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Comparison of different high intensity intervals training sessions, taken from:

Esfarjani, F. Laursen, P. (2006) **Manipulating High Intensity Interval Training: The Effects on VO<sub>2</sub> Max, the lactate threshold and 3000m running performance in moderately trained males.** Journal of medicine and science in sport. 10, 27-35.

Interval training is a well used tool in all endurance sport disciplines and is a recognised method of improving performance. The history of interval training dates way back to past champions such as Emil Zatopek who believed that running one lap of the track quickly and one slowly would make him a faster runner overall, Zatopek is quoted as saying "Why should I learn how to run slow, I already know how to run slow, I must learn how to run fast!" Zatopek won Olympic gold for 5k, 10k and the marathon at the 1952 games which is a good indicator of his success!!

Interval training simply involves bouts of hard running, broken by recovery periods, but within that simple definition there exists an endless number of workouts, each with different outcomes. By altering the length of time running, recovering or the running speed, an interval training session can be designed to meet any objective from 800m to marathon racing.

Time to get **DIRTY**:

**Distance:** How far are the intervals you are running e.g. 200/400/800m?  
**Interval:** How much rest interval do you take and what do you do with that time?  
**Repetition:** How many times do you repeat the distance e.g. 8X400m?  
**Time:** What speed are you attempting to run the intervals at?  
**You:** Why are you doing the session, what are your objectives?

Esfarjani & Laursen examined the benefits of 2 specific interval training sessions upon 3000m performance and therefore we cannot presume that these sessions are equally beneficial for 10k / half marathon / marathon performances as the physiological requirements are very different. When selecting intervals, think about **You** and your objectives.

Before the training commenced they tested a group of non-elite male runners to calculate their VO<sub>2</sub> max and identify the treadmill speed at which VO<sub>2</sub> max was reached, the athletes were then split into 2 groups to complete 2 different types of interval training. The intervals they selected were as follows:

- Group 1: 8 X 3.5 minutes at the running speed equivalent to VO<sub>2</sub> max with 3.5 minutes recovery between each repetition.
- Group 2: 12 X 30 seconds at the running speed equivalent to 130% VO<sub>2</sub> max with 4.5 minutes recovery between each repetition.

Following 10 weeks of training the athletes were re-tested, both groups showed a similar increase in VO<sub>2</sub> max and both showed improvements in 3000m running performance with group 1 showing the greatest improvement in time. These results suggested that both types of interval training would improve VO<sub>2</sub> max but the longer intervals had the greatest effect upon performance in a 3000m race which from an athlete's perspective, is the most important result.

The results also showed that the longer intervals of group 1 had a far more dramatic effect upon the running speed associated with lactate threshold. The lactate threshold of both groups improved following the 10 week schedule but it was group 1 who benefited the most.

Group 1 did not have things all their own way, the researchers asked subjects to run on the treadmill at a speed equivalent to VO<sub>2</sub> max for as long as possible as those from group 2 covered the greatest distance. Suggestions for this include enhanced anaerobic capabilities, once your VO<sub>2</sub> max is reached and you cannot absorb more oxygen, you may

rely on anaerobic sources to a greater extent. Running fast for 30 seconds would place great stress on the anaerobic system and promote adaptations.

A second explanation is running efficiency which is related to elasticity of muscles and 'energy return'. Short, high intensity sprints promote nervous system changes enabling muscle tissue to produce more force. Changes also occur with regards to muscle tension and elasticity, in the same manner as those which take place as a consequence of plyometric training.

In summary, 3000m performance can be improved by both of the interval sessions outlined and the improvements are likely to come from different physiological adaptations. Both types of training have benefits if used in the correct phase of training, with the correct athletes, in the correct quantities!!

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