

Stair Climbing

Stepping Up Your Workout; Part II

BY GREGORY WELCH, MS

Muscles

Joints

Footpads



In Part 1 of this two-part analysis of stair climbing, we looked at the actual climbing of stairs as a tremendous opportunity to enhance cardiovascular as well as muscular conditioning. Although it is likely that every ambulatory individual has climbed a great number of stairs within their lifetime, the concept of stair climbing as a training method takes on a different philosophy. Therefore, the basics of this workout were covered such that a novice can begin the activity safely and correctly, with regard to preparation, preliminary training and successful execution. In Part 2, I will attempt to provide more advanced information for a higher level of participation.

The Versatility of Stair Climbing

The common step-by-step method of ascending a flight of stairs is obviously self-explanatory. However, when considering variation, most anything can be implemented to add variety to the stair climbing program. Skipping a step, sidestepping, cross over stepping, and hopping up each step with both feet simultaneously can add a new dimension of agility to the workout. To increase the difficulty as well as the challenge, a person could progress to skipping two steps; combining sidestepping with crossing over each foot, both front and back; hopping up two steps with both feet; and even hopping up each step with one foot. Additionally, a weighted vest could be used with each of these stepping patterns. However, it is important to remember that any biomechanical movement pattern that is new will cause the body to fatigue more rapidly. As explained in Part 1, this is considered inefficient movement due to different neuromuscular loads and firing patterns—not a different

set of muscles. Therefore, prudent progression with sufficient time for adaptation is crucial to avoid injury.

Although climbing stairs can be done many ways, caution and discernment must be used when *descending* the stairs. There can be many repetitions in a stair climbing workout and what goes up must come down. The *eccentric* load on the total musculature of the legs while descending the stairs makes them more susceptible to injury than the *concentric* load. Likewise, if you were to step in the same agility patterns as when ascending the stairs, it could lead to a coordination issue. The combination of fatigue and lack of coordination added with the stress of the eccentric load could possibly lead to a fall. It is recommended that in the early stages of the program, or until advanced coordination and conditioning occurs, the various foot patterns utilized when ascending the stairs should be delayed and descending the stairs should be done in the traditional way.

Stair Racing

Stair racing is somewhat of a new aspect of stair climbing, emerging from the desire within human nature to be the best. The objective is the obvious challenge to reach the top of a particular building by climbing its stairs in the shortest amount of time. Getting to the top, however, requires every bit of competitive edge available and the training is as serious as any other sport. The individuals that gravitate to this endeavor are as diverse as the structures they climb. It is not uncommon to find runners, boxers, triathletes, hikers, etc. utilizing the event to cross-train. Police and fire personnel will often enter these races in teams to enhance their

conditioning as well as bolster morale. It has even been noted that athletes, long established in other sports, have made a permanent change to stair racing.

Another reason why stair racing is becoming so popular is that it not only attracts athletes from other sports, but gives athletes from various other circumstances a new alternative to compete. Take, for instance, Mark Trahanovsky from Yorba Linda, Calif. For three decades he had enjoyed running 5Ks, tracking his progress and competing relentlessly against the clock. One day following a routine training run, Trahanovsky felt severe pain in his left knee, which was diagnosed as a torn meniscus. In 1980, he had injured the same knee in a skiing accident. Whether the new injury was due to years of running, years of running on a previously compromised knee, or a combination of both, is uncertain. What is known is that, according to Trahanovsky's surgeon, he had the knee of an 80-year-old man and his running days were over.

Three months after surgery and several hours of physical therapy, Trahanovsky learned of a race to the top of the U.S. Bank building, a 76-story skyscraper in Los Angeles. Out of 1,800 people entered that day, he took third in his age group. As of this publication, Trahanovsky has competed in over 16 races in skyscrapers across the United States. By the end of 2009, he was ranked 27th overall in the world's elite male stair climbers.

A similar, yet different situation is the case of P.J. Glassey, CSCS, a certified strength and conditioning specialist and founder/owner of The X Gym in Seattle, Wash. Glassey tried to be a runner, but suffers from extreme pronation due to ultra high arches. Regardless of orthotics and a well-planned training progression, he could never run past three miles without significant pain in his shins, knees and lumbar spine. An accomplished athlete in his own right, Glassey recently switched to stair racing and is truly an up and comer. He currently holds a world ranking of 90th and 30th in the United States.

Training for Stair Racing

The popularity of stair racing is increasing rapidly as demonstrated by the growing number of races in many of the tallest buildings around the country. The sport offers many things to men and women that are looking to express themselves in a physically competitive endeavor. Keep in mind that there is a distinction between stair climbing for general conditioning and stair racing. What separates the two is the issue of competitive performance. Incorporating the stairs into a general workout is a great idea for individuals to experience tremendous benefits. Muscular strength and conditioning as well as cardiovascular improvements are virtually guaranteed providing the implementation of the stair work is prudent. Stair climbing also adds a measure of cross-training to complement the more common running, cycling and swimming programs. Training for stair racing, however, truly takes the activity to the next level (no pun intended).

The training program for stair racing demands that every opportunity to improve the total time of the race must be taken. Wasting time and effort by training methods that fall short of being the most *specific* to the race should be avoided. When preparing for a race, it is likely that the athlete will not be able to train in the actual race environment. Therefore, initial consideration for attempting to reproduce the identical setting needs to include: 1) the number of floors of the competition, 2) tread versus rise

of the steps, 3) number of steps between landings, 4) right versus left turn of the landings, 5) the width of the stairwell and whether handrails exist on one side or both, 6) type and material of the hand rails, 7) ventilation of the stairwell, 8) weather, i.e. temperature as well as humidity, 9) altitude and the geographical location of the building.

Specificity Training

The law of specificity is widely accepted and should be a primary consideration when designing any competitive training program, yet it is often misunderstood and/or neglected altogether. Just because a movement pattern appears to be identical to a movement in the sport, does not necessarily make it truly *specific* to the sport. The stair stepping machines are a perfect example of an exercise falling short of the specificity objective. First of all, the full range of motion is not adequately reproduced, especially when the appropriate pace is implemented. Secondly, the movement of the footpads is that of giving way to the muscular contraction of the legs. Stair racers skip one and sometimes two steps in a competition, recruiting far more predominant muscle fibers specific to lifting the body *upward* while engaging core musculature to stabilize the torso.

Other aspects of training specific to a stair race are the muscles that fulfill the necessity of functional stabilization. Those most commonly overlooked, but vitally important, are the ankles, wrists, elbows, adductors and the core. While thought to be sufficiently covered through general weight training, when striving for peak performance, omitting these may be the subtle difference in both improving overall time and preventing injury.

Lastly, it is crucial to properly train the energy system specific to sustaining the intensity required to be the first to the top. Many athletes understand that interval training is the best way to accomplish this, but there are three energy systems as well as overlap among them. Depending on the athlete's present conditioning pace, number of floors, and number of steps between landings, more emphasis needs to be placed on the precise interval program to bring about the best results.

The Mental Race

In addition to the intense physical training required for stair racing, it is a huge mental challenge. Still, races themselves are grueling from a physical standpoint; elevating the mental threshold needs to be considered as well. Trahanovsky believes that stair racing requires a large mental capacity for discomfort. He often quotes famous runner, the late Steve Prefontaine, when he says "the one who has the most guts wins." Glassey agrees and states, "Stair racing is 80 percent mental. All the guys in the top 20 of any major race are in amazing shape, but the one who wins has the strongest mind and is able to push past the pain and fatigue better than the others." Glassey takes the mental aspect of stair racing even further. He has authored a book entitled *Cracking Your Calorie Code* (Xlibris Corporation, 2008), where he discusses regular mental exercises and cognitive workouts that are necessary to strengthen the brain, similar to strengthening the muscles. AF

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