Hydrogen Water – Because Less Muscle Fatigue Means More Effective Workouts

Description

Anaerobic respiration during exercise leads to blood lactate, which is one of the major causes of muscle fatigue. Shortly before a competition, athletes may ingest pH buffer substances such as sodium bicarbonate to provide a store of alkalinity that can improve muscle anaerobic performance and prevent fatigue, however this can sometimes cause unpleasant side-effects. Recent scientific studies have shown that hydrogen-rich water can help to regulate pH levels in the body when at rest, therefore, tests were carried out to see whether similar results could be found during exercise.

Eight trained male cyclists between the age of 34 and 48 were given 2 litres of placebo regular water (PLA) or hydrogen-rich water (HRW) every day for 2 weeks; the groups then swapped over and had a further 2 weeks on the other water type. Maximum oxygen uptake (VO_{2max}) is the maximum volume of oxygen that is consumed per kilogram of bodyweight during intense exercise; the VO_{2max} of the participants was calculated in advance by means of a cycling exercise test that gradually increased in intensity. At the end of each 2-week period, the cyclists took part in a 30-minute cycling trial consisting of 10 3-minute blocks. The 3-minute blocks consisted of 90 seconds at 40% VO_{2max}, 60 seconds at 60% VO_{2max}, 16 seconds sprinting and 14 seconds recovery. Oxygen uptake, heart rate and power output were measured throughout, while peak power output and fatigue were only measured for the 16-second sprints. Blood analysis was used to measure pH, lactate and bicarbonate levels.

Peak power output decreased more in the PLA group than in the HRW group, implying that two weeks of drinking hydrogen water helped to maintain peak power output during repeated cycling sprints over 30 minutes. This suggests that HW water could be a suitable alternative to sodium bicarbonate in helping to delay muscle fatigue and maintain peak power output. This could help improve performance during anaerobic lactic exercise without the risk of side effects.

In a separate study, ten male football players aged 19-22 drank 1.5 litres of placebo water (PW) or hydrogen water (HW) daily for a week; afterwards, the groups were swapped over for another week so that those previously drinking HW were now drinking PW and vice versa. Daily training was carried out throughout each week, except on the final day which was used for exercise tests and blood sampling. The exercise tests consisted of 100 repetitions of maximal isokinetic knee extensions. While these were being carried out, applicators were used to monitor electrical activity in the rectus femoris (a muscle in the thigh) and peak torque and joint position were also measured.

Blood lactate levels were significantly lower in the HW group, indicating that less oxidative stress had occurred. Loss of peak torque after exercise can be an indicator of muscle fatigue, however, this was prevented in the case of those drinking HW.

The results of these studies suggest that hydrogen-rich water can be an effective source of hydration for athletes by helping to prevent oxidative stress and muscle fatigue to a greater extent than regular water. Less muscle fatigue was shown to help maintain peak torque and power output, contributing towards a better workout.

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