

# Difference Between Leg Cramp and Blood Clot

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## Key Difference – Leg Cramp vs Blood Clot

A blood clot is a meshwork of **fibrin** fibers running in all directions and entrapping blood cells, **platelets** and **plasma**. A leg cramp is a sudden painful contraction of the muscles, usually in the calf, which gradually disappears within few minutes. This is the key difference between leg cramp and blood clot. Although a blood clot can be a cause for the leg cramps, they often occur due to some other minor physiological derangement.

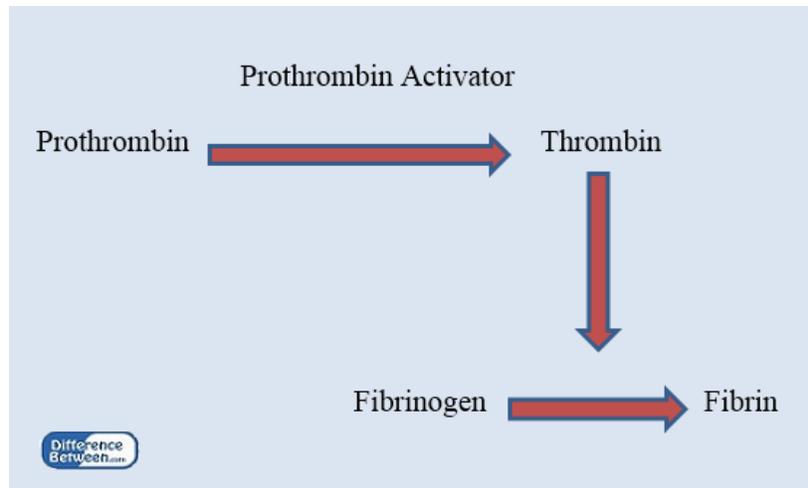
## What is a Blood Clot?

A blood clot is a meshwork of fibrin fibers running in all directions and entrapping blood cells, platelets and plasma. In medical jargon, a blood clot is also known as a **thrombus** or **embolus**.

It is actually a protective mechanism employed by the body in order to prevent the loss of blood when a blood vessel is ruptured or when the blood itself is damaged by some injurious agents.

When there is damage to a blood vessel, a pathway called the **extrinsic pathway** is activated, and when there is a blood injury, it is the **intrinsic pathway** that is activated. Both these pathways are cascades of chemicals that ultimately form the prothrombin activator.

Prothrombin activator converts fibrinogen into fibrin through several steps.



**Figure 01: Conversion of Fibrinogen into Fibrin**

Under normal conditions, blood clots are not produced within the circulatory system due to the presence of few counter mechanisms specifically aimed at preventing the unnecessary clotting of blood.

### **Mechanisms that Prevent Unnecessary Clotting of Blood**

- Endothelial surface factors

The smoothness of the endothelial surface helps in preventing the contact activation of the intrinsic pathway. There is a coat of glycocalyx on the [endothelium](#) which repels clotting factors and platelets, thereby preventing the formation of a clot. The presence of thrombomodulin, which is a chemical found on the endothelium, helps to counter the clotting mechanism. Thrombomodulin binds with thrombin and stops the activation of fibrinogen.

- Anti-thrombin action of fibrin and antithrombin iii
- Action of heparin
- Lysis of blood clots by plasminogen

In spite of the presence of these countermeasures, blood clots are formed unduly inside the vessels. When such a clot gets lodged in the blood vessels in the lower limb, it compromises the blood supply to the

muscles of that particular area. This leads to the accumulation of metabolic waste products and the lack of oxygen gives rise to [ischemia](#). These events stimulate the nociceptors, giving rise to intense pain in the legs which is perceived as a cramp by the patient.

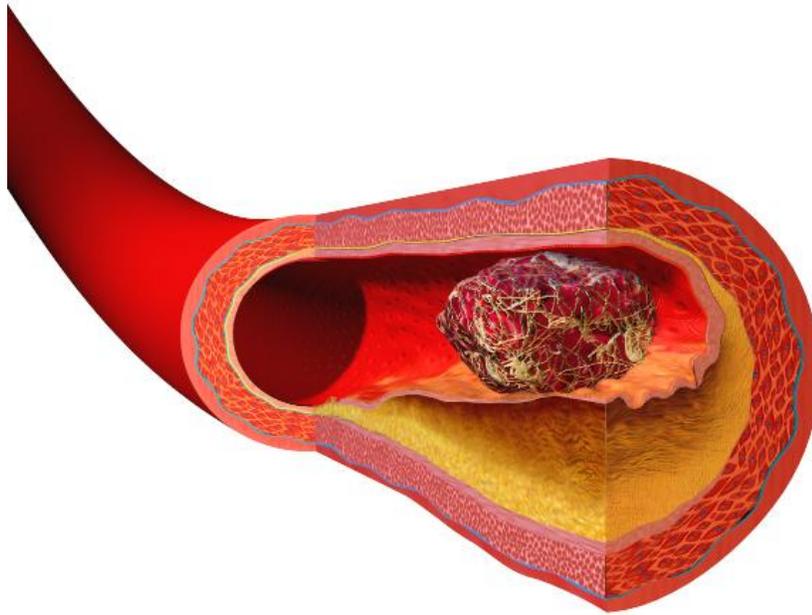


Figure 02: Blood Clot

In addition to the pain, there can be other symptoms such as swelling and tenderness in the calf, indicating the presence of a blood clot occluding a blood vessel.

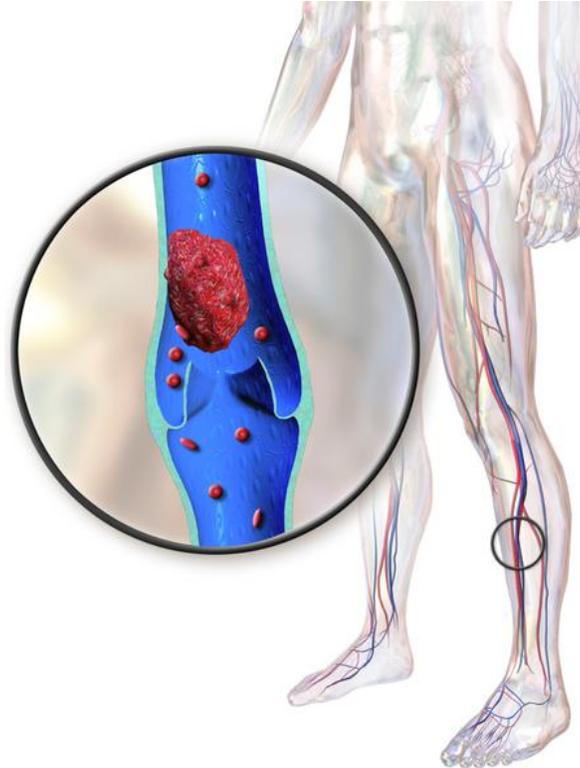
## What are Leg Cramps?

As mentioned at the beginning, leg cramps are sudden contractions of the lower limb muscles giving rise to an intense pain which gradually alleviates within few minutes.

## Causes of Leg Cramps

- Excessive exertion of the muscles
- [Hyperthermia](#)
- Pregnancy

- Ion imbalance – especially the decrease in the amount of potassium and calcium in the blood.
- Peripheral arterial disease and deep vein [thrombosis](#)
- Some drugs such as furosemide are also known to cause leg cramps as a side effect.
- Less frequently in conditions, such as the Addison’s disease, [hypothyroidism](#), and type II diabetes.



**Figure 02: Deep Vein Thrombosis**

## **How to Prevent the Occurrence of Cramps?**

- When you get a cramp, stretch the muscles as much as possible.
- If you are a sportsman, drink plenty of water and do not skip the warm up exercises.
- As in most of the other medical conditions, good nutrition is a key factor in preventing the recurrence of cramps. A healthy balanced diet will assist you to maintain the appropriate levels of calcium and potassium in the body.
- Painkillers can be taken to reduce the pain.

- Recurrence of cramps is not a good sign. Meet your doctor to exclude the possibility of any serious underlying pathology.

## What is the difference between Leg Cramp and Blood Clot?

Leg Cramp vs Blood Clot	
A blood clot is a meshwork of fibrin fibers running in all directions and entrapping blood cells, platelets and plasma.	A leg cramp is a sudden painful contraction of the muscles usually in the calf which gradually disappears within few minutes.
Causes	
Blood clots can be a cause of leg cramps.	Leg cramps can also be caused by many other conditions.

### Summary – Leg Cramp vs Blood Clot

Leg cramps are most often due to benign causes. However, it is important to know the difference between leg cramp and blood clot since leg cramp caused by a blood clot may lead to a serious condition. If leg cramps start to recur more frequently and the pain worsens along with the appearance of other symptoms it is better to take medical advice to exclude the possibility of a blood clot or other serious disorder.

#### Reference:

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2. Kumar, Vinay, Stanley Leonard Robbins, Ramzi S. Cotran, Abul K. Abbas, and Nelson Fausto. Robbins and Cotran pathologic basis of disease. 9th ed. Philadelphia, Pa: Elsevier Saunders, 2010. Print.

## Image Courtesy:

1. "Blausen 0088 BloodClot" By "Medical gallery of Blausen Medical 2014". WikiJournal of Medicine 1 (2). DOI:10.15347/wjm/2014.010. ISSN 2002-4436. – Own work ([CC BY 3.0](#)) via [Commons Wikimedia](#)
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