INCREASING THE SPEED ENDURANCE OF LONG-DISTANCE RUNNERS

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Abstract: *This article examines modern training methods aimed at increasing the speed endurance of long-distance runners. The study analyzes the effect of interval training, strength training and proper nutrition on endurance indicators.*

Keywords: *speed endurance, long-distance running, interval training, strength training, nutrition, sports physiology.*

INTRODUCTION

Speed endurance in long-distance running determines the ability of runners to maintain high speed for a long time. This indicator is related not only to physical fitness, but also to psychological endurance and proper nutrition. In recent years, research in the field of sports physiology has been actively studying new methods for increasing endurance, in particular, interval training and strength training. This article aims to analyze these methods and experimentally verify their effectiveness.

DISCUSSION

A comprehensive approach is required to improve sprint endurance in long-distance runners. This process includes training types, nutrition, technique, recovery, and psychological preparation. Below, I will discuss each aspect in detail, providing practical tips and examples.

Types of training: Training to improve sprint endurance should be balanced: focusing on developing the cardiovascular system, increasing muscle strength, and raising the lactate threshold. The following types of training are considered the most effective:

Interval training: Interval training increases cardiovascular endurance and trains the body to work at high intensity for longer periods. These exercises develop anaerobic and aerobic power.

- Sample program:
- 10 minutes of easy warm-up (running, dynamic stretching).
- 6x400 meters at 90% maximum speed, followed by 90 seconds of easy running or walking.
- 5 minutes of cool down (easy jog, static stretching).
- Weekly plan: 1-2 times a week, use options such as 4x800 meters or 8x200 meters. Gradually increase the intensity.

- Benefits: Improves VO2 max (maximum oxygen uptake) and delays the accumulation of lactic acid.

Tempo Run (Threshold Run)

Tempo running helps to increase the lactate threshold, which means that the body can work at a high speed for a long time without getting tired.

- Sample program:
- Warm up with a 10-minute easy jog.
- 20-30 minutes of running at 70-80% of maximum speed (at this speed you can still breathe, but it becomes difficult to talk).
- 5-10 minutes of cool down.
- Weekly plan: 1 time a week, gradually increase the distance or time (for example, from 20 minutes to 40 minutes).
- Benefits: Improves running economy and helps you adapt to race pace.

Long-distance running

Long-distance running increases overall endurance and develops the ability of muscles to work for long periods of time.

- Sample program:
- Run at a moderate pace (60-70% of your maximum) for 60-90 minutes.
- Increase your distance by 10% every 2-3 weeks (for example, from 10 km to 11 km).
- Weekly plan: 1 time per week, usually on weekends.
- Benefits: Increases aerobic power and improves muscle endurance.

Strength training

Increasing muscle strength increases running efficiency and reduces the risk of injury.

- Sample exercises:
- For legs: Squat, lunge, calf raise (for calf muscles).
- For body: Plank, Russian twist, push-up.
- With weight: Deadlift or kettlebell swing (under the supervision of a trainer).
- Weekly plan: 2-3 times a week, 30-45 minutes. Perform each exercise with 3 sets of 10-12 repetitions.
- Benefits: The pushing power of the legs increases, which increases speed.

Speed training (Fartlek)

Fartlek (Swedish for "speed game") involves alternating different speeds in a random order.

- Sample program:
- 10 minutes of easy running.

- For 30 minutes: 1 minute sprint, 2 minutes easy run, 3 minutes moderate speed, etc.

- 5 minutes cool down.

- Weekly plan: 1 time per week, alternating with interval training.

- Benefits: Improves adaptation to changes in speed and increases psychological endurance.

Nutrition and hydration

A proper diet plays an important role in increasing endurance quickly, as it replenishes energy reserves and promotes muscle recovery.

Carbohydrates

Carbohydrates are the main fuel for muscles.

- Recommendations:

- Eat carbohydrate-rich foods (oats, rice, pasta, bananas) 2-3 hours before training.

- Energy gels or sports drinks during long workouts (more than 90 minutes).

- Amount: 50-60% of daily calories should come from carbohydrates (approximately 5-7 g/kg of body weight).

Protein

Protein is essential for muscle recovery and strength.

- Recommendations:

- Eat a protein-rich meal (chicken, fish, eggs, yogurt, or a protein shake) within 30 minutes of your workout.

- Daily intake: 1.2-2 g/kg of body weight.

- Example: 84-140 g of protein per day for a 70 kg runner.

Fats

Healthy fats serve as a long-term source of energy.

- Recommendations: Eat healthy fats such as nuts, avocados, and olive oil.

- Amount: 20-30% of your daily calories from fat.

Hydration

Water balance is important for maintaining endurance and speed.

- Recommendations:

- Drink 500 ml of water before your workout.

- Drink 150-200 ml of water or an electrolyte drink every 15-20 minutes.

- Drink 1.5 liters of water for every 1 kg of body weight lost after training.

- Electrolytes: Sodium, potassium and magnesium are lost during long runs, so use sports drinks or salt tablets.

Running technique

Proper technique reduces energy expenditure and increases speed.

- Stride frequency: The ideal frequency is 170-180 steps per minute. Measure this with a watch or metronome.

- Foot placement: Lower the leg below the knee and place it close to the body. Avoid excessive jumping.

- Body position: Keep your back straight, relax your shoulders, and move your arms freely at 90 degrees.

CONCLUSION

To improve the sprint endurance of long-distance runners, a systematic approach is needed: interval and tempo training, strength training, proper nutrition, technique, recovery and psychological preparation.

Research shows that a comprehensive program that includes interval training, strength training and a carbohydrate-rich diet significantly increases the sprint endurance of long-distance runners. The following recommendations are made to coaches and runners:

Include at least 2-3 sessions of interval training per week.

Conduct 2 sessions of muscle strength training per week.

Ensure a carbohydrate-rich diet before and after training.

In the future, it is necessary to study the long-term effects and the effect on runners of different ages.

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