

Explosive type strength training enhances distance-running performance



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One of the most fundamental rules of training is specificity; if you want to train for an event, your training should replicate the demands of that event. The rule of specificity arises because different events tend to rely on different energy systems in the body (which need to be specifically trained) and also because many disciplines require a specific set of motor skills and neurological adaptations.

However, the reality is that while many endurance events draw heavily on the aerobic energy system, they often also require short high-energy bursts provided by the anaerobic energy pathways (for example, during the sprint for the line) - pathways that are often neglected in training because of the desire to concentrate on endurance performance. But new research by Finnish scientists at the Research Institute for Olympic Sports suggests that this strategy may be counterproductive for endurance runners, and that anaerobic performance can be readily enhanced without increasing training volume or compromising endurance.

In the study, the effects of concurrent explosive strength and endurance training on aerobic and anaerobic performance and neuromuscular characteristics were studied in 25 distance runners, who were split into an experimental group (13 runners) and a control group (12 runners). All of the runners trained for eight weeks with the same total training volume, but in the experimental group 19% of the endurance training time was replaced by explosive-type training, including sprints and strength drills. After the eight-week training programme, all the runners were evaluated for various aspects of performance with the following results:

- * Compared to the controls, the maximal speed during a maximal anaerobic running test and 30-metre speed improved in the experimental group by 3.0% and 1.1% respectively;
- * The concentric and isometric forces generated during leg extension increased in the experimental group but not in the controls;
- * The experimental group improved their muscular force-time characteristics and had rapid neural activation of the muscles (ie they were able to generate more power through more rapid muscular contractions);
- * The increase in thickness of quadriceps muscles after eight weeks was nearly double in the experimental group compared to the controls;
- * Importantly, the maximal speed during an aerobic running test, the maximal oxygen uptake (VO₂max) and the running economy (how efficiently the runners used oxygen to for any given running speed) remained unchanged in both groups.

The implications of these findings are clear; if you are an endurance athlete whose event also demands brief bursts of high-intensity work, substituting some of your endurance training (up to 20%) with anaerobic work needn't necessarily involve a drop in aerobic performance, and may even give you a competitive edge.