

## NUTRITION FOR CANOE SPRINT

Canoe Sprint (formerly known as flatwater canoe/kayak) was first included in the Olympic Games, as a men's sport, at the 1936 Berlin Olympic Games. Women's events were included shortly thereafter and made their first appearance at the 1948 Olympic Games. The Australian Institute of Sport Sprint Canoe Unit was established in 1991 and is located on the Gold Coast, Queensland.

### Competition

Both canoes and kayaks are raced at the Olympic Games, although currently only men race canoes at International level. Athletes contesting kayak events sit with legs forward, in a closed boat and use a double bladed paddle. In contrast, athletes contesting canoe events paddle an open boat in a kneeling position and use a single bladed paddle.

The type of craft and the number of people in the craft are expressed in the name (e.g. K1 is a single kayak event, K2 a doubles kayak event, K4 a quad kayak event, C1 a single canoe event and C2 a doubles canoe events). Men used to compete over 500 m and 1000 m in the K1, K2, C1 and C2 and over 1000 m in the K4 whilst the Olympic Women's events were over 500 m in the K1, K2, and K4 events. Recently the International Canoe Federation announced that the men's events would now be K1, K2, K4, C1 and C2 over 1000m and K1, K2 and C1 over 200m while the women's events will be K1, K2 and K4 over 500m and K1 200m.

Races are contested on flat water and boats must keep to their own lanes, staying at least 5 m from the closest boat. A system of heats, semi-finals and finals are used to determine which competitors reach the finals.

### Training

Elite sprint canoe athletes commonly train 2-3 times each day, 6 days a week. Training typically involves one to two on-water sessions plus either a weight training session, and/or a cross training session of aerobic running or swimming. On-water sessions vary in distance, frequency and intensity of effort according to the specific focus of the session. An aerobic session may consist of 12-16 km of steady-state paddling, whereas a specific race set may consist of 250-500 m pieces at maximal or near maximal effort. Athletes paddling in team boats will do a mix of individual and team boat training to assist them to run the boat smoothly when working together within a team boat.

### Special Considerations

Canoeing and kayaking require significant upper body strength, with the drive of each stroke generated by the torso. Commonly, athletes are heavily muscled in the shoulders, back and abdomen regions. To achieve such a physique, athletes undertake significant resistance training programs supervised by qualified strength and conditioning coaches. These programs are designed to develop strength and explosive power specific to their sport. Resistance training workouts for younger, developing athletes often focus on muscle hypertrophy so the athlete can increase lean body mass. At times it can be difficult for athletes to increase lean body mass or even maintain muscle mass during periods of intense training. Athletes need to be diligent with their selection of foods and fluids throughout the

day in order to enhance training sessions, maximise recovery between training and maintain, or if necessary, increase lean body mass.

## Common Nutrition Issues

### Energy Balance

As kayak/canoe flatwater paddlers are heavily muscled and sustain high training loads, they have increased daily energy (kilojoule), carbohydrate and protein requirements. For some athletes, once they have met their specific nutrient needs, they can relax their food choices and rely on less nutritious options to meet their daily energy requirements. The meal plans of these athletes still require structure and planning in order to ensure that all needs are met otherwise training capacity and recovery can be adversely affected.

### Timing of Meals and Snacks Around Training Sessions

Most athletes have work or study commitments outside of training and given they are required to complete two to three training sessions daily, athletes need to carefully plan the timing of their meals and snacks throughout the day. The nutritional focus in assisting an athlete's recovery following training will depend on the nature and duration of the session, along with the environmental conditions in which the session was performed.

Eating a carbohydrate-rich, protein-containing snack or meal immediately after training may optimise gains in muscle mass by increasing production of anabolic hormones, reducing protein breakdown and supplying amino acids for protein synthesis.

The following snacks are examples that provide sufficient carbohydrate to optimise recovery following heavy exercise:

#### Male athlete (target 60-80 g carbohydrate)

- \*200 g fruit yoghurt + jam sandwich
- \*200 g fruit yoghurt + cereal bar + 250 ml fruit juice
- \*200 ml flavoured milk + cereal bar + banana
- 750-1000 ml sports drink
- \*65 g PowerBar Protein Plus powder with water + large banana
- \*Sports bar + 500 ml sports drink

#### Female athlete (target 40-50 g carbohydrate)

- \*200 g fruit yoghurt + cereal bar
- \*200 g fruit yoghurt + 1 banana
- \*200 ml flavoured milk + cereal bar
- 750 ml sports drink
- \*65 g PowerBar Protein Plus powder with water + piece of fruit
- Jam sandwich + 250 ml fruit juice
- \*Sports Bar

Note: \* indicates a valuable source of protein/amino acids in addition to carbohydrate.

## Meeting Fluid Requirements During Training and Competition

As paddlers are required to train 2-3 times each day, sweat losses tend to be high, particularly when training in warm environments. Athletes need to make a conscious effort during the day to adequately replace fluid losses or run the risk of chronic dehydration. Having access to a drink bottle during training and carrying a drink bottle around during the day is an important strategy to assist athletes in meeting daily fluid losses. Despite being surrounded by water when they train, sweat losses are similar to other land-based sports. As both hands are required for paddling, athletes need to ensure they maximise their opportunities to drink fluids during breaks in training. In longer aerobic training sets with minimal or no breaks in training, camel hydration packs may provide a practical solution in assisting athletes to meet their hourly sweat losses during training. For further information on matching fluid needs see the fact sheet, Fluid - Who needs it?, in the Hot Topic section of our website.

## Timing of Meals at Regattas

Local and national level competitions are usually held over two or three days. Paddlers may race several times throughout any single day of competition in individual and team boat events. Racing is usually held over two sessions - a morning and afternoon session with a 1-2 hour break. International regattas are usually held over 3-5 days of competition with most athletes contesting only one or two events. As a result, athletes seldom compete in more than one or two races daily. Competition usually starts early morning, particularly if strong winds and unfavourable weather conditions are likely to prevail.

Despite events lasting only 30 seconds - 4 minutes, athletes may exercise for 20-30 minutes each race they contest once the with warm-up and cool-down are included. As athletes may compete several times throughout the day, the timing of foods and fluids becomes important. Athletes are also faced with the uncertainty of when an event may start, hence juggling the timing of fluid and food choices throughout the day becomes complicated. Breakfast needs to be eaten at least 2-3 hours before the start of competition. Foods selected should be easily digested as athletes are often required to race early morning. Throughout the day, athletes need to incorporate a post-race snack, which aids recovery and acts as a pre-race snack for the next race. Ideally this snack should be eaten within 10-15 minutes of the race finish and 1-1½ hours before the next race. In addition to the fluids which can be used to provide carbohydrate and energy (such as sports drinks, juice, flavoured milks and milkshakes), athletes should sip on water throughout the day in order to meet sweat losses.

## Weight Management

Most athletes need to maintain or increase muscle mass, while maintaining moderately low body fat levels. As athletes are required to propel their own body weight and the body weight of other crew members, maintaining a high power-to-weight ratio is important in optimising exercise performance. Increasing lean body mass for some athletes can be difficult as they may struggle to consume adequate kilojoules throughout the course of a

day. For further information on strategies to increase muscle mass see the fact sheet, How to Grow Muscles, in the Hot Topic section of our website.

At the same time, some athletes can struggle to manage body fat levels in the face of heavy training loads and the need to gain / maintain muscle mass. A sports dietitian can help advise athletes on specific modifications they can make to their diet to achieve these goals.

### **Travel to Overseas Countries**

European countries have a stronghold on sprint canoe paddling. As a result, world cup races and major international races are often held in Europe. Australian athletes contesting elite competition are often required to spend 2-3 months a year in Europe during northern hemisphere summer months. Having access to regular foods items, having the required knowledge to select appropriate foods and fluids, and having access to specialised sports foods used routinely at home are all important considerations. For details regarding travel nutrition issues see the fact sheets in the Travel section of our website.

### **Dietary Supplements and Nutritional Ergogenic Aids**

As previously mentioned, a focus for many athletes is to increase muscle mass. As a result, it is common for paddlers to use a mix of dietary sports supplements and nutritional ergogenic aids. Dietary supplements such as liquid meal supplements, sports bars and sports drink provide a compact, convenient source of kilojoules, carbohydrate and protein.

*This fact sheet is based on AIS / National team athletes and is therefore specific to these athletes. Written by AIS Sports Nutrition, last updated September 2009. © Australian Sports Commission.*