

Trail Riding

MTB marathon, gravel, multi-hour singletrack. Technical terrain hides your fuelling gaps until the last climb.

Small numbers point to the sources on page 2.

1 Where cramps bite

- Cyclist data: 30% lifetime cramp prevalence, quads nearly half of all cases, 63% of cramps in the final quarter¹.
- Trail adds repeated hard out-of-saddle surges and long descents braced on the pedals. Both load the quads and calves the way cramps like.
- Riders over 50 and those with injury history or chronic conditions carry higher risk¹.
- Cramp is a fatigued-nerve problem before it is a salt problem: hydration and sodium did not separate crampers from non-crampers⁴.

2 Cut your risk

- Ride the course profile in training. Cramp is most likely when the race is harder than anything you have rehearsed⁴.
- Train frequency, not just long weekends: more sessions per week was protective in 21,460 cyclists¹.
- Stay seated where you can and spin the technical climbs. Save standing efforts for when they buy real time.
- Suspension and tyre pressure set right cuts the bracing load on descents.
- Cramp history is the strongest predictor. Plan for it⁴.

3 When it hits

- Get off the pedals before it locks. Roll or walk a technical section rather than force it.
- Stretch the muscle to full length and hold: heel down for calves, stand tall for quads².
- **Early, not late.** Take your GOAT Shot at the twinge, from the jersey pocket. In the lab a small measured shot shortened cramps to about 85 s against 134 s for water³.
- Do not empty a bottle of plain water to fix it⁴.
- The evidence behind this tactic is lab-based and mixed: Miller (2010) found a clear effect, later trials found a small or non-significant one⁹. What it is not: an electrolyte top-up. Test it in training, not on race day.

4 Fuel

- Carb load 10 to 12 g/kg/day for 36 to 48 h before a race over 2.5 h⁵.
- Pre-race 1 to 4 g/kg carbohydrate, 1 to 4 h before⁵.
- 60 to 90 g/h from glucose plus fructose. Field cyclists average only 53 g/h and rough terrain pushes that lower^{5,6}.
- Put carbs in the bottle so you fuel while you steer. Eat solids on fire roads and at feed zones.
- Higher intake means more nausea unless practised: train the gut on long rides⁶.

5 Fluid and salt

- Pre-load 5 to 7 ml/kg about 4 h out⁷.
- Hydration pack or two bottles: one carb mix, one electrolyte. Sweat sodium is about 1 g per litre⁷.
- Finish within 2% of start weight. In heat plan 500 to 750 ml/h and know the refill points⁷.
- Sodium matters for anything over 2 h and in the heat⁷.

6 Race day

- Taper 8 to 14 days, volume down 41 to 60%, keep short intensity⁸.
- Bike check: sealant, brake pads, chain, dropper, pressures, spares, charged GPS.
- Pockets or pack: gels, GOAT Shot, tube and plugs, multitool, phone.
- Morning: eat 3 h out, arrive early, 15 min warm up including one short hard effort.
- Ride the first third at 85%. The last climb decides the race, and that is where the cramps live.

Sources and the fine print

Every numbered claim on page 1 traces to one of these. Peer-reviewed studies and consensus statements only, no influencer opinion.

1. Pohl et al. Independent risk factors associated with a history of EAMC in 21,460 Cape Town Cycle Tour cyclists. *Braz J Phys Ther* 2026; and Univ. of Pretoria SAFER cohort, 2016 event.

2. Maughan RJ, Shirreffs SM. Muscle cramping during exercise: causes, solutions and questions remaining. *Sports Med* 2019;49(S2):115-124.

3. Miller KC et al. Reflex inhibition of electrically induced muscle cramps in hypohydrated humans. *Med Sci Sports Exerc* 2010;42(5):953-961.

4. Schwellnus MP et al. Increased running speed and previous cramps rather than dehydration or serum sodium changes predict EAMC: 210 Ironman triathletes. *Br J Sports Med* 2011;45:650-656.

5. Burke LM et al. Carbohydrates for training and competition (IOC consensus). *J Sports Sci* 2011;29(S1):S17-27.

6. Pfeiffer B et al. Nutritional intake and gastrointestinal problems during competitive endurance events. *Med Sci Sports Exerc* 2012;44(2):344-351.

7. Thomas DT, Erdman KA, Burke LM. Nutrition and athletic performance: ACSM / Academy of Nutrition and Dietetics / Dietitians of Canada position. *Med Sci Sports Exerc* 2016;48:543-568; Sawka MN et al. ACSM exercise and fluid replacement, 2007.

8. Wang Z et al. Effects of tapering on performance in endurance athletes: systematic review and meta-analysis. *PLOS ONE* 2023;18(3):e0282838.

9. Behringer M et al. Effects of TRPV1 and TRPA1 activators on the cramp threshold frequency: randomised placebo-controlled trial. *Eur J Appl Physiol* 2017;117:1641-1647; Lavender AP et al. Mouth rinsing vs ingesting pickle juice. *Appl Sci* 2021;11:12096.

GOAT Shot, plainly

A 10 mL single-serve shot of Australian organic apple cider vinegar with the mother, saltbush brine and native botanicals, in a small thin sachet that opens easily. A food, not a medicine.

The research above (Miller 2010; Behringer 2017; Lavender 2021) is what the twinge tactic on page 1 is built on. Read it and make your own call.

Test any race-day tactic in training first. That includes this one.

Pickled GOAT is a food under the Food Standards Australia New Zealand code. It is not a therapeutic good and is not intended to diagnose, treat, cure or prevent any condition. This guide is general information for healthy adults, not medical advice. If cramps are frequent, severe or happen at rest, see a sports doctor. Informed Sport and HASTA certification are stated goals and are not currently held.

HERD members only. Passed on by a mate? Join the HERD at pickledgoat.com and every BLEAT lands in your inbox. Your sign-up answers, event, distance and where you cramp, decide which BLEAT we write next. Tell us and we will bleat back.