

Where do side stitches come from?

July 8 2024, by Clément Naveilhan and François Dernoncourt



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Imagine you're running with your friends in a park. You're in good shape, smiling and feeling strong. But suddenly you feel a sharp pain in your right side, just below the ribs. You find it hard to breathe, you slow down, you stop. You've just got hit by a side stitch.

This phenomenon is common among swimmers and runners, particularly those under 20. But what exactly is it and how can it be avoided?

It hurts, but why?

Although very common, until recently side [stitches hadn't been extensively studied](#). Scientists have not yet identified their exact cause, but one hypothesis seems more likely than the others.

This hypothesis is irritation of the peritoneum, a thin membrane that covers the inner wall of the abdomen. The peritoneum is made up of two layers, which protect the organs located in the abdomen. A liquid between these two layers prevents rubbing.

During physical exertion such as running or swimming, the quantity and viscosity of this fluid changes, making it less effective. What's more, because of the movements involved in the activity, these two layers may rub slightly against each other. It is this slight friction that causes irritation and is at the root of side stitch pain. When you're a [child](#), the surface area of the peritoneum is proportionally larger than in adults, which could explain a greater frequency of side stitch in children.

Repetitive movements of the torso, particularly rotations and up-and-down movements, cause friction between the two layers of the peritoneum, particularly when the torso stretched out. This explains why side stitches are common in running, swimming and even horse riding, but rarer in cycling where there is less [movement](#) of the torso.

Stitches are sometimes associated with a sharp pain in the shoulder when the irritation affects the area of the peritoneum below the diaphragm. This is thought to be due to rubbing of the peritoneum, which irritates the [phrenic nerve](#), which passes through the shoulder. The side stitch could cause what is called "referred" pain, meaning a sensation on the

nerve path that originates somewhere other than where it's felt—in this case, irritation of the peritoneum under the diaphragm causes shoulder pain via the phrenic nerve.

You just got a side stitch. What can you do?

The first [solution](#) is to avoid physical activity after eating too much. The swelling of the stomach could compress the two [layers](#), increasing friction and therefore [pain](#). The second solution would be to build up the stability of the body core, and in particular the [transverse abdominis](#) muscles.

If, despite this, you still get side stitches, there's unfortunately no miracle solution to make them go away. Still, try deep breathing or pressing on the affected side, approaches that come naturally to us all. And ultimately, the best solution is to slow down or even stop physical activity—as painful as they can be, side stitches inevitably pass.

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