

## Applied Exercise and Sport Physiology, with Labs, 4e

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### Chapter 13 – Study Guide Answers

How can speed be increased?

By increasing the positive force or decreasing the negative factors

What is meant by the phrase “specificity of speed”?

Speed is not a general characteristic (i.e., a person may have fast arm movements but slow leg movements).

Name four primary factors that contribute to the intrinsic speed of a muscle contraction.

- The level of myosin ATPase activity. FT fibers have greater activity of this enzyme and liberate the stored energy from ATP more effectively.
- ST fibers have poorly developed sarcoplasmic reticulum, which may interfere with the rate of calcium release and muscle contraction.
- There are slight differences in the myosin molecules found in FT and ST fibers.
- There may be differences between FT and ST fibers in the ability of calcium to bind with troponin.

What are the three phases of a sprint event?

- The start
- The acceleration phase
- The high velocity phase

What will help improve performance during the start and rapid acceleration phases of a sprint event?

Resistance training will develop the strong flexor and extensor muscles in the lower extremities needed during these phases.

What will help improve performance in the high velocity phase of a sprint event?

Increasing the length of the stride and shortening ground contact time

What sports would benefit from sprint-resisted training?

Sprint-resisted training benefits any sport that requires rapid acceleration, repetitive bouts of acceleration, or changes of direction.

What sports would benefit from sprint-assisted training?

Sprint-assisted training is best for distances greater than 40 meters where it is essential to maintain maximal velocity.

Name two good strategies for improving sprint swimming?

1. Practice swimming with slow stroke rates to develop greater distance per stroke.
2. Improve distance per stroke early in the season. Work on power and efficiency at race speeds in the late season.

Improving sprint bicycling performance should take into consideration what two factors?

1. The rider
2. The equipment

What steps can you take to improve sprint speed skating?

- Increase the strength of the lower body extensor muscles and plantar flexors
- Reduce the moment of inertia caused by the weight of the skates
- Improve the technique to reduce air and ice friction
- Perfect new starting techniques