

# Effects of long-term consumption of Hydrogen-rich water in athletes



Athletics should be a recreation. But when games and sports become the chief interest in life and exalted into a serious profession, they do more harm than good. However, the balance is in favour of athletics, which keep the body, the animal side of us, fit!

A number of studies have confirmed that the occurrence of exercise-induced fatigue is closely related to

the level of oxidative stress in the body. The lipid peroxidative damage caused by the accumulation of free radicals in the body and the corresponding chain reaction are considered important factors responsible for decreased function of the body. The antioxidant capacity of professional athletes is much higher than that of ordinary people, and athletes develop a greater ability to withstand the accumulation of free radicals and oxidative damage generated in sports. However, there are still many problems regarding protection against and alleviation and removal of the oxidative stress reaction induced by free radical accumulation in the aftermath of exercise and sports. The effects of antioxidants used in exercise practice vary, and studies have indicated that some of these substances may induce more significant skeletal muscle injury in athletes.

A significant number of studies have confirmed that hydrogen-rich water shows selective antioxidant activity. Currently, sports science researchers are paying increasing attention to the selective antioxidant, anti-inflammatory, and anti-apoptotic effects of hydrogen and its regulation of the alkalizing environment of the body. The beneficial protective effect of hydrogen-



rich water has gradually been confirmed in both animal and human experiments. The consumption of hydrogen-rich water for two months significantly reduces serum malondialdehyde, interleukin-1, interleukin-6, tumour necrosis factor- $\alpha$  levels; then significantly increases serum superoxide dismutase, total antioxidant capacity levels and haemoglobin levels of whole blood.

The human symbiotic gut flora, considered the body's "second genome", has significant effects on human health. In recent years, studies have confirmed that imbalance of the intestinal flora is directly related to oxidative stress. The results of human experiments on athletes have shown that a greater exercise intensity results in increased oxidative stress in the body and, thus, a higher incidence of gastrointestinal stress symptoms. Therefore, in the training process, athletes should drink a sufficient amount of selective antioxidant hydrogen-rich water to regulate their gut flora, which might have a protective effect on the gastrointestinal tract and reduce stress reactions. Thus, the consumption of hydrogen-rich water for two months might play a role modulating in the gut flora of athletes based on its selective antioxidant and anti-inflammatory activities.



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