



# Muscle Cramps

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Muscle cramps are involuntary muscle contractions or spasms, often sustained and painful.

Muscle cramps can and do affect almost all riders. What can be done to help prevent this problem, and what can be done once cramps occur?

## Cramps Questionnaire

Answering this questionnaire will help determine the cause of your cramps.

1. What kind of riding do you do?
2. What is your weekly mileage/hours?
3. How long is your longest weekly ride in miles/hours?
4. How often are you troubled by cramps?
5. Which muscles are affected? Is it always the same muscle, or are various muscles affected?
6. Have you noticed that anything is associated with your cramps?
7. Are you more likely to have cramps when you travel?
8. Are more likely to have cramps in the morning, afternoon, evening, or at night?
9. Has your training been stable, or have you decreased or increased your training?
10. Have you changed your bicycle position in the last year?
11. Are cramps more likely for you in the heat or in the cold?
12. Do you have any on-going medical problems or conditions?
13. Do you take any prescription or over-the-counter medications? Which? How much?
14. Do you take any herbs, supplements, or other non-conventional-food substances?
15. If it were hot and humid on a 4-hour ride, how many standard water bottles (16 – 18 ounces) would you drink?
16. Do you have water in your waterbottles? Do you use a sports drink? What percentage of time is it water? What percentage of the time is it a sports drink? Which sports drinks? What concentration?
17. Do you have breakfast before you ride? What do you generally eat? How many calories?
18. How many calories do you consume on an average 4-hour ride?

## What Causes Cramps?

There are probably many causes of cramps. No one is certain why cramps occur in any individual. Although it is clear that cramps occur within muscles, it is likely that a neurologic reflex (involving anterior horn cells, firing at rate up to 300 per second, much higher than occurs with voluntary contraction of muscle) maintains most cramps.

Some of the more likely causes are:

- Unaccustomed sudden hard exertion or inadequate conditioning. Note that a bicycle position change can result in unaccustomed muscle use.
- Fluid and electrolyte imbalance. This is probably more of a problem in the local muscle cell area than a reflection of overall body electrolyte imbalance or dehydration. Some of the electrolytes implicated are sodium, magnesium, potassium and calcium.
- Temperature changes. Not being used to cold or hot weather.
- Low blood sugar.
- Glycogen loading. Too much stored carbohydrate in muscle.
- Fatigue.
- Accumulation of waste products, such as lactic acid.
- Lack of flexibility.
- Benign nighttime leg cramps, unknown cause, more common in older masters.
- Medical situations, problems or diseases (e.g. thyroid disease, amyotrophic lateral sclerosis, pregnancy, glycogen storage disease, patients on hemodialysis, tetanus, stiff-man syndrome, strychnine poisoning).
- Medications can cause cramps through fluid and electrolyte imbalance, and well as through other mechanisms (e.g. diuretics, or water pills, commonly used to treat high



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blood pressure; withdrawal from benzodiazepines such as valium)

- Over-the-counter supplements. These can cause cramps through fluid and electrolyte imbalance, and well as through other mechanisms (e.g. creatine has been associated with cramps in some studies).

### Prevention

- Train specifically. If you are targeting a long-distance event, incorporate long rides into your training. If you are a racer and will have surges and jumps in your races, train that way.
- Allow time for acclimatization if you are traveling.
- Eat a diet rich in carbohydrates, calcium, potassium, and magnesium.
- If riding long or hard in the heat, add sodium to your diet.
- Target event glycogen loading (high-carb diet, little or no exercise for a few days before the event) can improve performance. Cramps are less likely if you ride moderately an hour or two the day before your target event.
- Be adequately hydrated before and during rides and races.
- Eat during long rides.
- Review your medications with your physician.

### Treatment of Cramps

- Stretch the opposing muscle. If you have a cramp in your quadriceps muscle, stretch your hamstrings. This may interrupt the neurological mechanism of the cramp.
- Stretch or massage the cramp. You may be able to do this while continuing to ride. For a calf cramp, stand on your extended affected leg, pedal at the bottom of the stroke, and drop our heel. For a quadriceps cramp, unclip the shoe of the affected leg, ride with one hand, and use the other hand to pull your shoe up toward your buttock.
- Concentrate on relaxing the affected muscle.
- Apply hot or cold packs. Either may help.

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