



NUTRITION FOR AQUATIC ATHLETES **SYNCHRONIZED SWIMMING**

Synchronized Swimming is unique among aquatic sports, combining speed, power and endurance with precise synchronized movements and high-risk acrobatic maneuvers. Athletes spend a great amount of time upside down, underwater and undertaking exercise while breath-holding.

The nutritional demands of the synchronized swimming athlete are complex due to the intense training demands and aesthetic nature of the sport. Several special challenges are faced by synchronized swimmers.

- The nature of training favors lengthy sessions in a variety of exercise modalities with limited breaks. Such a structure makes it difficult to consume adequate energy and fluid during the session. Furthermore, the underwater and upside down maneuvers may cause discomfort following food/drink intake.

Synchronized swimming is an aesthetically judged sport – making appearance and body composition a prime focus for coaches and athletes. Individuals are required to achieve a uniform “ideal” shape to achieve competition success.

Training Issues:

Synchronized swimmers should aim for a well-chosen diet that is adequate in energy, carbohydrate and protein to optimize training and performance.

Achieving an ideal physique and adequate energy availability

The overzealous restriction of energy intake to achieve weight loss goals can sacrifice bone health, performance, menstrual function and other health issues. The synchronized swimmer should achieve their physique goals according to a safe and well-organized plan.

Tactics include:

- Choosing a safe and healthy body composition goal, with adequate time to achieve this.
- Consulting a sports nutrition expert to help with meeting dietary requirements and managing body composition issues.
- Ensuring that physique changes are achieved while maintaining adequate energy availability (see section on energy availability).
- Considering the timing of meals and snacks to optimize energy availability over the day, and promoting optimal nutrient support training sessions.
- Seeking early intervention at the first sign of food related stress.

Carbohydrate: a key nutrient for training support

The synchronized swimmer should vary their carbohydrate intake according to the fuel needs for training (volume/intensity/goal). The section on carbohydrate needs for training provides a summary of the periodization of daily intake, and specific intake around training sessions.

Protein: important for building and repairing muscles

The timing, quantity and choice of protein-rich foods is important to meet daily protein needs and to support the adaptation to training. Synchronized swimmers should plan their meals and snacks to provide a regular spread of high quality protein choices over the day, including in the recovery after key workouts. (See section on Protein needs).

Eating for comfort and nutritional support during training sessions

Since a large percentage of training is done upside down in the water, synchronized swimmers can experience gastrointestinal upset. To relieve symptoms, the athlete should experiment with various strategies within their everyday eating plans:

- Avoid eating large volumes of food before training sessions
- Avoid excess intake of high fiber foods
- Avoid other gas-producing foods, such as cruciferous vegetables, peppers and onions

Coaches should allow sufficient breaks during workouts to support adequate fueling and hydration. Sections in this booklet provide strategies for fluid intake and carbohydrates to meet the needs of training sessions.



CARBOHYDRATES FOR TRAINING AND RECOVERY

Carbohydrates provide an important fuel source for the brain and muscle during exercise. A long history of studies shows that the performance of sports involving prolonged activity, high intensity efforts, skill and concentration, or a combination of these factors, is enhanced, when body carbohydrate stores can keep pace with fuel needs.

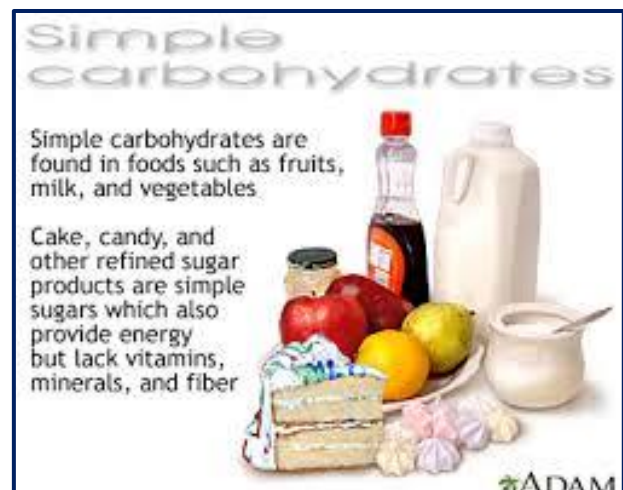
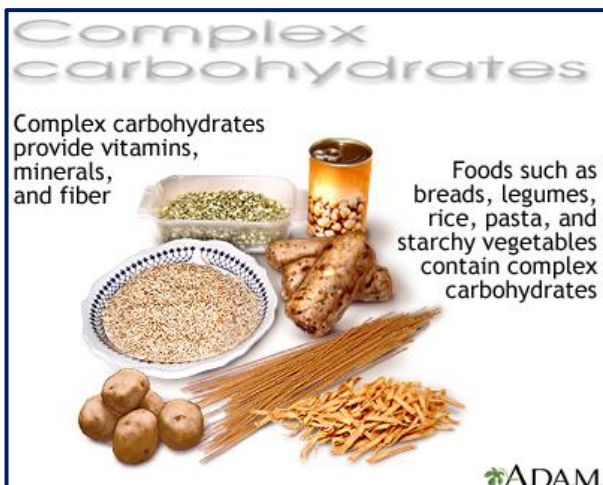
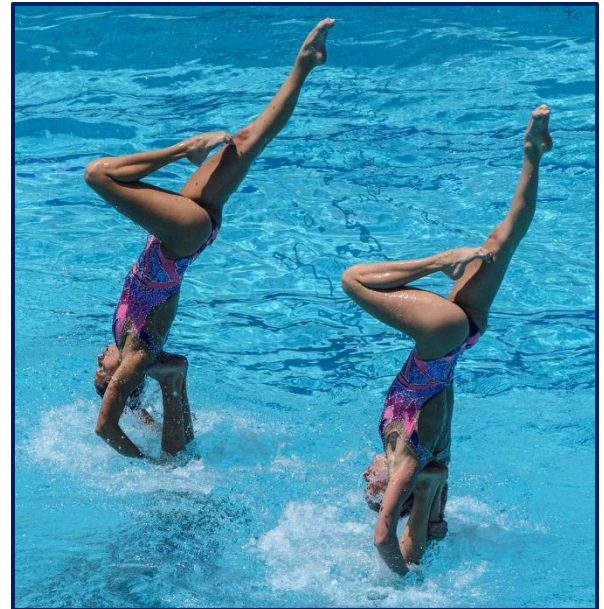
The body's carbohydrate supplies come from glycogen stored inside the muscle and from blood glucose which is topped up by liver glycogen stores or by carbohydrates consumed just before and during exercise. These stores can be turned over by a single exercise session of sufficient length and intensity (e.g. 60-90 min of high intensity training), so daily carbohydrate intake determines how much carbohydrate fuel is available for each training and competition session in the athlete's program.

Twenty years ago, sports nutrition guidelines promoted a universal message that all athletes should eat diets highly focused on carbohydrate-rich foods at all times. These messages have changed in the light of new evidence, new understandings and new terminology.

Unfortunately, not all athletes and coaches have heard of these changes. Further confusion is provided by the current best-selling diets in the general community – for example Paleo, Atkins, Real Meal Revolution (high fat, low carb) and Zone – which are reduced carbohydrate, carb-restricted or entirely anti-carbs. This creates the need for some new and clear messages about carbohydrate and the athlete.

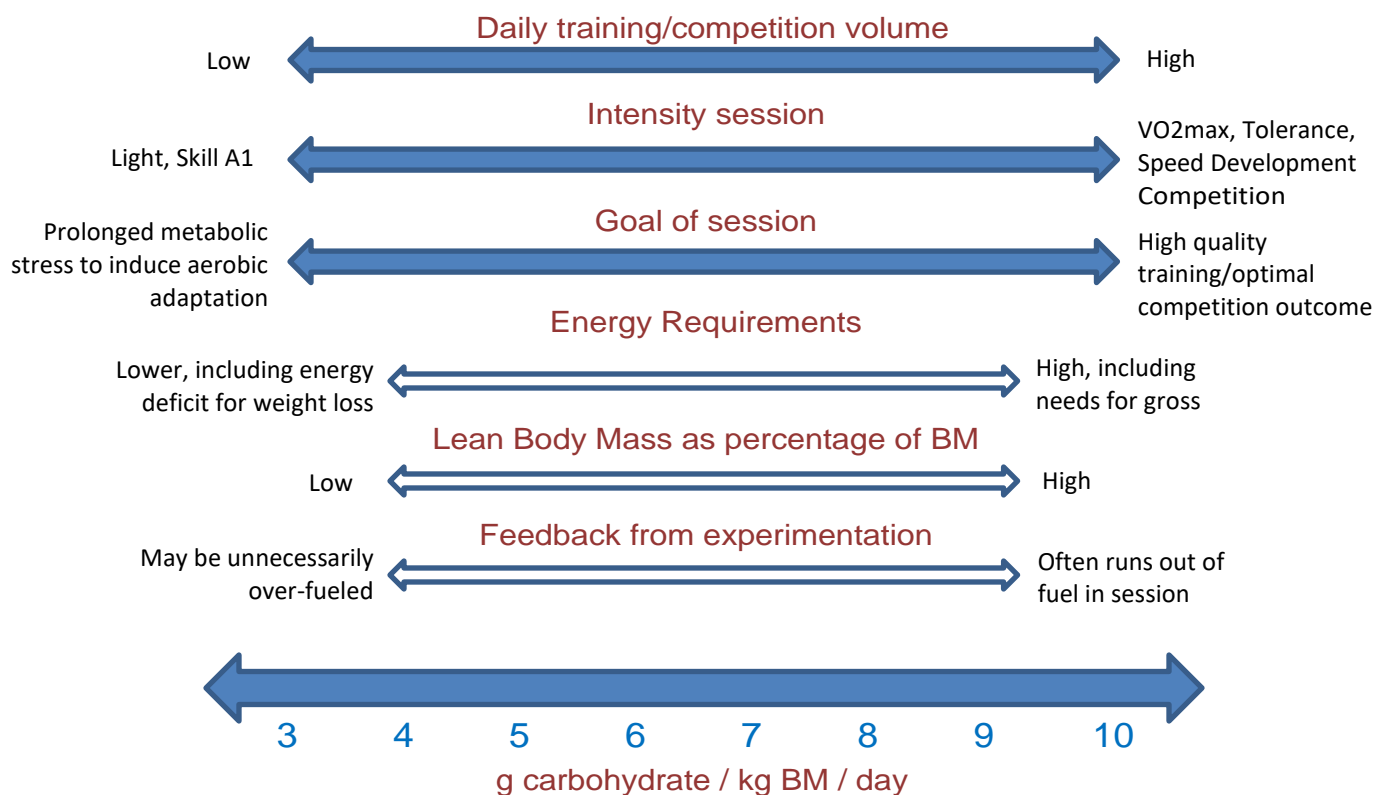
New concepts in carbohydrate guidelines for the everyday diet

A pictorial summary of guidelines for carbohydrate intake is provided in Figure 1, while the features of the updated guidelines are explained on the next page.



1. We no longer promote a “one size fits all” approach to dietary carbohydrate targets. Instead, the athlete’s carbohydrate intake, should be individualized, to suit the demands and goals of their training program. The frequency, duration and intensity of training will largely determine the muscle’s carbohydrate needs, and that will vary between athletes.
2. We use different language and concepts to discuss carbohydrate intake goals. Targets for carbohydrates are provided in terms of grams relative to the athlete’s size (body mass) rather than as a percentage of total energy intake. Furthermore, rather than simply talk about “high carbohydrate diets” and “low carbohydrate diets”, we should consider carbohydrate intake in comparison to the muscle’s fuel needs on a daily basis. We should consider whether the total intake and timing of the day’s intake able to meet the fuel demands of a workout (= high carbohydrate availability), or are carbohydrate stores depleted or sub-optimal in comparison to the muscle fuel demand (= low carbohydrate availability). Because each athlete’s fuel needs can be different, any given carbohydrate intake might provide high carbohydrate availability for one athlete but low for another.

Considerations in setting daily carbohydrate intake targets for aquatic athletes



Muscle glycogen less limiting for completion of session
 Less need for carbohydrate intake over total day or around sessions
 Some sessions may be deliberately done with low carbohydrate availability

High muscle glycogen requirement for completion of training or optimal completion performance
 Promote opportunities for carbohydrate intake in total day and around session.