

Tests and assessment in endurance running

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Lecture abstract:

One of the basic principles of sports training management is evaluation. The evaluation process is based on the evaluation of data obtained from measurements or observations for optimization of training process. From the perspective of endurance running, four determinants of performance are fundamental: maximum oxygen consumption, fractional utilization, lactate/ventilatory threshold and running economy.

The above determinants can be measured both in the laboratory and in the field settings. Most commonly, we use a motorized calibrated treadmill and a gas analyser to evaluate functional parameters such as oxygen consumption, ventilation, etc. According to the test protocol (ramp, continual, graded, intermittent and combination of previous), we determine the values that can enter the assessment of body condition and trained runners. It has been found that in performance-homogeneous groups, a more accurate indicator of running performance is the running economy than the maximum oxygen consumption. Through the concept of running economy, for example, improvement of running performance can be explained by including additional muscle strength training without changing the VO₂max parameter. Respiratory parameters VO₂ and VCO₂ are in the endurance run related to body weight (and therefore also the fat-free component of weight is an important variable). During the stress test, the kinematic analysis parameters can be monitored using a 3D video system. From the point of view of the application of trainers in practice, this analysis is more often performed in 2D mode in the sagittal and frontal plane by a common video recording. 2D video recording, resp. photographs of each gait key positions, are often used in the commercial sphere to select the appropriate footwear. Another possible outcome is the evaluation of running technique. Running technique does not have standards, but there are key points in the technique that coaches want to keep their athletes in their sports performance. Under field conditions, most of the above parameters can be observed due to the advent of new technologies and algorithms (Garmin Running Dynamics, Stryd, etc.).

Last but not least, the practice of endurance runner coaches is also the assessment of movement. An example of a practice/test is a squatting exercise or testing the capacity of one of the most important parts of the runner's body - single leg calf raise. Furthermore, the classical detection of strength abilities (1RM and/or 3RM) in squat and deadlift. In view of the plyometric qualities of the runner (indicating the ability to use elastic components), the evaluation of the reactive force index (RSI) in drop jump is also desirable.

Finally, a plethora of tests can put the trainers themselves in the trap to test them. However, the primary reason for testing should remain the selection of sports talents and the positive impact of sports training on endurance performance.