

## Runners Stitch

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### EXERCISE RELATED TRANSIENT ABDOMINAL PAIN

#### “RUNNER’S STITCH”

Runner’s stitch, or runner’s cramp, is an injury that nearly every runner has experienced in the midst of or after a training session. Although this pain affects approximately 60% of competitive runners (2) and also other athletes (4), there has not been much scientific research conducted on this topic. The anatomic mechanism of the stitch is poorly understood. However, there are several anecdotal-only suggestions regarding stitches available on the Internet and in running/athletic magazines. More scientific testing in this area is needed as it affects a large number of athletes.

84% of the athletes, who reported the presence of a stitch while exercising, said it negatively affected their performance. Most of these athletes simply reduced the intensity of their exercise while a few of these athletes had to stop exercising altogether in order for the stitch to cease (5). In a competitive environment, neither of these options is desirable.

The scientific name for Runner’s Stitch is **Exercise Related Transient Abdominal Pain** (ETAP.) It is a pain that occurs in the thoracic cage when running. Usually runners describe this pain as sharp or stabbing usually at one side, and up under the ribcage. Research has shown that the pain most often affects the right side and is more frequent and severe in younger athletes (2).

Unfortunately, according to the research (5), runners suffered the stitch more frequently than all other types of athletes. ETAP was also found to occur commonly in horseback riders. Duathletes are also susceptible to this injury with the transition from run to bike and back to run again.

There are a number of theories that have been lightly tested to claim the origin of the stitch pain. However, even though all of these theories have some validity none have been **PROVEN** to be the actual cause of ETAP. Such theories include:

#### **1. Tugging on the peritoneal ligaments (ligaments that hold the organs in place)**

This theory is the original explanation for stitch pain occurring in runners. These researchers believe that when running, the organs such as the stomach and liver undergo a lot of jostling and bouncing. With each bounce, it is believed that there is a sharp tug on the ligaments that hold the organs in place, and this causes pain. (1, 4)

#### **2. Referred thoracic spine pain**

A new theory has suggested that stitch pain really originates from the mid back, or thoracic spine. One study revealed that 47% of the study subjects had the exact pain

reproduced with palpation of certain joints in the thoracic spine. An interesting trend that these researchers have found was that runners with poor running posture (slouch) were more likely to have pain originating from the spine. (6)

### **3. Irritation to the lining of the abdominal cavity.**

This is also a newer theory still in various stages of testing. There are two layers of membrane that line the inside of the abdominal cavity. One layer covers the organs and the other layer attaches to the abdominal wall. It is thought that the stitch occurs when there is friction between the inside and outside layers of the membrane. A full stomach or a reduction in fluid between the layers may cause this friction. Sometimes the stitch pain can radiate deep into the shoulder, caused by a nerve that comes from the shoulder/neck area, but supplies innervation the top part of the outer layer. (4,5).

### **4. Lack of blood flow to the diaphragm muscle.**

This theory attributes the side “stitch” to a lack of blood flow to the diaphragm muscle, which is the main breathing muscle in the thoracic cage. The blood is being shunted away to the limb muscles and the gut (for digestion of any fluid taken in) during exercise. The support for this theory comes from research that shows a higher incidence of stitch pain in runners who had just consumed a high-energy fluid supplement. Also in concurrence with this theory is that the stitch appears over time as more blood is diverted to active muscles during exercise and away from the respiratory muscles. (2)

### **5. Quadratus Lumborum and Psoas Muscle Tightness**

This theory is relatively new, hypothesizes that stitch pain could actually be muscular in nature. The quadratus lumborum and psoas are both muscles in the thorax and both thicken as they run upwards and attach to the diaphragm muscle. This theory proposes that perhaps tightness in either of these muscles can cause varied sensations of stitch pain. (7)

### **Treatment of ETAP**

Although research is quite limited regarding exercise related transient abdominal pain, there have been suggestions for treatment based on findings in the literature. Breathing exercises and proper breathing technique is one important concept for those susceptible to stitch pain. Perri and Halford (8) found that respiration patterns play a huge role in not only cramping, but also many biomechanical factors in the skeleton and muscles of the thorax, spine and even neck. Exercises designed to encourage abdominal breathing rather than upper chest breathing can rehabilitate a number of specific pain patterns. Pursed lip breathing while running has also shown to help reduce stitch pain in some cases.

As suggested by a number of the theories proposed above, the weight of the organs of the abdominal cavity could lead to cramping or stitch. Thus the solution offered by various authors is to use fluids in small frequencies rather than a large volume at once while exercising. Also suggested was to consume drinks with small carbohydrate content as they have been shown to be absorbed faster, thus reducing the weight of

the gut. Avoid eating a large meal prior to exercising or high fat foods, as they take longer to empty from the intestines as well.

Some of the other proposed methods of stitch pain could benefit from chiropractic treatment and Active Release Techniques. Adjustments or mobilizations to the thoracic spine would suggest a decrease in the frequency or severity of stitch pain in some patients affected by the thoracic spine pain referral theory. Active Release Techniques® to the Quadratus lumborum or psoas muscles could also cause relief if the mechanism of the stitch is caused by the tightness in these muscles.

There is much research to be done on such a common injury. There are various types of stitch and a range of causes for exercise related transient abdominal pain that can be examined. This article outlines some of the proposed theories in the research and outlined some of the current theories that are now being examined.

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