

## NUTRITIONAL GUIDELINES FOR OPTIMAL RECOVERY AFTER TRAINING & COMPETITION

The goal of food and supplement intake after exercise is to support recovery which includes:

- The refueling of glycogen stores (the storage form of carbohydrates in the liver and muscle).
- The replenishment of fluid and electrolytes lost during exercise.
- Muscle repair and synthesis.
- Synthesis of cellular components (e.g. red blood cells) part of the repair and adaptation process.
- Immune system support.

The intake of nutrients **within the first 30 minutes after exercise** is crucial for achieving recovery goals, especially when the duration of the rest period between exercise sessions is short.

<p><b>Carbohydrates</b></p>	<p>Intake within the first hour after exercise is crucial, because glycogen synthesis rates are at its greatest. The amount and type required is dependant on the duration of the exercise session and the time between exercise sessions. A general recommendation is to consume 1-1.2g/kg. When the duration between exercise sessions is:</p> <ul style="list-style-type: none"> <li>• <b>&lt; 8 hours:</b> Choose carbohydrates with a fast absorption rate such as liquid recovery drinks. This will reduce satiety ensuring that you can consume enough carbohydrates without experiencing discomfort.</li> <li>• <b>≥ 8 hours:</b> The amount and type needed should make a useful contribution towards daily requirements.</li> </ul>
<p><b>Protein</b></p>	<p>It is accepted that 10-20g of a good quality protein added to carbohydrates, may accelerate glycogen recovery and minimise protein breakdown. Protein peptides have a fast absorption rate which makes it a convenient option especially when the duration of the rest period between exercise sessions is short.</p>
<p><b>Fluid and electrolytes</b></p>	<p>Consume 1-1.5 litres of fluid to replace 1 kg of body weight lost during training. The intake of water alone will not necessarily ensure re-hydration. Unless electrolytes lost are not replaced, the consumption of large volumes of water will result in large urine losses.</p>
<p><b>Other nutrients</b></p>	<p>Vitamins and minerals, especially anti-oxidants (Vitamin A, C and E), may support the immune system. Glutamine supports a healthy gut environment, the body's first line of defense.</p>

Practical recommendations include choosing from the following:

Recommended: **RE-IGNITE**

Alternatively:

- **FUSION DRINK**
- **PVM ENERGY BAR** + water
- **OCTANE 4.0/ XTR**
- Sandwich with cottage cheese/ tuna + water
- Fruit and milk/ yoghurt + water

Recovery may extend beyond the 30 minutes after exercise. When you struggle to meet high-energy demands or your next meal is not yet due, you may add **FUSION/ FUSION MASS** as a snack **1 hour after exercise**.

Be sure to consume a **balanced meal 2 to 3 hours after** exercise or at habitual meal times. For guidelines refer to [healthy eating guidelines](#).

Protein supplements are only recommended when protein needs are not met through diet or occasionally after strenuous training. In such cases, **Protein XTR** may be consumed 30 minutes before bedtime, because the release of growth hormone is highest at night during sleep and in the early morning hours. Growth hormones play an important role in the lean muscle synthesis along with proteins. Protein supplements are not recommended for children under the age of 18 years.

**Myth:**

**Use a pure protein or high-protein, low-carbohydrate supplement for recovery directly after exercise**

Protein balance cannot be restored in the absence of macronutrient intake and the replenishment of depleted muscle glycogen. Glycogen is the storage form of carbohydrates and these stores are replenished by supplying the body with sufficient carbohydrates. In the absence of sufficient carbohydrate intake, protein consumed will be converted to glycogen – a very expensive source of energy.

Muscle protein synthesis can potentially be stimulated post training after sufficient macronutrient intake has been achieved. Sufficient carbohydrate intake post training has a protein sparing effect and should preferably be consumed with some protein to push the body to an anabolic state. Expensive high protein low carb meal replacements can be consumed 1-3 hours post training, but only after muscle glycogen has been replenished. Pure protein supplements should preferably be consumed before going to bed at night.

**Myth:**

**Waxy maize supports effective glycogen replenishment due to its fast absorption rate**

Starch can be categorised according to its digestibility. Rapidly digestible starch is enzymatically digested in vitro within 20 minutes, while slowly digestible starch is digested between 20 to 120 minutes. Resistant starch is not digested or absorbed in the small intestine. Waxy maize is classified as a slow digestible starch based on these criteria. Its structure is largely the reason for this.

There are generally two types of starch molecules, amylose and amylopectin. Amylose is a long chainlike molecule that consists out of 500 to 2000 glucose molecules. Amylopectin on the other hand has a branched, bushy type of structure that also consists out of glucose molecules. Most natural starches contain a combination of both molecules. Certain types of starches have been developed to contain only amylopectin. They are called waxy starches such as waxy maize because of the waxy appearance of the kernel when it is cut.

Waxy maize is a slow digestible starch that leads to blunted plasma glucose and insulin responses. Its digestion rate is slower than maltodextrin which is a fast absorbing carbohydrate. Several studies have confirmed that glucose polymers such as maltodextrin help with rapid replenishment of glycogen. Waxy maize will support glycogen replenishment, but it may occur at a slower rate than a fast absorbing carbohydrate such as maltodextrin.