

Tri Gut Check: Avoiding Race Day GI Distress

The finish line can seem awfully far away when you are plagued by gastrointestinal (GI) distress on race day. To be clear, the “GI tract” refers to the digestive system, or the mouth, esophagus, stomach, and intestines. Symptoms can range from heartburn, nausea and vomiting to cramping, bloating and diarrhea. Up to 63% of athletes must deal with varying degrees of GI distress, which in its most severe form can bring even the best-trained athlete to their knees. Women happen to be more susceptible than men to GI distress as well as individuals with preexisting GI issues (reflux, lactose intolerance or irritable bowel syndrome). In triathlon, the majority of issues on the run are related to the lower GI tract, while on the bike there may be more vomiting and reflux, associated with the upper GI tract. Given the disastrous effects that GI distress can have on race day performance, it is important to identify not only the causes, but also how it can be prevented.

The causes of GI distress can be divided into 3 categories: biological, mechanical and nutritional. Let’s look at each of these in more depth.

Biological

- *Reduced blood flow to the GI system*

During exercise, blood is routed away from the digestive organs to working muscles and the skin for temperature regulation. Studies have shown that blood flow to the digestive organs can be reduced between 40% and 50% during exercise. Decreased blood flow may reduce intestinal absorption of the foods you are eating, causing nutrients to accumulate in the GI tract creating an “osmotic effect” where fluid will move into the intestine and cause bloating and diarrhea. Combine reduced blood flow with the dehydration common in long distance athletes and the problem is further exacerbated. Dehydration reduces total blood volume, additionally limiting blood flow to the intestinal organs.

- *Stress/anxiety*

Studies have shown that acute psychological stress will alter the ability of the GI tract to function properly. Pre-race jitters are the cause of great lament for many triathletes. A well thought out nutritional plan can get literally flushed down the toilet when you roll your bike into T1 for the first time.

Mechanical

- *Impact-related*

Many runners experience gastrointestinal bleeding. This is thought to be a result of the repetitive high-impact mechanics of running and subsequent damage to the intestinal lining. This repetitive gastric jostling is also thought to contribute to lower GI symptoms including flatulence, diarrhea and urgency.

- *Posture-related*

On the bicycle, upper GI symptoms are more prevalent possibly due to increased pressure on the abdomen as a result of the cycling position, specifically when in the aero position. “Swallowing” air as a result of increased respiration and drinking from water bottles can result in mild to moderate stomach distress. Additionally, swallowing air during the swim portion of a triathlon can lead to stomach discomfort and belching.

Nutritional

- *Fiber*

Fiber has long been touted for its benefits in promoting intestinal regularity. For the athlete in training, a diet with adequate fiber will help to keep the bowel regular and can provide low calorie bulk to the

diet to aid in maintenance of a healthy body weight. Fiber on race day, however, is a different story. By definition, fiber is not digestible by our bodies, so any fiber you eat essentially passes through the intestinal tract. On race day, speedy digestion is not the goal – frequent bowel movements will accelerate fluid loss leading to dehydration and slow your finish time (unless of course you do not stop to use the restroom!).

- *Fructose*

Fructose is a relative of glucose. However, unlike glucose, it is not absorbed from the intestine in the “ready to use” state. Fructose must be transported by the blood to the liver where it is converted to glucose. In addition, fructose is absorbed by the intestines more slowly. Fructose is not an ideal energy source for the triathlete because slower absorption may lead to cramping and diarrhea, and because it is not as readily converted to “energy” as glucose.

- *Osmolality*

Osmolality is another way of expressing how many particles, or molecules, or a substance is contained in a set volume of water. For example, bottled Gatorade has an osmolality of 280 to 360 milliosmols per kilogram (mOsm) of water. Gatorade’s osmolality is very close to that of our blood, about 300 mOsm, which makes Gatorade “isotonic”. Any solution whose osmolality is higher than that of our blood is considered “hypertonic”. Excessive intake of hypertonic solutions will make the osmolality of the fluids in our intestines rise, causing osmotic diarrhea and delaying stomach emptying. Studies have shown that a 6% carbohydrate solution, or an osmolality of 295 mOsm (isotonic), is best tolerated. In terms of translating this to shopping for sports drinks: a hypotonic solution generally will have less than 4 gram of carbohydrate per 100 mL, an isotonic solution will have 4 to 8 grams of carbohydrate per 100 mL, and a hypertonic solution will have more than 8 grams of carbohydrate per 100 mL.

- *Dehydration*

Dehydration is linked with delayed stomach emptying, a major cause of nausea in athletes. In addition, dehydration reduces total blood volume which will further reduce blood flow to the gastrointestinal organs. Reduced blood flow to the GI organs can contribute to diarrhea.

Prevention

- Many of the biological and mechanical factors are beyond our control; however, eating while training to stimulate digestion may help to increase blood flow to your digestive organs and reduce GI distress. Moreover, studies have shown that older athletes who have been training for many years have much lower prevalence of GI upset than younger athletes.
- To reduce race day jitters, pack everything the night before so you are not rushing in the morning. If possible, pick up all your race info/bib the day or night before. Arrive at the race site with plenty of time to check that you have all of your gear and your bike is ready. Leave time to wait in the bathroom line! Get your body marking and/or race chip and begin your pre-race warm-up. It may be helpful to listen to music that you enjoy. Just try to stay as relaxed as possible.
- Adjust your diet 2 days prior to decrease fiber intake. Reducing fiber a few days before your race will allow the body to adjust to the dietary change and decrease the risk of unwanted bowel movements. It is also a good idea to reduce intake of fiber on race day if you are prone to GI distress. Avoid higher fiber sports bars like Power Bar Harvest, Cliff Bar, Fig Newtons, etc. Instead, choose low-residue foods like saltines or pretzels to obtain your solid food nutrition.

- If you are prone to GI distress, avoid fructose on race day. Fructose is not only found in fruit, but also in most processed sweets; candy, cookies etc., in the form of high fructose corn syrup. Table sugar is a combination of glucose and fructose.
- Reduce osmolality of race day foods and fluids. Choose sports drinks with an osmolality less than 300mOsm or less than 6% carbohydrate (works out to no more than 8 grams of carbohydrate per 100 mL. When consuming gels or other solid foods during a race make it a point to drink an adequate amount of water to ensure optimal absorption and avoid possible negative GI consequences.
- Stay hydrated. Aim for fluid intake of 4-8 ounces every 15 to 20 minutes when exercising for more than one hour.

Make sure to experiment with your pre-race and race-day nutrition plan many times prior to race day. This will allow you to figure out what does and does not work for you, and to reduce the chances that GI issues will ruin your race.

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