

# Fitness Testing at the Fire Academy

August 18, 2001

It was a hot August morning as I sent the cadets off on their mile-and-a-half run. That event was the last segment of their fitness assessment. In addition to running, they had done push-ups and sit-ups. I also measured their body fat. I performed these assessments using the *On Target* protocol designed by Dr. Paul Davis.

That was exactly the same testing procedure as my team of fitness instructors and I did twice a year for every member of the Plano Fire Department. As I best recall, Plano was the first Texas fire department to get into organized health and fitness in a big way. Under Chief Maxwell's leadership, we were first in a lot of innovative fire service activities.

I'm sure that the fitness testing I did for Pat at his CCCC Fire Academy was also a first for Texas fire training academies as well. Both the PFD and Pat's school led the way in a number of categories. You could do things like that when you had fat operating budgets like we had in those days.

On this particular day, the cadet that led the running pack was a young lad from Mexico. Although he was an American citizen, he was born in Mexico and had recently lived with his grandparents in Mexico City. While there, he trained for and ran in several marathons. Cleverly, while training for the marathons, he ran frequently in the highest altitudes he could find.

The human body is powered by burning blood sugar and oxygen. The more oxygen the body takes in, mixes with sugar, and subsequently processes into energy, the more physically fit that body is. Hemoglobin is the agent in blood that picks up oxygen in the lungs and transports it to every living cell in the body. The more hemoglobin a given body's blood contains, the more oxygen can be carried in the blood and the more work that body can perform. On a long-term basis, a person's body adjusts the amount of hemoglobin it needs by measuring the oxygen in the air. Thus, a person who trains in higher altitudes, where the "air is thin," as they say, will produce more hemoglobin than he would produce at sea level. If that person leaves the high-altitude environment and goes to a lower altitude, for a while he has an excess of hemoglobin, thus he is fitter for a time at the lower altitude until his body readjusts. So, many marathoners train in the mountains, then return to lower altitudes to compete in their marathons. Thus, they have a hemoglobin advantage over their fellow competitors who trained at lower altitudes.

In the fitness assessment world, we have ways to measure the amount of oxygen that is processed in the human body. The main method we used was the Davis *On Target* testing system, wherein we would weigh a person, then send him on a mile-and-a-half run with instructions to complete the task as fast as he possibly could. We carefully measured the time that the runner

took to complete the task. Then, we entered his weight and time into a computer program that yielded a numerical score. That score was the number of milliliters (or volume) of oxygen the candidate could glean from the air he inhaled, and then **process that oxygen** along with sugar to produce energy.

That number was known as VO<sub>2</sub> maximum (pronounced vee oh too max). An adult in poor physical condition may have a VO<sub>2</sub> max of 30. When I was running a lot my VO<sub>2</sub> max was 55. The Mexican lad mentioned above scored 64. He was a very, very fit individual.

His overall fitness level increased his potential to be hired by a fire department because he could, in essence, do more work and stay healthier while on the job, than those candidates who were less fit.