and if it does, you will have your answer as to why your legs are swelling. If the summer heat and swelling is really getting you down, you can try and wear a cooling jacket, which has ice inserts. This cools down your core temperature and reduces the need for the body to cool your legs off and reduces the blood flow to the skin on your legs. Similarly, drinking ice cold liquids will help keep the core body temperature down and indirectly keep the legs cool and swelling down.

# BODY MASS INDEX (BMI) CHART

		Weight																					
		90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	
		kgs	41	45	50	54	59	64	68	72	77	82	86	91	95	100	104	109	113	118	122	127	132
ft/in	cm																						
	4 ft 8 in	142.2	20	22	25	27	29	31	34	36	38	40	43	45	47	49	52	54	56	58	61	63	65
4 ft 9 in	144.7	19	22	24	26	28	30	32	35	37	39	41	43	45	48	50	52	54	56	58	61	63	
4 ft 10 in	147.3	19	21	23	25	27	29	31	33	36	38	40	42	44	46	48	50	52	54	56	59	61	
4 ft 11 in	149.8	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	51	53	55	57	59	
5 ft 0 in	152.4	18	20	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	
5 ft 1 in	154.9	17	19	21	23	25	26	28	30	32	34	36	38	40	42	43	45	47	49	51	53	55	
5 ft 2 in	157.4	16	18	20	22	24	26	27	29	31	33	35	37	38	40	42	44	46	48	49	51	53	
5 ft 3 in	160.0	16	18	19	21	23	25	27	28	30	32	34	35	37	39	41	43	44	46	48	50	51	
5 ft 4 in	162.5	15	17	19	21	22	24	26	27	29	31	33	34	36	38	39	41	43	45	46	48	50	
5 ft 5 in	165.1	15	17	18	20	22	23	25	27	28	30	32	33	35	37	38	40	42	43	45	47	48	
5 ft 6 in	167.6	15	16	18	19	21	23	24	26	27	29	31	32	34	36	37	39	40	42	44	45	47	
5 ft 7 in	170.1	14	16	17	19	20	22	24	25	27	28	30	31	33	34	36	38	39	41	42	44	45	
5 ft 8 in	172.7	14	15	17	18	20	21	23	24	26	27	29	30	32	33	35	37	38	40	41	43	44	
5 ft 9 in	175.2	13	15	16	18	19	21	22	24	25	27	28	30	31	33	34	35	37	38	40	41	43	
5 ft 10 in	177.8	13	14	16	17	19	20	22	23	24	26	27	29	30	32	33	34	36	37	39	40	42	
5 ft 11 in	180.3	13	14	15	17	18	20	21	22	24	25	27	28	29	31	32	33	35	36	38	39	40	
6 ft 0 in	182.8	12	14	15	16	18	19	20	22	23	24	26	27	28	30	31	33	34	35	37	38	39	
6 ft 1 in	185.4	12	13	15	16	17	18	20	21	22	24	25	26	28	29	30	32	33	34	36	37	38	
6 ft 2 in	187.9	12	13	14	16	17	18	19	21	22	23	24	26	27	28	30	31	32	33	35	36	37	
6 ft 3 in	190.5	11	13	14	15	16	18	19	20	21	23	24	25	26	28	29	30	31	33	34	35	36	
6 ft 4 in	193.0	11	12	13	15	16	17	18	19	21	22	23	24	26	27	28	29	30	32	33	34	35	
6 ft 5 in	195.5	11	12	13	14	15	17	18	19	20	21	23	24	25	26	27	28	30	31	32	33	34	
6 ft 6 in	198.1	10	12	13	14	15	16	17	18	20	21	22	23	24	25	27	28	29	30	31	32	34	
6 ft 7 in	200.6	10	11	12	14	15	16	17	18	19	20	21	23	24	25	26	27	28	29	30	32	33	
6 ft 8 in	203.2	10	11	12	13	14	15	16	18	19	20	21	22	23	24	25	26	27	29	30	31	32	
6 ft 9 in	205.7	10	11	12	13	14	15	16	17	18	19	20	21	24	24	25	26	27	28	29	30	31	
6 ft 10 in	208.2	9	10	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
6 ft 11 in	210.8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	25	26	27	28	29	30	

■ Underweight    
 ■ Healthy    
 ■ Overweight    
 ■ Obese    
 ■ Extremely Obese

### 3. OBESITY

For those who are overweight and who have swollen legs, there is a good chance that these are related, especially if your BMI is over 30. Your excess abdominal weight presses down on the veins in your abdomen and pelvis. These veins normally allow blood from the legs to return to your heart. With obesity, blood flow out of the legs is diminished and slows down because the pressure inside the veins increases. With increased pressure in the

veins, fluid pools in the tissues of your legs.

Overweight people with this condition often have mild vein reflux, which is abnormal flow in the veins. In my experience I have found that for most overweight patients, there is minimal improvement with vein treatments since the main problem is excessive pressure from their abdomen. Vein treatments can help, but the best thing you can do for leg swelling that is caused by obesity is to lose weight. To get this sorted out, you will need a reflux vein ultrasound of



the legs and an evaluation with a vein specialist.

#### 4. NOT SLEEPING FLAT AT NIGHT

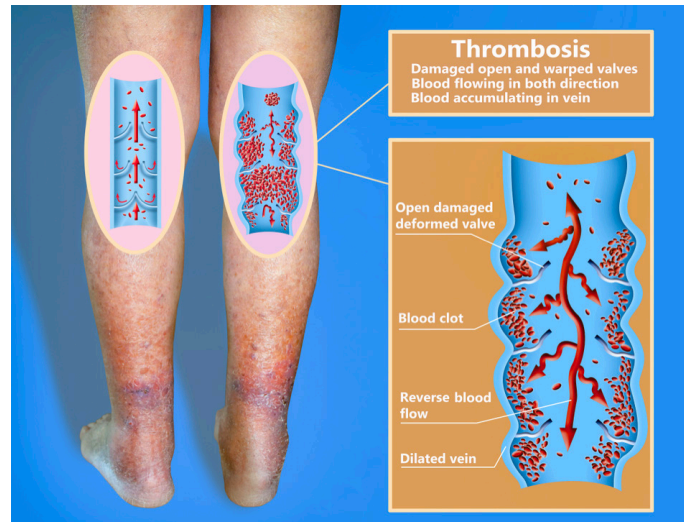
Some people have trouble sleeping at night for a number of reasons: trouble breathing from COPD or heart failure, back pain, sleep apnea or obesity with a large abdomen interfering with breathing. All of these conditions have in common that the individual has trouble sleeping when they are lying down. People learn quickly that by elevating their head they can get some sleep. When the head is elevated on pillows or they are in a recliner sleep is easier but is usually still fitful. What is certain is that this sleep position results in extra pressure in the veins of the legs which results in swelling. The swelling in this situation is always present and does not resolve overnight.

#### 5. MEDICATIONS, ESPECIALLY CALCIUM CHANNEL BLOCKERS

Several medications can cause swelling, and it is best to review your medications with your pharmacist for swelling side effects. A common cause we see is the class of several blood pressure medications called calcium channel blockers. These help lower high blood pressure, but they can have a side effect of leg swelling. Don't stop taking calcium channel blockers on your own but be sure to let your healthcare provider know about your symptoms and ask about alternatives. Other medications can cause swelling, and a pharmacist and your healthcare provider can help you sort this out.

#### 6. CONGESTIVE HEART FAILURE

If you have had a heart attack, high blood pressure or diabetes, you are at higher risk of congestive heart failure. In congestive heart failure, the heart is weakened and cannot pump blood efficiently throughout the body.



The body reacts by retaining fluid, and this shows up in the legs or even your abdomen. Weakness, low stamina and fatigue are always present throughout the day. Many people who have congestive heart failure get short of breath with exertion and they suffer from fatigue and weakness.

Congestive heart failure swelling tends to be worse later in the day and better first thing in the morning. Swelling from congestive heart failure is always associated with a recent weight gain of a few pounds or more - which is water weight - so keeping track of your daily weights will help sort this out.

If you have swelling of your legs along with shortness of breath or fatigue you should speak with your healthcare provider to assess for congestive heart failure, and they can prescribe medications, set up diagnostic tests or make a referral to a specialist.

### POSSIBLE CAUSES WHEN ONLY ONE LEG SWELLS

Now let's take a look at common conditions that cause swelling predominately in one leg, starting with the most common condition causing leg swelling - pregnancy.



## **1. PREGNANCY (SWELLING CAN BE IN ONE OR BOTH LEGS)**

Swollen legs are common and are due to the hormones of pregnancy which results in expansion of the mother's blood volume to accommodate increased blood flow to the growing baby. In addition, as the baby gets bigger, the baby and uterus also puts weight on the veins in the pelvis and this increases pressure and worsens the swelling. Typically, there is more pressure on veins on the right side of the abdomen than on the left, so there will be more swelling in the right leg than in the left, but usually both will swell. Swelling typically is worse in the calves but can also involve the upper leg.

Swollen legs in pregnancy usually return to normal after the baby is born and the pregnancy hormones decrease. During pregnancy, it helps to sleep on the left side to take pressure off the veins on the right side of the abdomen. Swelling during pregnancy usually improves but does not completely go away overnight.

The swelling and leg aching can also be helped by compression garments. The style we recommend during pregnancy is maternity pantyhose. Even when women follow all the prescribed steps of their treatment, swelling may not completely resolve during pregnancy and will only go away after delivery. If swelling affects the hands and face during pregnancy this may be a sign of a significant condition called pre-eclampsia, and you should contact your provider.

## **2. DEEP VEIN THROMBOSIS, ALSO KNOWN AS DVT**

One important cause of swelling in one leg is deep vein thrombosis, more commonly known as DVT.

This usually comes on abruptly, often over a few hours to a day, with swelling, severe pain, and difficulty

walking. If these symptoms occur, it's important to get an ultrasound exam to see if a clot is present. If present, it may be necessary to start on blood thinners to avoid a life-threatening blood clot traveling to your lungs. This kind of swelling does not go away overnight and depending on the location of the clot and may involve the calf or the entire leg from the groin down.

Long term effects of a blood clot can include swelling, pain and heaviness in the affected leg. If this occurs it is called post-thrombotic syndrome. If present, it is treated with compression stockings and in some cases, angioplasty and stenting.

There are also DVTs that cause pain and swelling without difficulty walking; these are in the smaller veins in the calf. You still need to be examined with ultrasound, but you may not need the blood thinners. Walking is recommended since this is known to dissolve blood clots. In addition, when the acute pain abates within a few days or week, wearing compression stockings reduces stagnant blood flow and the chance of the clot worsening. Your healthcare provider will make recommendations for blood thinners if you have a DVT.

## **3. VENOUS REFLUX (SWELLING CAN BE IN ONE OR BOTH LEGS)**

Venous reflux is a condition in which the veins in the legs begin to fail and lose their ability to keep blood flowing to the heart. This condition is always associated with one or more of the following symptoms: aching, cramps, calf and ankle swelling, heaviness in the calf, restless legs syndrome, and generalized fatigue. Swelling when present involves the calf.

These symptoms are worse after standing or sitting for long periods and it is always worse at the end of the day. Symptoms improve (but do not go away) by elevating your legs, and patients figure this out and hit the recliner



or sofa at the end of the day. Swelling comes from two sources with this condition: high vein pressure allows fluid to leak out of the veins and inflammation around the veins causes the circulation to become leaky allowing fluid to accumulate. This kind of swelling always goes away overnight.

There are definitive treatments which help, and you can also benefit from changes in lifestyle such as sleeping with your feet elevated on pillows and wearing compression socks. The test for confirming a diagnosis of venous reflux is called a venous reflux ultrasound which is typically covered by insurance. Since not all ultrasound labs perform this type of ultrasound you will want to check ahead of time to make sure they perform this exam.

#### **4. MAY-THURNER SYNDROME (USUALLY JUST ONE LEG SWELLS)**

May-Thurner syndrome is an uncommon condition that causes swelling in one leg, usually the left leg, and it is due to a problem in the pelvis. In this syndrome, the right iliac artery, which sends blood to the right leg, overlies and blocks the left iliac vein, which brings blood back up to the heart from the left leg. The most common symptoms are left leg pain and swelling. The swelling is peculiar in that it always involves both the thigh and calf. The pinched off vein has slow flow and this often results in a blood clot in the pelvic vein that extends to the leg.

This syndrome is more common in women than in men, and the diagnosis can be made using a CT or MRI to search for narrowing of the left iliac vein. Often people have had symptoms for years before the diagnosis is made. If you are concerned that you may have this condition, make sure that the CT or MRI looks at the veins since most of the time these studies are set up to look at the arteries. This condition can be easily treated with a stent.



#### **5. LYMPHEDEMA (SWELLING CAN BE IN ONE OR BOTH LEGS)**

Lymphedema is a condition of blockage not in the veins but in the lymphatic circulation. The lymph circulation is responsible for returning the swelling fluid in your tissues back to the bloodstream. When it is not working, fluid accumulates in the leg and causes swelling.

There are a number of causes of lymphedema. Cancer surgery with removal of a lymph node or radiation therapy in the groin or pelvis can cause leg swelling since the lymph circulation passes through the lymph nodes. If a lymph node is no longer present or is scarred, lymph cannot flow through the lymphatic vessels.

More commonly lymphedema is a hereditary condition and can affect one or both legs. Perhaps most common is lymphedema after injury, knee or ankle surgery or leg infection. Lymphedema as it progresses always involves swelling on the top of the foot, and it can extend to involve the knee, thigh and even the abdominal wall. Lymphedema does not respond well to simple compression or compression pumps. The excess fluid needs to be massaged out with a specific technique; most people get excellent results from this painless treatment. If this is your problem, make sure your physical therapist is certified in manual decompressive therapy for lymphedema. After the swelling goes down you can prevent recurrent by daily use of compression stockings and a lymphedema pump for advanced cases.

be difficult to diagnose. Your healthcare provider will need to order a CT scan to evaluate your abdomen and pelvis to sort this out.

***Here's to living your best life now!***

## **6. TRAUMA, KNEE OR ANKLE DISEASE (USUALLY ONE LEG SWELLS)**

Inflammation, trauma or surgery of the knee or ankle can cause swelling due to local swelling in the joint which puts pressure on the lymphatic circulation. This can include a Baker's cyst, meniscus tears, arthritis, direct injury to the muscle or a twisted or sprained knee or ankle.

If your knee is affected you will have swelling in your calf. If your ankle is affected you will have swelling in your foot and ankle. Your healthcare provider can address the sprain, strain, abrasion, or fracture causing the swelling, and refer you to a specialist. This type of swelling can take a long time to go away and sometimes does not resolve without treating the joint condition and starting lymphedema therapy.

## **7. PELVIC TUMOR (SWELLING IN ONE OR BOTH LEGS)**

Pelvic tumors are a rare cause of leg swelling and it can

