

WHAT'S BEHIND STRESS ?

The runner covers the last metres of the distance in a feverish sprint and swings both hands upward in a victorious gesture. After making a few steps through inertia, he stops and bends, resting his hands on his knees. At that moment even the least experienced spectator realises how much the victory has cost the athlete. He seems to be unable to make another step: he is completely wiped out physically and emotionally.

By L. Répine



This is not the case, however. These are moments of a major stress condition. Indeed, the competition on the track is over, but the body's inner forces mobilised for the effort continue their invisible toil.

The very notion of "stress" is often identified with another emotional state — the affective condition. The causes of both can be common — a very strong external stimulus, a strong influence upon the nervous system, but the after-effects are different. In the affective state the person commits acts unexpected for himself and others: he becomes uncontrollable. It is an impulsive and short-lived emotion.

It is different with stress. The athlete, for example, can stay under stress for a rather long time, beginning with the pre-competition excitement and then throughout the whole contest. This is quite natural. Furthermore, stress is conducive to athletic performance as it mobilises his inner strength. In other words, in sport stress is a state under which the body's physical and emotional potential is concentrated.

Each stress induces a defence chain reaction in the organism. The cerebral functions are activated first, as wave of defensive stimulation spreads across the whole body and interferes in the most involved processes taking place in cells, thus ensuring the most favourable conditions in the struggle against external (in the case of sport) danger, or to be exact, against extreme loads.

What is happening in the athlete's body at that moment? The functioning of the adrenal glands dramatically intensifies, and adrenalin, a hormone which increases oxygen consumption by the blood, arterial pressure rises, and the metabolism which is highly imperative under such physical loads or strong emotional state, is raised almost instantly. With new portions of adrenalin, the sugar content rises considerably in the blood and upon oxidation provides additional energy to the muscles. Naturally, this is but a general picture of the involved processes occurring under stress.



The spectators realize that the athlete has given his all in order to win.

As we have mentioned above, all these phenomena are helpful to the athlete.

Stress, however, provokes other, less desirable changes, too. Suppression of immunity is one of the most significant ones. It leads to an increased probability of contracting a multitude of diseases. The regulation of the immune system in top-class athletes during strenuous training sessions and major tournaments is the subject-matter of research conducted by Soviet scientists G. Kassil, V. Levandov, R. Suzdalnitski, B. Pershin and S. Kouzmin. The findings were unexpected and highly interesting.

First, athletes were examined during moderate training sessions not requiring much energy. The immunity characteristics improved noticeably during the sessions.

Besides, a tendency towards a higher content of antibodies was observed: the body's main internal defenders against the invasion of bacteria, viruses and other pathogenic micro-organisms. The benefit of such training is obvious.

With the intensity of the workouts growing, the content of antibodies was reduced at first to the pre-training level, but then a sharp decline took place. Immunity was weakened almost to the utmost.

In a number of experiments the researchers tested the blood of athletes immediately after major competitions. It was interesting to learn about the behaviour of antibodies in a stress condition when extreme physical strain is experienced together with strong excitement. A discovery awaited them.

They established that under such a state the number of antibodies dropped virtually to zero! The discovery was named "the phenomenon of disappearing antibodies". It would certainly be good for coaches and particularly for sports physicians to know about it, as it is in this period (its duration is individual and depends on many circumstances) that athletes are most vulnerable to infectious diseases. Knowing this, one can try to escape the danger.

The scientists examined athletes in different sports, hoping to identify the relationship between this phenomenon and the specific sport. They succeeded in this.

It was found that short-distance running, jumping and throwing were followed by a short but powerful ejection of adrenalin into the blood and the phenomenon of disappearing antibodies had no time to develop. As for long- and super-long-distance running, the phenomenon manifests itself in full in them. It was also found that in sports where the athlete is subjected to protracted physical strain, different people react differently to stress. In some, adrenalin intensively enters the blood, while in others it is insulin — a hormone that reduces the sugar content in the blood. With it, glucose is used to better

advantage in muscle tissues, while athletes themselves endure lengthy strain more poorly. Knowing the intricate but highly important subtleties of the organism, every beginner can be given recommendations as to a particular sport where he can be successful.

True, the recommendation alone is not enough. Numerous other qualities are needed, and only then can the talent develop most effectively. Love for the chosen sport is not the least among them.

The research in the little-studied area of stress conditions provides fresh knowledge not only for sports physicians and coaches but also for medicine as a whole, helping us understand the complicated processes occurring in the body.

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The inner workings of the body continue to function, unseen.

