

What Makes an Olympic Champion?

- 1 How does a person become an Olympic champion—someone capable of winning the gold? In reality, a combination of biological, environmental, and psychological factors, as well as training and practice, all go into making a super athlete.

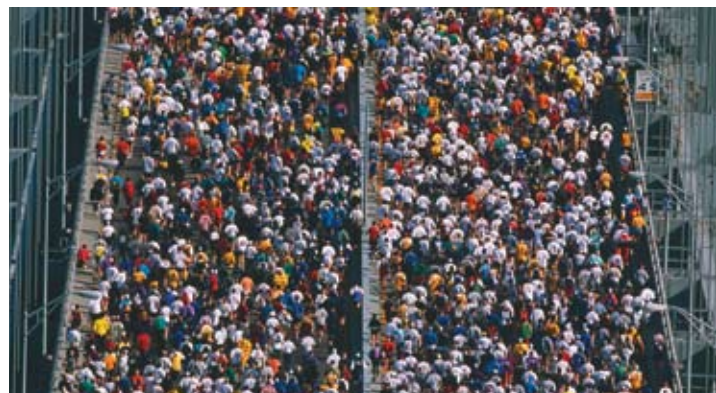


▲ Weightlifters such as U.S. national champion Shane Hamman have incredibly strong leg muscles.

- Perhaps the most important factor involved in becoming an elite¹ athlete is genetics. Most Olympic competitors are equipped with certain physical characteristics that differentiate them from the average person. Take an elite athlete's muscles, for example. In most human skeletal muscles (the ones that make your body move), there are fast-twitch fibers² and slow-twitch fibers. Fast-twitch fibers help us move quickly. Olympic weightlifters, for example, have a large number of fast-twitch fibers in their muscles—many more than the average person. These allow them to lift hundreds of kilos from the ground and over their heads in seconds. Surprisingly, a large, muscular body is not the main requirement to do well in this sport. It is more important to have a large number of fast-twitch fibers in the muscles. The legs of an elite marathon runner, on the other hand, might contain up to

- 90 percent slow-twitch muscle fibers. These generate energy efficiently and enable an athlete to control fatigue and keep moving for a longer period of time. When we exercise long or hard, it's common to experience tiredness, muscle pain, and difficulty breathing. These feelings are caused when the muscles produce high amounts of lactate and can't remove it quickly enough. Athletes with many slow-twitch muscle fibers seem to be able to clear the lactate from their muscles faster as they move. Thus, the average runner might start to feel discomfort halfway into a race. A trained Olympic athlete, however, might not feel pain until much later in the competition.

▼ A crowd of 30,000 runners of all ages heads streams across a bridge during the New York City marathon.



¹ **Elite** refers to the most powerful, rich, or talented people within a particular group.

² **Fibers** are thin, thread-like pieces of flesh that make up the muscles in your body.

For some Olympic competitors, size is important. Most male champion swimmers are 180 cm (six feet) or taller, allowing them to reach longer and swim faster. For both male and female gymnasts, though, a smaller size and body weight mean they can move with greater ease and are less likely to suffer damage when landing on the floor from a height of up to 4.5 meters (15 feet).

Some athletes' abilities are naturally **enhanced** by their environment. Those raised at high altitudes in countries such as Kenya, Ethiopia, and Morocco have blood that is rich in hemoglobin. Large amounts of hemoglobin carry oxygen³ around the body faster, enabling these athletes to run better. Cultural factors also help some athletes do well at certain sports. Tegla Loroupe, a young woman from northern Kenya, has won several marathons. She **attributes** some of her success to her country's altitude (she trains at about 2,400 meters or 8,000 feet) and some to her cultural background. As a child, she had to run ten kilometers to school every day. "I'd be punished if I was late," she says.

Although genetics, environment, and even culture play a part in becoming an elite athlete, training and practice are needed to succeed. Marathon runners may be able to control fatigue and keep moving for long periods of time, but they must train to reach and maintain their goals. Weightlifters and gymnasts perfect their skills by repeating the same **motions** again and again until they are **automatic**. Greg Louganis, winner of four Olympic diving gold medals, says divers must train the same way to be successful: "You have less than three seconds from takeoff until you hit the water, so it has to be reflex. You have to repeat the dives hundreds, maybe thousands of times." Training this way requires an athlete to be

³ **Oxygen** is a colorless gas in the air which is needed by all plants and animals.

⁴ If you **compliment** someone, you say something polite to them to show that you like their appearance, or approve of what they have done.

⁵ A **splash** is the sound made when something hits water or falls into it.

not only physically fit but psychologically healthy as well. "They have to be," says Sean McCann, a sport psychologist at the Olympic Training Center in the U.S. "Otherwise they couldn't handle the training loads we put on them. [Athletes] have to be good at setting goals, generating energy when they need it, and managing anxiety."

How do athletes **adjust** to such intense pressure? Louganis explains how he learned to control his anxiety during a competition: "Most divers think too much . . .," he says. "They're too much in their heads. What worked for me was humor. I remember thinking about what my mother would say if she saw me do a bad dive. She'd probably just compliment⁴ me on the beautiful splash."⁵



Kenyan athletes such ▲ as Irene Lemika benefit from training at high altitude, which develops the body's ability to transfer oxygen quickly.