Integrative Reading

In this module we will review the most important concepts studied during the course and analyze the application of the concepts based on protocols, recommendations and useful tips.

Sports Foods

We will begin our study of sports foods by analyzing sports drinks, the most commonly used of all the sports foods. Around the world, athletes of different levels and specialties use sports drinks for training and competition. More broadly, we can also include gels, bars and sports snacks among those supplements that allow athletes to obtain necessary carbohydrates and sodium. Water too can be considered a sports drink.

In that sense, Table 1 provides us with essential information, summarizing carbohydrate requirements based on the duration of the training or competition that the athlete must face.

Table 1: Carbohydrate Intake Recommendations During Sports Activities

Sport or activity type	Duration	Carbohydrate objectives or needs	Comments
Brief exercise	< 45 minutes.	Not necessary.	
Sustained high-intensity exercise	45 to 75 minutes.	Small amount, including mouth rinse	Various products and sports drinks can supply fast-acting carbohydrates.
Endurance exercises, including stop-and-go sports	1 to 2.5 hours.	30 to 60 g/h [1.05 to 2.11 oz/h].	Opportunities to consume food and drinks vary according to the rules and nature of each sport. It can be useful to include different daily dietary choices and specialized sports products in solid or liquid form. Athletes should practice in order to find the fuel recovery plan that meets their individual goals, bearing in mind hydration needs and intestinal comfort.
Ultra-endurance events	>2.5 to 3 hours.	Up to 90 g/h [3.17 oz/h].	Same as above. Higher carbohydrate intake is associated with better performance. Products that supply various transportable carbohydrates (glucose and fructose mixes) will increase the speed of carbohydrate oxidation during exercise.

Source: Burke et al., 2010. Page 5

Looking at the table, we can see that both team sports (e.g., soccer or rugby) and endurance sports (e.g., half marathon, mountain trail running events (21 km) [13 miles], cycling events, etc.), require consuming up to 60 g [2.11 oz] of carbohydrates per hour. These carbohydrate requirements can be met in different ways, including:

- 2 gels.
- 1 gel + a 500 ml [16.97 fl. oz] sports drink.
- 1 fruit + 1 gel + 1 sports bar.
- 750 ml [25.36 fl. oz] sports drink.

Bearing in mind the desired goal for the three nutrients essential to performing exercise (water, carbohydrates and sodium), a nutrient intake plan should be created based on natural foods and supplements and tested during training sessions until the athlete's ideal combination has been reached.

In Summary:

- Daily carbohydrate intake should reflect the intensity, duration and frequency of an athlete's activity, and may vary according to each individual. The type of carbohydrate and intake quantity before, during and after exercise should be determined according to the type of activity in which the athlete participates.
- Dehydration has a negative impact on physical and psychological performance. The loss of liquids is a consequence of sweating during exercise and can vary widely according to the individual, the exercise intensity and environmental conditions.
- For optimal adaptation, it is recommended to consume sufficient high-quality protein (20-25g) [.7-.88 oz] at regular intervals throughout the day, equivalent to 1.5-2.0 g/kg [.05 oz/lb] of the athlete's body mass.
- Very few nutritional supplements have been tested, which is why the use of dietary supplements must be supervised and monitored by professional nutritionists, doctors and scientists.
- For that reason, individual hydration and diet plans are recommended, including the use of supplements before, during and after exercise if necessary. It is also recommended that the diet plan be modified according to factors such as objectives, the physical environment, exercise type and intensity.

It is important to bear in mind that nutritional needs for improving performance are not specific to the sport, but to the athlete. Therefore, nutrition principles can be applied to each person throughout a wide range of sports activities.

Below, in table 2, you will see an athlete's main dietary complements.

Table 2: Dietary Supplementation for Performance and Recovery

The following dietary supplements should be used in specific sports situations according to evidence-based protocols. Supplements should be used to directly improve athletes' performance. Supplements must be used according to individual protocols under the supervision and monitoring of a nutritionist/doctor/sports science expert. While there may be supporting evidence for these products, additional research may be necessary in order to develop protocols for individual use and specific events.

Performance	Supplement
Supplements tend to help improve performance. Supplements should be used according to individual protocols under the supervision and monitoring of a nutritionist/doctor/sports science expert. While there may be supporting evidence for these products, additional research may be necessary in order to develop protocols for individual use and specific events.	Caffeine
	Creatine
	B-alanine
	Dietary nitrate
	Bicarbonate

Source: Source: FCB Sports Nutrition GSSI.

Recovery	Supplement
Food polyphenols - foods with chemicals that imply bioactivity, including antioxidant and anti-inflammatory activity. These can be consumed in food form or as a concentrate.	Acidic Cherry Juice
	Glutamine
	Fish oils

Source: Source: FCB Sports Nutrition GSSI.

In order to further our knowledge of how this theory is applied to the field, Dr. Antonia Lizarraga, nutritionist for the Barcelona Football Club's first team, has answered some questions regarding this "Supplementation and Ergogenic Aids in Sports" course.

1. What is your position on your athletes taking supplements? Are there differences between youth teams and the first division?

Yes, there are differences. The main goal is to provide adequate nutrition education and to instill proper food timing, the importance of hydration and optimal recovery.

Taking supplements is not the norm for these players, although they do use drink products for hydration and, if necessary, drinks for recovery in exhaustion or post-match situations.

2. What type of supplements do you use? In this regard, does your decision follow any general guidelines or is it based on specific cases? Practical cases.

Supplementation is always planned at the club level and is typically reflected by internal guidelines, thus ensuring that effectiveness and safety criteria are what determine the suitability of supplement products. Having guaranteed these aspects, the basic supplement type indicated tends to be drinks for rehydration, protein supplements or combinations of carbohydrates and proteins for recovery, as well as B-group vitamins, vitamin C, and minerals like iron, calcium or magnesium.

In the event that it is considered necessary, Vitamin D supplements are used during the winter, and omega 3 fatty acids are used due to their major effect on both the physical and cognitive aspects of athletes.

References

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