PRE-EXERCISE NUTRITIONAL STRATEGIES

The purpose of building a nutritional strategies also for the ***before*** of a sport activity is to optimise the ***availability of carbohydrates*** and **water reserves** during the exercise.

CARBOHYDRATES RESERVES

Our body has the ability to ***stock carbohydrates*** building up reserves in the muscles and in the liver. Anyway these reserves ***are not infinite*** since the glycogen stores in muscles are used by muscle fibers during exercise and the liver stores tend to support the brain.

"A medium-high intensity exercise (at the anaerobic threshold) will deplete these stores of muscle glycogen in about 60 minutes, leading to an almost overwhelming sense of fatigue."

For example, many marathoners have experienced the 35km "wall". During a marathon, the lower intensity (near the aerobic threshold) of the exercise means that the sensation of fatigue occurs later than in a faster race. Part of the reason for this is because, at such speeds, the mixture used to produce energy contains a combination of carbohydrates and fats, resulting inevitably in the carbohydrate reserves being used up more slowly.

Since such reserves are the basis for our bodies' production of energy, it follows that ***we need our reserves well stocked*** when we have to work the hardest. This will ***improve performance*** and ***increase mental clarity*** in the final stages of a race or training.

AEROBIC VS ANAEROBIC

Generally speaking, the **aerobic threshold (AT)** is a **steady-state effort** that one could perform for hours. So a longer steady-state workouts like long runs or long rides.

The **anaerobic threshold** is the **highest exercise intensity** that one can sustain for a prolonged period. Most athletes enter the anaerobic threshold zone when they're putting in some serious work and a lot of power output over a short period of time – like during an interval or sprint. That's when they're using energy that's readily available, but that won't last long.

It's important for athletes to understand aerobic and anaerobic energy systems. The **aerobic energy system** gives more **long-lasting energy** because it burns predominantly fat stores, while the **anaerobic energy system** can produce energy more **quickly**, and allows to exercise at **higher intensities**.

In the past, some scientists recommended avoiding all carbohydrates 3-5 days before a race and then carbo-loading in the days just before the race to optimize glycogen reserves.

PRE-EXERCISE NUTRITIONAL STRATEGIES

This approach was subsequently partially discredited and criticized as some athletes found it brought more problems than benefits.

In truth, to increase reserves, we merely need to ingest more carbohydrates than we burn and in the week before a race, athletes normally burn less carbohydrates simply because they reduce their training schedule. This is already beneficial.

"Still, if there is a long race ahead, then optimizing these reserves will require additional carbohydrate intake through diet about 1 to 3 days before the competition."

For the right amount of carbohydrates one should have daily, there is ***no one-size-fits-all answer***. In theory, the longer the race, the greater the intake should be, although over doing it is never the solution as ***"more" does not automatically mean "better"***.

It is fundamental, then, to define the right amount of carbohydrates one should have according to one's body composition, training volumes, past history, type of exercise and so on.

BEFORE THE EXERCISE / RACE

The ingestion of food with ***low glycemic index (GI)***, or preferably the exclusion of food with high GI from the meals taken just prior to a sport activity can enhance the oxidation of fatty acids during exercise.

The use of fatty acids by muscles seems to induce a sparing of ***glycogen*** which will therefore be ***available for a longer period*** during exercise, increasing the athletes' resistance or their performance intensity in the final phase.

Note that a pre-competition nutritional strategy based on a ***low glycemic index diet*** can be useful only in sport disciplines involving a depletion of muscle glycogen, with the intensity of exercise being, at least during part of the exercise, compatible with the ***use of fats for energy*** purposes (***aerobic threshold***).

When the threshold is exceeded, the rate of lipid used for energy production drops rapidly leaving no alternative to the consumption of carbohydrates, and particularly glycogen.

PRE-EXERCISE NUTRITIONAL STRATEGIES

WATER RESERVES

Water is very important in sports. In several sports events and particularly in those that last more than a few dozen minutes and/or that are held in an environment that leads to abundant sweating (i.e., with high air temperatures and high humidity and irradiation levels), it is absolutely essential that athletes ***reach the start of the competition without any water deficiency*** and that, during the competition, at least part of the water lost through sweat (and if necessary, minerals as well) is integrated.

"The suggestion is to drink about 500ml of fluids two hours before physical activity to favor adequate hydration and have enough time to eliminate excess fluids."

The quantity of fluids that should be drunk ***as soon as the warm-up is completed*** and ***before the start of the effort*** depends on the ability to support the presence of the beverage in the stomach without feeling discomfort. It also depends on the type of effort involved. Running, for instance, implies vertical jolts at every step and hence concentrated beverages are not indicated, as, on the other hand, they are for cycling,

It is also important to ***choose the most appropriate beverage***, and this is especially true for the beverage ***drunk just before*** or ***during*** the physical effort: it must remain in the stomach for as short a time as possible and it must be rapidly absorbed in the intestine.

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The ***time a drink spends in the stomach*** depends on its ***concentration of carbohydrates*** and its ***temperature***. A quick passage through the stomach is possible when it contains ***5% carbohydrates or less*** and, at the same time, does not contain too many minerals.
At the same concentration (1 g of carbohydrate for every 100 g of water), a drink containing ***fructose or maltodextrins*** passes more quickly compared to one containing glucose or sucrose.

To reduce the time a drink spend in the stomach, its ***temperature*** should be ***below 15°C***.
If drinks are between 2.5°C and 9°C, gastric motility increases, and the time spent by fluids in the stomach is reduced.

PRE-EXERCISE NUTRITIONAL STRATEGIES

CONCLUSION

To prepare a nutritional strategy before a race, it is necessary to consider both ***levels of glycogen stores*** and ***water reserves***.
Glycogen stores are our main source of energy when it comes to physical exercise so they need to be ***well stock*** before any prolonged activity. In order to do so one should ***increase the carbohydrates intake*** in the 1 to 3 days before the activity. Priority should be given to ***low glycemic index carbohydrates*** since their intake allows to delay the sense of fatigue during a sport performance.

To reach the start of a competition without any water deficiency, it is suggested to drink ***500ml of fluids two hours before*** the start. The fluids should be at a temperature ***below 15°C*** and with a carbohydrates concentration no higher than 5%.

BUILDING UP A NUTRITION STRATEGY FOR THE BEFORE

CARBOHYDRATES RESERVES *Increse carbohydrates intake 1-3 days before competition*	**AEREOBIC EXERCISE:** *Low glycemic index carbohydrates (Isomaltulose, Fructose)* **ANAEREOBIC EXERCISE:** *High glycemic index carbohydrates (Glucose, Maltodextrin)*
HYDRATION	**2H BEFORE:** *500ml of water at a temperature below 15°C. Water should contain no more than 5% of carbohydrates.*

OUR SUGGESTIONS

Pre sport

Pre Sport is the highly technical energy supplement based on a concentrate of different carbohydrate sources and enriched with isomaltulose. To be taken before exercise.

Carbohydrates	Vitamin	Gluten Free	25g Carbs
Fructose Isomaltulose Glucose	Vitamin B1		