

RECOVERY

At the end of a workout or a race it is important to recover what was lost during the activity:

- *Restoring water and mineral levels in the body*
- *Replenishing energy (glycogen) stores*
- *Repairing damaged tissue*

REPLENISHMENT OF GLYCOGEN STORE

In several disciplines the replenishment of glycogen stores is needed after the physical activity but a “normal” diet does not lead to glycogen replenishment in less than 48 hours. While in the dozens of minutes following exercise glycogen replenishment in the fibers that have worked is faster, muscle fibers show a decrease in the ability to absorb glucose and produce glycogen in the period following exercise.

For this reason, to promote the transit of glucose molecules into the fibres and stimulate glycogen synthesis, high level of blood insulin are required. This requirement can be met through the ingestion of **high glycemic index carbohydrates** such as **glucose, maltodextrins** or **sucrose**.

The process of complete muscle **glycogen synthesis** will take **24 hours** in very well trained individuals and will take longer for those who are less well-trained.

Glycogen restoration may also take longer when there is muscle damage or carbohydrate intake is modest. Within a **4-6 hour** window **carbohydrate ingestion** can result in significant elevations in muscle glycogen.

For a 70 kg person this is roughly 85 g of carbohydrate. The amount of carbohydrate you will find in the following recovery foods that also contain protein.

“To achieve muscle glycogen synthesis carbohydrate intake is critical. The advice is usually 1.2 g/kg/h for 3-4 hours post exercise to maximize glycogen synthesis.”

- 400-500 ml of milk-shake or fruit smoothie
- 500 ml of a recovery drink and 2 bananas
- 3 energy bars
- 2 slices toast/bread/bagel with jam, banana or honey topping plus 2 cereal bars
- Fruit salad with 200 g of yoghurt and honey
- Chicken panini
- Rice cakes
- 300 ml of a protein shake with an energy bar

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REPARING DAMAGED TISSUE: Proteins

After intense exercise, recovery can be enhanced if immediately after exercise **proteins** and/or specific **amino acids** or amino-acid derived molecules are taken.

The reason behind this can be better understood if one thinks that at any time of the day both **protein synthesis** and **break-down** take place in the human body. In athletes these two phases alternate during and after the physical activity. The loss of protein because of protein break-down prevails during the training while the protein synthesis prevail during the recovery phase. This is why, it is highly recommended that, thanks to **appropriate nutrition**, protein synthesis is promoted as soon as demanding physical exercise is completed.

“Recommendations for protein intake is 20-25 g of protein within an hour after training /racing followed by regular protein containing meals every 3-4 hours thereafter.”

The food options listed above provide this amount of protein.

REPARING DAMAGED TISSUE: Amino-acids

Immediately after training or some time later protein synthesis starts with the aim of making up for protein break-down occurred during exercise and stimulating the production of new proteins. For synthesis to take place, however, it is necessary that muscle fibers can rely on appropriate **“building blocks”**, i.e. the **amino acids** resulting from protein digestion.

Supplementation with branched chain amino acids can reduce excess catabolic hormones, which operate in the protein break-down, in athletes and restore anabolic hormones to basal values immediately after training. As a result of this amino acids are able to enhance **muscle recovery** immediately at the end of intense exercise.

CONCLUSION

In order to achieve a rapid muscle glycogen replenishment after its depletion caused by physical exercise, athletes are recommended to take **high glycemic index carbohydrates** as soon as possible after the completion of exercise. With a concomitant **intake of proteins** glycogen recovery is enhanced and, at the same time, protein synthesis is promoted.

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More specifically, the negative effects caused by the anabolic process during physical exercise are corrected more promptly. **Branched chain amino acids**, in particular **Leucine**, promote muscle tissue repair after exercise and stimulate the synthesis of new muscle proteins. **Glutamine** promotes glycogen synthesis and reduces the risk of infection and overtraining, two possible consequences of intense and repeated efforts.

THE NUTRITIONAL FACTORS THAT SPEED UP RECOVERY AFTER INTENSE TRAINING OR A COMPETITION

WATER AND MINERAL REPLENISHMENT

Beverages containing minerals

GLYCOGEN RESYNTHESIS

*High glycemic index carbohydrates (maltodextrins)
+ proteins or amino acids (glutamine in particular)*

**REPAIR OF DAMAGED TISSUE AND
SYNTHESIS OF NEW PROTEINS**

Proteins + leucine

OUR SUGGESTIONS

WP Recovery Drink

WP Recovery Drink, taken within 30 minutes of the end of the exercise, with its formula based on high quality carbohydrates and whey proteins is the ideal ally for your muscle recovery.



Carbohydrates

Maltodextrins

Proteins

10,5g of Whey
Proteins

Vitamin mix

Vitamin C
Vitamin E
Niacine
Vitamin B6
Riboflavin
Thiamin



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Protein Bars

Enervit Protein Bars provides your muscle mass with valuable nutrients thanks to a unique composition based on milk and soy proteins, with vitamins.



Proteins	Vitamin mix	Gluten Free	Palm Oil Free
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10g
15g
20g

Vitamin D
Vitamin B6