

The GI in practice



In the second part of the series, **Wendy Martinson** looks at how the glycaemic index can affect your performance

Eating a carbohydrate-rich meal two to four hours before training increases the glycogen content of the muscle and liver. Compared to the fasted state, it can improve exercise performance.

The rationale behind consuming lower glycaemic index (GI) foods prior to training is that these slow release carbohydrates will produce a slower increase in blood glucose levels – therefore less insulin will be released thus preventing the dip in blood glucose that can happen as exercise starts. The lower insulin levels may also encourage a greater use of fat as a fuel which in turn will spare glycogen stores and increase endurance capacity.

Studies looking at the effect on performance of eating low or high GI foods several hours prior to exercise show mixed results. It is mainly the ‘time to exhaustion’ studies at a fixed work rate that show an improvement in actual performance with low GI foods, which is not always applicable to individual sports.

So in terms of rowing performance eating a lower GI meal before a longer UT2* endurance training session may be of benefit in terms of increased fat utilisation with sparing of carbohydrate stores which will help prevent fatigue. Even though the performance benefits of pre-exercise low GI over high GI foods remains unclear it may be beneficial to include them on a regular basis due to the health benefits mentioned already and to help with body fat reduction if required.

Before training

In the hour before exercise, the vast majority of rowers will be able to eat high GI foods without any noticeable negative effects of any short-lived dip in blood glucose levels

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*UT2 = training at up to 75-85% of maximum heart rate



Pasta is a great pre-exercise meal

that may occur. Any dip that does occur is quickly corrected once exercise commences.

However a small minority may have an exaggerated metabolic response to pre-exercise high GI carbohydrate. This can be prevented by making sure a substantial amount of carbohydrate is eaten in this snack (>1g carbohydrate per kg), experimenting with timing, choosing lower GI foods, including high intensity sprints in the warm-up to stimulate glucose to be released from the liver and consuming carbohydrate during training.

Research shows that when carbohydrate is consumed during exercise any effect of pre-exercise carbohydrate on metabolism is reduced.

The combination of consuming carbohydrate both before and during exercise has been shown to improve exercise performance.

Practical low / intermediate GI foods to eat 30-60 minutes prior to exercise include bananas, dried fruit, cereal bars, sports bars. Sports drinks and gels are generally high GI (unless they have a higher proportion of fructose which will reduce the overall GI value) and are also practical and suitable to have in this 30-60 minute period for the majority of rowers. In practice a combination of these foods are consumed and so mixing high and low GI foods / fluids reduces the overall glycaemic effect.

During training

Many studies show a beneficial effect on performance of carbohydrate consumption during exercise of 45 minutes or longer. Higher GI carbohydrates are required during exercise – e.g. sports drinks or carbohydrate gels – so carbohydrate enters the bloodstream rapidly to maintain glucose levels. The carbohydrate in sports drinks is used as an energy source during

exercise and so blood glucose levels will not peak too high. Insulin release is suppressed during exercise to help prevent glucose levels dipping too low.

Carbohydrate is also an important fuel source for immune cells and it is well accepted that exercising in a carbohydrate depleted state will increase stress hormone production which in turn will suppress immune function.

Current recommendations suggest that 30-60g per hour of carbohydrate in drinks or gels should attenuate various aspects of immunosuppression during prolonged exercise thus helping to prevent illness.

Examples of lower GI pre-exercise meals

- Porridge made with milk plus a banana and fruit juice.
- Baked beans on multigrain toast.
- Multigrain sandwiches with low fat filling – e.g. chicken, cottage cheese, lean ham.
- Pasta with tuna / chicken and tomato sauce.
- Muesli with fresh fruit and yoghurt.

How can I eat lower GI foods on a regular basis?

- Choose bran, oat or barley based breakfast cereals with low fat milk / yoghurt for breakfast or snacks. Low GI examples include porridge, muesli and All-Bran. Intermediate examples are Special K, Sustain, Just Right and Weetabix.
- Use grainy breads made with whole seeds of barley rye, oats, soy and wheat for making sandwiches.
- Choose basmati rice instead of ordinary easy-cook rice.
- Eat pasta (avoid over-cooking), noodles, quinoa and sweet potato as an alternative to potato. However, adding baked beans or cheese to a jacket potato will lower its glycaemic impact.
- Include pearl barley, beans, peas and lentils in cooking – for example adding kidney or butter beans to casseroles.
- Increase the proportion of fruit and vegetables in your diet and aim for at least the recommendation of five portions per day.
- Include low fat dairy foods such as fruit smoothies, yoghurts and milkshakes in your pre / post-exercise snacks