

## Investing your training time efficiently

By Lee Cook

Approximately 90% of all books, magazines or websites that document how to structure a 12 month training programme will suggest the same idea. This is that the winter months should be spent doing miles or volume at low intensity to build the aerobic base, then gradually employing some high intensity interval training and reducing training volume to stimulate the fast twitch muscle fibres and top end aerobic/lactic acid system before race season. The race season is then typified by low volume and very high training intensity while trying to race or do a race pace effort at least once a week.

Other authors, such as Rick Niles, suggest that it is the time spent training at the lactate threshold which is the key to improvement and advocates this as the main type of training all year round. Obviously, these authors suggest that some endurance training to the effect of 50% greater than race distance needs to be done but should be no more than once a week and restricted to off season. This is a far cry from the 10-14 hours per week at 70% that some athletes employ during the winter months.

So which theory is correct? If you were to ask Lance Armstrong I am sure he would follow the consensus whereas ex-triathlon world champion Karen Smyers is a believer of Rick Niles' method. From personal experience and studying sports science it is my firm belief that no one method can be generalised to suit everyone and each training program needs to be specific to an individuals needs.

Many people read what professional athletes are doing and attempt a scaled down version which may not always be the best option. Professional athletes may invest up to 20-35 hours of training per week during off-season and a large chunk of that will be at 65-70% of  $VO_2$ max. The professional racing season is so much more demanding than an amateur season that it requires a much larger aerobic base to get through it. It is also impossible spend 20-35 hours per week at lactate threshold without becoming over trained and therefore large volumes of low intensity training is done to maximise improvement and stimulate motor recruitment patterns.

Work and personal commitments combined with motivational levels often limit the amateur athlete to between 6-14 hours of training per week. Much of the scientific research that has been conducted shows that high intensity interval training induces the greatest improvements in endurance performance in well trained athletes. Therefore, if an athlete has more than enough endurance to complete a race distance, there seems little point to me in plodding around at 70% for 4 months. I'm not saying that over-distance training does not need to be done but people should not be scared of doing high intensity training more than once a week during off season.

However, my own personal experiences have led me to believe that there can be no general training program that will induce the greatest improvements for everyone. You may or may not know that each person has a varying distribution of slow and fast twitch muscle fibres. Slow twitch muscle fibres produce relatively little force, contract slowly, are resistant to fatigue and are best suited to endurance based activities. Fast twitch muscle fibres contract very fast, produce large amounts of force

but fatigue easily because the energy required to fuel them is produced anaerobically (without oxygen). Most people will have a slightly greater distribution of one type of muscle fibre than the other. It is likely that if you are able to exercise for long periods of time without much fatigue or previous training but often lose out in sprints that you will be slow twitch dominant. If you feel that you are suited to shorter events (e.g. better at sprint distance triathlon to Olympic distance triathlon in endurance terms) and gain muscle mass quickly it is more likely that you are fast twitch dominant.

It is therefore obvious that your biological makeup is a massive determinant of your performance and consequently should be a central issue of your training focus. This idea was particularly reinforced by one client I know who went to see an elite cycling coach for performance testing and program planning. The coach advised the client to spend 6-8 hours per week on the bike at 70%  $VO_2$ max during the winter months. When the client returned for another performance test after strictly following the training regimen, the coach went as far as accusing the client of not following the schedule as the performance test was actually worse than the previous one.

The client in question was actually an ex-British fell running champion and extremely slow twitch dominant. Huge gains in performance were only incurred when the client was given a program that focused on strength and power production. The reason why the client did not improve from doing the low intensity/high volume type training is that they were already well trained and the muscles were very efficient at doing that type of exercise. What the client needed was to develop strength and power because slow twitch muscle fibres contract slowly and produce little force. In contrast, people who have high power outputs would gain more from their training by doing low intensity/high volume type training in order to make their muscle fibres more fatigue resistant. I'm not saying you should completely neglect what your good at, just have a stronger emphasis towards what you are not.

I therefore believe that a general training program will not maximise success unless you have an exact 50-50 distribution of fast and slow twitch fibres. A training program needs to be constantly analysed and used to improve specific weaknesses. Most of all people should understand that sport science is a relatively young subject and things you may have read in the 80's and even 90's may no longer be true. If you have seen little improvement in the last couple of years then try something else. Too many people stick to the same old regimented formula and invest 14 hours of training per week to stay at the same place. The client above who shifted to a high intensity interval programme has actually decreased training time by 50% yet improved their Olympic distance triathlon time by 15 minutes!

Just to clarify, my stand point is based on the fact that you are well trained and have been in the sport for a number of years. If you are slow twitch dominant but have never exercised regularly, you would still need to do lots of low intensity/high volume training as your cardiorespiratory system would not be efficient enough to provide the working muscles with an adequate oxygen supply.