

Sport Science

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With reference to NCCP and LTR Nutrition and Fitness materials

Sport Science Module – Evaluation Criteria
Communicates effectively to team why fitness, nutrition, mental preparation are relevant
Ability to use outside resources and guest experts to communicate sport science concepts
Follows-through a prescribed dry-land fitness training regime with team
Creates time for 10-minute dynamic warm-up pre-session and static stretch post-session
Continued reinforcement of regular hydration and nutrition on and off the water
Role model nutrition & hydration practices

There are many books and theories around sports fitness and nutrition, some even specifically created for sailing. In Canada we are very lucky to have access to trained professionals in areas of nutrition, strength & conditioning, and sport psychology, in addition to sports medicine and other performance-related sport science fields. Three NCCP modules and nutrition/fitness material from the CYA LTR course also provide excellent sport science reference resources.

All this information however can be difficult for the average race coach to digest without additional training, and difficult for the race coach to implement with limited time. This doesn't mean sport science should be left out of sail training, rather this module aims to simplify the large amount of information available so that Development Coaches can regularly integrate sport science into their programs.

This module will cover:

- Why fitness and nutrition are important for sailing
- Fitness Best Practices
 - Injury prevention
 - Warm-ups and Cool-downs
 - On-land training
 - Training leading up to events
- Nutrition/Hydration Best Practices
 - Per-hour water consumption requirements
 - Nutrition leading up to (and at) events

By the end of this module, coaches will understand why they need to pay attention to, and how they can include fitness and nutrition in their programs.

Why Fitness and nutrition are important for sailing

WHY do athletes need to be fit for sailing?

It is important that you educate your athletes why they need to be physically fit for sailing. When they understand this they will begin to want to be fitter and stronger so that they can:

- Prevent injuries - Injuries often occur because athletes are asking too much from untrained bodies and in the end their body gives up. Example: hiking with poor hiking technique and a weak core will result in lower back injuries.
- Be mentally strong - sailing is a huge mental sport, without having endurance for long days on the water your athlete will struggle...to perform the necessary skills AND be able to make good decisions on the racecourse.

Many athletes and coaches believe that we should be doing as much or more land training than on-water sailing. In Canada we only have 6 months of the year that we can sail (in country anyway), so sailing should always be the first activity for the day; ***the best fitness for sailing is sailing!***

Why do athletes need good nutrition?

You can do all the training you like, but if you are not fuelling yourself properly you will not have the energy. Compare good nutrition to stoking a good fire: If you add paper to a fire you will get a great shot of flames, but you are left with burning flakes blowing everywhere, providing no heat. If you add coals and stoke a hot burning fire you will maintain heat. Thus if an athlete puts the wrong food in (i.e.: a snickers bar vs. a power bar) the same affect will take place.

***“A mediocre athlete won’t become elite with the correct nutrition,
but an elite athlete will become mediocre with poor nutrition”***

Fitness Best Practices

The athletes

The athletes that you will likely be dealing with at the Development Coach level are mainly still growing and developing. They will potentially be competing and training in other sports as well as sailing. An athlete should NOT start lifting any heavy weights in till they are 17 and if they are still growing, only body weight circuits are advised. For young boys especially the key supplement to their sailing is going to be flexibility training.

The first thing to go in the sailing athlete is the athlete’s back, due to over-tight hamstrings, IT bands and hip flexors. Knee, ankle and shoulder injuries also are common, particularly in singlehanded boats. If these are addressed at a young age, injuries can be prevented later on in their sailing careers. If you have a particularly keen athlete that wants to do more land training than you normally do with your race team , ALWAYS advise them to go and see a personal trainer or contact their regional training centre, as a coach is it not your job to design for them an on-land training program.

Warm-ups

Before undertaking any sport that involves high stress on your body you should always warm up. On windy days ideally you would get your athletes to do a light jog and a dynamic stretch (A dynamic stretch is stretching with movement). The reason we do dynamic and not normal (static) stretching is because the muscles are not yet warm and a static stretch actually increases the risk of injury when the muscles are “cold”. Get your athletes to do this dynamic warm-up in their sailing gear. Once on the water you can stop the session after 15-20 minutes and run static stretching in the boat for 5 minutes.

Cool Downs

After a windy on-water session, active recovery is a must! Active recovery is low-intensity physical activity and can be done anytime from right after the on-water session to later that night. Active recovery flushes the lactic acid out of the muscles after exercise. Explain to your sailors that if they do not get rid of the lactic build up, they will spend the first half of the training session or regatta the next day just getting rid of the acid and in pain! This is especially so with singlehanded hiking boats. For active recovery, get your athletes to go for a 20 min LOW intensity run/cycle/swim or row. They should get warm but be able to hold a conversation easily whilst exercising. Athletes should then perform static stretching for 15-20 minutes.

Strength training:

Firstly, when you know that your athlete is going to be sailing in windy conditions then ALWAYS make sure they are fresh for the sailing session. You can leave the on land training out and just perform a cool down and stretch after the session. All athletes find it easy to 'slack off' and focus on general on-land fitness and strength when sailing is the core ingredient. When your athletes reach the Provincial team level they will have access to sports science and will be given programs to fit their age and development stage. At this stage you should be focused on encouraging them to maintain their sailing fitness, develop the cardiovascular endurance and work on developing good core strength and muscular endurance.

Again, on windy days leave the on-land training and go sailing. On the light days, focus on a circuit of simple body weight exercises (i.e. "planks", "dips", "push-ups", "lunges", etc). The idea is that athletes are using only their body weight and correct form. At this stage in their development athletes need to be strong and fit enough for their body weight.

Cardio:

Interval training is great, raising the heart rate very high, having a few minutes off and then spiking back up again. This increases recovery time and the ability to tolerate lactic acid build up.

Running/ biking/ rowing:

- Warm up for 5 mins- sprint for 3 mins at 75-90% max HR, rest 1 min, repeat 5 times and then you can increase the number of intervals. *This would be a great session leading up to an event.*
- Warm up for 5 mins- sprint for 10 mins at 70-80% max HR, 3 mins rest, repeat 3 times. This is less intense but a longer interval session. *This would be a great session during a training period.*
- 45- 60 mins at 60-80% HR- long endurance session. *These sessions should be done in the off season, as they are endurance building block sessions.*

Training leading up to events

Leading up to events the idea is to have your athletes going in prepared and rested. Your on-water sessions and land sessions should both increase in intensity but the time spent during them should be less. It takes months to make small improvements in fitness and strength, so it makes no sense to risk tiring athletes before competition - we don't want to be putting too much training load on the athletes as it will just decrease their ability to perform in the long days expected during the event.

Nutrition / Hydration Best Practices

It is important that athletes are putting the right fuel in their bodies, not only for maintaining physical endurance while training and racing, but also for mental state. Athletes need to have a consistent level of glycogen in their blood (Glycogen is quite simply the complex name for sugar in the blood). This needs to be constantly maintained and stoked like a fire – If your athletes don't eat for more than two hours then they will 'crash' and their mental and physical state will deteriorate.

Hydration

Hydration is the most important part of nutrition. There are a lot of studies that say power drinks (Gatorade, etc) over water etc. However, the most important hydration key to get across to your athletes is that they should be drinking (depending on body weight) 500mL to 1L an hour when under physical exertion! WEAK power drinks are good in extreme heat – ensure they are weak as there is much sugar in these types of drinks, causing the sugar spike to be a negative effect. As a coaches, especially at events, making sure we constantly make our athletes drink is a massive part, set a good example and be seen drinking yourself as you also need to concentrate!

Nutrition leading up to and during events

Again there are lots of theories and material written on carbo-loading leading up to events. As youths at this level, the longest event they will do is 5 days (i.e. CORK), which will likely include at least some heavy winds. This small nutrition plan is based on a lead up to CORK-like regattas.

Week prior:

Light training both on and off water= intense but short sessions. Concentrating on making your athlete confident, not adding new skills in, but refining skills they already know.

3 days prior:

High carbohydrate and protein meals: Pasta, potatoes, rice, and meat in big portions. It is also really important that athletes keep eating lots of fresh fruit and vegetables as they are going to put a lot of physical stress on their body and so are likely to bring their immune system down if not careful.

Morning of event:

Most athletes are nervous going in to the first day and breakfast is a real struggle. But it is very important that they get their carbohydrates in early. Below is a layout of a day on the water with food and drink:

8am	oat meal and fruit with a glass of half water half fruit juice
10am	pre water snack, power bar, 0.5-1 litre of water/ sports drink
12am	banana and power bar (after first race), 0.5-1 litre of water/ sports drink
1pm	hand full of mixed fruit and nuts and power bar (after 2 nd race), 0.5-1L water/sport drink
3pm	on way in after last race, a protein shake and a sandwich
5pm	a yogurt and a piece of fruit, ½ litre of water
7pm	dinner, pasta, chicken and a salad, ½ litre of water
9pm	a hot chocolate
10pm	BED!

As you can see from the list, a lot of preparation is needed with 3-4.5 litres of fluid during the day (at least!). There are lots of variations to the food suggested here, but this gives coaches an idea of timings and the amount of constant food and water needed during a day competing.

Conclusion

As sailing coaches we need to know the basics that allow us to give our athletes the best preparation to compete and train. This module only summarizes the vast amount of sport science knowledge available, and provides a few practical sailing-specific suggestions. Pre-course NCCP modules or “Prevention and Recovery”, “Developing Athletic Abilities”, and “Psychology of Performance”, provide excellent resources to supplement these suggestions, as does the CYA LTR Annex ‘D’: Nutrition Reference Material. Coaches should make a serious effort to incorporate fitness and nutrition principles into their athletes’ regular daily training, and should contact trained professionals when looking to implement specific sport science programs.

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