In a recent scientific study in the ***Journal of Applied Physiology*** workers demonstrate that by reducing the volume of training by 25% and introducing the so-called speed endurance training (6-12 x 30 second sprint runs, 3-4 times a week) endurance trained runners can improve not only short-time but also long term performance. Runners improved their 10-km time by 1 minute - from 37.5 to 36.3 minutes after just six weeks of changed training. Six of the participating 12 runners obtained a new personal record on the 10-km, despite having been training for more than 4 years. The most impressive achievement was the one runner who lowered the time by more than 2 minutes from 37.5 to 35.4 minutes. In addition, performance in a 50 sec sprint test and an intense exhaustive run (about 2 minutes) was improved by 7% and 36% respectively. In agreement, the authors have previously shown that an 85% reduction in training volume can improve short-term performance.
In association with the improved performance the amount of muscle Na+/K+ pumps was elevated and the rate of accumulation of potassium during exercise was lowered, and it is speculated that this may play a significant role for the increased performance.