ENHANCED RECOVERY & REDUCTION IN INFLAMMATION



Emerging research suggests molecular hydrogen may help athletes recover faster by supporting the inflammatory process, limiting muscle damage and supporting tissue repair. A cleaner, more resilient body helps you train harder, recover quicker and stay in the game longer.

KEY RESEARCH FINDINGS

01 FASTER RECOVERY & IMPROVED PERFORMANCE

A pilot study in elite dragon boat athletes suggests hydrogen-rich water may support recovery from high-intensity exercise, support rowing performance, increase power output, gain an advantage in the final sprint stage, and **reduce physical damage from accumulated fatigue.**

Pilot study • elite dragon boat athletes

02 HELPS MANAGE SORENESS & INFLAMMATION

Molecular hydrogen may help manage post-exercise muscle soreness and inflammation by addressing oxidative stress, regulating cytokines, and preventing excessive inflammatory responses. H_2 may reduce oxidative stress in cells, decrease inflammatory cell infiltration and chemokine production, and support a healthier inflammatory balance after intense exercise.

Huang et al. • Free Radic Res. 2010 • PMID: 20815764

03 ANTI-INFLAMMATORY EFFECTS SUPPORT FASTER RECOVERY

H_2's anti-inflammatory properties might aid in faster recovery by supporting the inflammatory process and reducing muscle discomfort. H_2 can potentially decrease the overall stress on the body during and after exercise and may aid in the treatment of sports-related soft tissue injuries, resulting in a faster return to normal joint range of motion. In the cited study, athletes used oral hydrogen tablets and topical hydrogen packs alongside standard treatment, not hydrogen water alone.

Ostojic et al. • Postgrad Med. 2014 • PMID: 25295663

04 SUPPORTS CONNECTIVE TISSUE HEALTH & RECOVERY

Tendons, ligaments, and other connective tissues are vulnerable to injury, especially in high-impact sports. In an animal study, rats given hydrogen water after surgical tendon repair showed **less tendon adhesion** and improved antioxidant markers compared with controls; the researchers linked these effects to activation of the Nrf2 antioxidant pathway. These results come from animal research and have not been shown in human athletes.

Meng et al. • J Cell Biochem. 2019 • PMID: 30367509

INCREASED ENERGY

05 COMBATS FATIGUE & SUPPORTS CELLULAR ENERGY

Molecular hydrogen might combat fatigue by supporting cellular function and maintaining homeostasis. It may contribute to reduced fatigue symptoms by ensuring that cells operate optimally. ATP - the cell's energy currency - is produced in the mitochondria, and hydrogen may help protect the mitochondria from damage.

LeBaron et al. • J Lifestyle Med. 2019 • PMID: 30918832

06 PROMOTES MITOCHONDRIAL ATP PRODUCTION

In an animal study, rats that drank hydrogen-rich water showed **increased mitochondrial ATP production** in heart tissue, along with higher coenzyme Q9 levels. The researchers proposed that hydrogen may act within the mitochondrial Q-cycle. These results come from animal research and have not been shown in human athletes.

Gvozdjáková et al. • Can J Physiol Pharmacol. 2020 • PMID: 31536712

RESEARCH INSIGHT

MAY SUPPORT MENTAL ALERTNESS

Molecular hydrogen may also support mental alertness, potentially offering a safe alternative to caffeine for sleep-deprived individuals. One study reported that hydrogen-rich water enhanced attention, alongside changes in brain metabolism.

Sleep-deprivation attention study • Nutrients 2022



HYDRATION SUPPORT

Maintaining **proper hydration** is **essential for athletic** performance, especially since **high-intensity exercise** and extended physical activity can result in dehydration and imbalances in electrolytes. Scientific literature shows that molecular hydrogen may **support cellular hydration when there is a deficit** by acting on aquaporin activity or expression, but it does not increase cellular hydration above what is optimal for a cell.

This may support optimal cellular function and overall hydration status.

Cell hydration research • International Journal of Molecular Sciences 2022



STRESS MANAGEMENT & MENTAL FOCUS

Not only does physical strength contribute to enhanced performance in athletics, but managing stress and anxiety is also crucial for maintaining focus and cognitive function. Exercise-induced inflammation can result in fatigue and mental fog, further affecting concentration and performance. By supporting hydration and reducing oxidative stress, hydrogen-rich water may help maintain cognitive function under stress, support mental clarity, help maintain central nervous system activity, and support quality of life.

Stress-cognition research • Clinical Medicine 2019



CONCLUSION

Drinking hydrogen water is a **simple and effective way to support** recovery and overall athletic performance. The research collectively suggests that hydrogen-rich water has the potential to reduce muscle fatigue, support recovery, improve endurance, and enhance overall performance. With its high safety profile, hydrogen water could be a valuable and practical means of hydration for athletes, with potential as an ergogenic aid.

