Volume 4
August 2005

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Welcome to the third edition of Endurance Sports Training's Newsletter. This newsletter provides a range of short training related tips. The tips listed in the following pages are categorised to ensure that athletes in a range of sports will get something from the.

I hope you enjoy this newsletter. If you have any questions or comments please let us know. For a full list of services provided by Endurance Sports Training please visit www.endurancetraining.com.au

Nutrition Tips

Over the last few years there has been plenty of talk about the use of coke and caffeine during endurance events. Both of these substances have been shown to have beneficial effects on performance. While caffeine does have diuretic properties, even small amounts can lead to increases in performance. The key is the timing of intake. For short events straight caffeine (not accompanied with large quantities of carbohydrates) is generally the best choose, and consumption should occur 30-60 minutes prior to the event. For longer events, coke usage can be used during the later stages of the run leg to provide a significant caffeine and carbohydrate hit. If you do intend using ergogenic aids to enhance event performance, it is advised that you research methods of use in detail first.

Most endurance athletes will eat their race day foods as part of their longer training sessions on almost a weekly basis. While this is crucial, one aspect of race nutrition which is often overlooked in training is the carbohydrate loading plan. Many athletes are unsure of what to do during the loading phase, and also unaware of how this will leave them feeling on race day. Therefore it is important to trial the loading plan a few times prior to your major competition goal. While such a plan will generally be used for 2-3 days prior to a long event, a 1 day trial before a week training day will provide great exposure to what you can expect on race day.

Recent research has unravelled an unexpected find in a respected UK laboratory. The study showed that simply by rinsing sports drink in your mouth and then spitting it out, increased performance was evident when compared to a flavoured fluid with no carbohydrate content. This has a range of practical training and racing applications. Firstly, it means that athletes attempting to consume a low calorie diet can do so without jeopardising training performance by using this technique during long training sessions. Secondly, it has useful application in racing where it may be difficult to consume enough food quantity in a comfortable manner, or when there is a limitation on adequate feeding periods.

General Training Tips

Hard training is the time when significant performance improvements are made. However it is the period leading into a race that can make the difference between a good result and a bad result. The taper is a crucial part of your race planning that requires a lot of planning, and some trial and error. Ideal tapers are very dependant on the individual athletes, with different athletes displaying different physiological characteristics and therefore responding to different tapers individually. For this reason it is advised to start by following general tapering principles and then fine tuning to your individual needs.

For the endurance athlete, and generally those aiming for the longer events such as long course, or Ironman, training load is high. Quite often training monotony is associated with high levels of training load. Training monotony is evident when training load does not vary greatly from day to day. This means that the body is continually being hit with similar levels of training stress. This generally leads to mal-adaptation, overtraining, or simply poor performance. As a general rule attempt to complete large training days, but also include days that are easier, or different, to ensure the body recovers or continues to respond to the load.

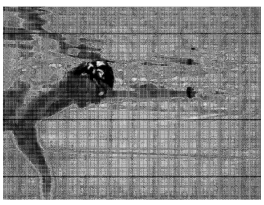
Many experienced athletes are very confident in prescribing their own training, and therefore feel a coach is not necessary. While it is true that an experienced athlete will often be able to know their body better than anybody else, and therefore complete the training that works, there are other benefits of having a coach that the athlete themselves cannot provide. The biggest benefit of a coach in this instance is the third-person view they have on the athlete and their training. Having a coach oversee the athletes response to training may allow them to pick up on areas that the athlete may overlook when viewing everything from ‘the athlete’s eyes’. So while coaching is generally associated with training prescription, there are many other benefits to having a coach assisting you.

When people traditionally think of warming up, they envisage stretching prior to a session. It is definitely important to take the muscles and joints through a wide range of motion, however static stretching prior to the start of a training session may provide minimal benefit, and may actually limit performance, by reducing neuromuscular stimulation. For this reason, the best approach to stretching for most sports is to undertake dynamic stretching prior to a session, and then complete static stretching at the end of the session to promote recovery.

When it comes to recovery, sleep is the most effective way of recovering from hard training, and regenerating the bodies systems. To maximise the benefit of sleep attempt to get good quality and quantity on a consistent basis while also ensuring your sleeping hours remain similar each day. This means attempting to go to bed and rise at a similar time each day. When your sleeping hours are irregular your body will find it more difficult to establish daily hormonal rhythms and thus the recovery properties of sleep will be impaired.

Strength training can be beneficial for endurance athletes, but in most cases it will not be as useful as spent undertaking your primary activity. As the time demands of training for endurance events quite intensive, when weight training is added in on top, it generally means that more fatigue is created and the quality of those key sessions is reduced. In many cases a key session is dropped so that strength training can be included. So while this form of training is beneficial, only include it if you have the time available, and the fatigue from these sessions will not result in reduced training quality.

A training schedule must be dynamic so that unforeseen circumstances can be accommodated. The best plans are flexible plans. No training program can predict, with precision, how you are going to respond to training, or when you are going to get sick, or when external commitments are going to require that training is altered. When key issues like this are overlooked and training progresses without adjustments, the possibility of future training problems, including illness and mal-adaptation, become prominent.



Injury Management and Prevention Tips

Injury is quite a common issue amongst endurance athletes, yet it is still one area that many athletes fail to address correctly. The biggest issues surrounding injury include: a failure by the athlete to realise and accept the injury; following up with a medical professional; and having time off if required. Injuries to not simply disappear; so there is no value in 'just giving it a few more days to see if it improves'. A good guide to injury management is:

1. Seek an assessment of the injury and appropriate treatment ASAP.
2. Train as guided by the medical professional. Substitute cross training if required.
3. Complete appropriate injury prevention work (eg. Strength, stability, flexibility).
4. Ensure follow up treatment as directed.
5. Resume training normally as guided by medical support.

Continue to monitor the injury.
While there is never any guarantees with injuries, a sensible approach will generally assist in a more speedy recovery.

Adequate range of motion in ankle dorsiflexion is not a performance enhancer, but rather it is absolutely necessary for long term running health.

When in the strike phase (when your foot hits the ground) and stance phase of your running gait, it is vital that your tibia/fibula (lower leg) complex moves over your foot (called dorsiflexion range of motion) with relative ease (least resistance). Decreased dorsiflexion range, and subsequent increased resistance in this phase, can result in numerous types of injuries, due to overloading of other structures. Shins, knees, ankles and foot mechanics may all be affected and limit your ability to train in these instances.

Test your dorsiflexion range by placing your big toe 5-7 cms from a wall and then leaning your bent knee towards the wall. If your knee makes the wall easily without your heal coming off the ground, then move your big toe back and try again. When you have established the distance from the wall that your heal begins to come off the ground, measure the distance from your big toe from the wall. This distance should be approximately 10 cm. Anything less and your dorsiflexion range of motion is limiting your ability to run and putting you at risk of injury.

If limited, increase your calf stretching (bent and straight knee) and self massage the deep flexor muscles either side of your achillis. If this doesn't increase your range of motion, consult your physical therapist for further instruction.

Poor hamstring and gluteal strength can lead to reduced performance and a greater occurrence of injuries in runners and triathletes. Under fatigue, hamstring and gluteal firing can be impaired, therefore altering running technique. This is most evident in athletes with underdeveloped strength through the gluteals and hamstrings. A simple test to determine if this may be an issue for you is pictured below. Starting in a relaxed position with one leg on a chair and the other leg slightly raised off the ground, you are required to raise your pelvis and lower body off the ground by firing the gluteals and hamstrings (as demonstrated in the photos). You will need to focus on keeping your hips high throughout the action. Complete one full repetition on a slow 3 second cycle. If you can complete 15 reps in a continuous manner then this indicates that you have adequate strength through this region. If you are unable to complete 15 reps, then this is a sign that it would be beneficial to undertake some appropriate strengthening work. This test will also highlight any asymmetry between your left and right hamstrings/gluteal combination.

Injury Management and Prevention Tips - continued

Technique is an important aspect of any sport. When technique is assessed, there are several key areas which become the focus of the skill. The two key issues of any technique analysis are your susceptibility to injury and the impact on performance. In many instances these two areas go hand in hand, however in some situations, developing a technique that increases performance may actually increase the risk of injury. When having your technique assessed it is important to consider both these aspects of the assessment.

Training consistency is one of the most important aspects of training, as frequent training leads to improved results. This means avoiding injury, and the best way to do this is through good injury prevention practices. Achieving this requires all the extra little things that are often viewed as luxuries. Some key areas of injury prevention include massage, regular physio, stability work, stretching, specific strengthening work, and postural awareness. Undertaking some, or all, of these practices will allow your body to cope with and respond positively to training. Do not follow the old motto, 'if it aren't broke don't fix it' mentality, or you may end up spending more time in the rehabilitation clinic then you do training.

By improving running technique, you have the potential to reduce the incidence of injury and improve performance. Many improvements in running technique require reduced pelvic movement. A stable pelvis will allow for a more stable 'platform' from which to generate force, as well as reduce severe lower body stress that can often result in injury. There are two major aspects to improving pelvic stability. Firstly, you need to have the ability to activate, or 'turn on', the required muscles, and secondly, you need to develop the stability or strength to maintain pelvic stability under fatigue and unpredictable/unstable situations.

Improve Your Performance - Learn How To Train Injury Free
At The Endurance Sports Training Running Camp

Endurance Sports Training is proud to offer you the opportunity to attend our running camp. Our goal for this weekend camp is to provide a wealth of running related knowledge, assessments, and advice that will allow you to improve your run training techniques, thus enhancing your running performance.

This camp will provide the information required to maximise your run training, while assisting you in staying injury free, and achieving your running goals. The camp has a strong education focus and is ideal for runners, and triathletes, of all levels, including those new to running.

Whether you are recovering from the Sydney marathon, want a hard training weekend, or just want to learn more about running, this training camp is ideal for you.

The running camp venue is set in the lovely Kangaroo Valley on October 22 and 23, with the camp based at a spectacular venue overlooking the valley.

Our running camp information form is available at www.endurancetraining.com.au or call 02 6161 0810

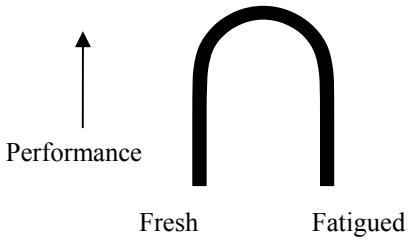
Kangaroo Valley, NSW
October 22nd and 23rd

Sports Science Tips

The international measure of how hard an athlete is training, is how many kilometres they are completing each week. This attitude gives into the theory that more is better, and by having a greater training volume, your performance will increase. This is definitely true for many athletes, but it is also very dependant on the length of your goal competition, your individual background, and the time of the season. While larger training volumes leads to adaptations that promote endurance and strength endurance adaptations, such as fatigue resistance and aerobic development, volume also causes fatigue which can limit performance. Intensity of training will ultimately have a great impact on performance, especially in shorter competitions. In order to maximise training intensity you need to ensure you are fresh for key intensity sessions. Pre-session fatigue will lead to reduced training intensity which will limit adaptations and therefore performance improvements. These sessions are also very demanding; so while they are not long in duration they still place a large load on the body. For this reason total mileage is not a good gauge of training load.

The monitoring of the load an athlete undertakes in training is something that is vital to any training structure, yet it is difficult to quantify. If you use duration or distance, you get an indication of the training volume but not the training intensity, and therefore only get half the entire picture. One good measure of overall training load that is used successfully in a range of sports is the RPE model. This involves giving each session a rating out of 10 (with 10 being the hardest) as to how intense that session was. For example, you might complete a hard 60min track session and give it a rating of 8 out of 10. The overall load for each session is then calculated by multiplying the duration and intensity rating. So our track session example would equate to 480 (60x8) training units. While this model may need to be refined slightly to provide weighing for each training discipline, it will provide you with a better measure of overall load than duration or distance.

Surprisingly, being fresher and more recovered does not always lead to a greater performance. There is an optimal point at which performance will occur, and it is generally when you are fresh but stimulated. This can be seen from an inverted U diagram. If you are too fresh, then performance is low; if you are too fatigued, then performance is also low. There is an optimal point at which you are not carrying excessive residual fatigue, and are adequately stimulated. This leads to optimal performance results.



At this time of the year there is always a lot of talk about heat acclimatisation, or preparing to race in hot conditions. Undertaking heat acclimatisation work can be very demanding on the body and may even lead to reduced performance if not used correctly. As a general rule of thumb, heat acclimatisation work should only be undertaken by well trained athletes when the competition environment is significantly hotter or more humid than the daily training environment. Undertaking heat specific training places a lot of stress on the body and can reduce training quality, so this must be considered when making the decision wether to undertake heat acclimatisation work.

Many athletes see physiological lab testing as being the gold standard for determining their athletic ability and potential. The magical VO2 max value is often seen as the be all and end all of endurance performance. However, the reality is that VO2 max is just one of many physiological variables can help determine performance. Other characteristics that determine overall athletic performance for many endurance sports include: economy; anaerobic threshold; aerobic threshold; maximal accumulated oxygen deficit; and relative power/speed. Even a simple blood lactate / heart rate curve can provide useful information to help fine tune training.

Sports Science continued

Regular performance testing can give you a good idea of how your training is progressing and key areas that you may need to focus on in order to achieve your goals. Ideally such performance testing can be accompanied with the monitoring of physiological variables in a laboratory environments, but more practically two methods of field tests are most effective. Firstly, and most simply, a short time trial can be used to assess performance. Alternatively, a progressive maximal test, starting with low intensity efforts and building to a maximum effort, can be used to assess both performance and adaptations at a range of intensities.

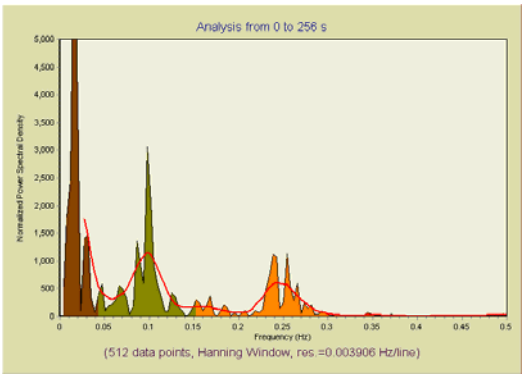
When using a heart rate monitor for training, understand that it can often take 2-3 minutes for heart rate to reach a steady state. This means that your first 2-3 minutes of your first interval of a particular session cannot be guided by heart rate. It also means that heart rate is not useful in determining the intensity of short efforts, shorter than 60 seconds in duration.

Want to maximise your training? Monitor individual training response on a daily basis with Heart Rate Variability.

Over the past 5 years, the sports physiologists at FitSense Australia and Endurance Sports Training have developed a new method of monitoring performance readiness in athletes. Heart rate variability has long been used in a medical setting to assess a number of physiological responses. Using new methods of analysis to analyse a daily 5 minute orthostatic test, our physiologists have been able to monitor sympathetic and parasympathetic responses to training and stress, thus determining an athletes training state, levels of fatigue, and readiness to perform.

These methods have been used over the last 4 years on elite endurance athletes including a handful of athletes who managed top 10 performances in the Athens Olympics. Through daily analysis, training can be altered according to individual responses, allowing optimal adaptation during the appropriate training or racing block.

This is now a service available to all athletes. For more information please contact us on info@fitsense.com.au or call 02 6161 0810.



Endurance Sports Training Services

Endurance Sports Training has been providing online coaching services for over 4 years, in the process helping many runners, triathletes, cyclists and adventure races to achieve their goals.

Endurance Sports Training continues to excel in the coaching of these sports with experienced coach and sports physiologist Ben Wisbey leading a specialist group of coaches.

Services provided by Endurance Sports Training:

- Online coaching
- Health and fitness programs
- Physiological testing
- Race day nutritional planning
- Run training groups for Canberra runners

For more information on the services offered by Endurance Sports Training please visit **www.endurancetraining.com.au**

FitSense Australia

Endurance Sports Training is specific branch of parent company FitSense Australia. FitSense Australia offers a full range of health and fitness services to individual and corporate clients. We use our experienced and qualified staff to ensure you achieve your health and fitness goals. Services offered include:

- Workplace wellness programs
- Job specific fitness assessments and training
- Running groups
- Personal training
- Sports specific coaching
- Sports science services

FitSense Australia

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