RESEARCH MADE SIMPLE

28 days of hydrogen-rich water and exercise capacity

A clear summary of a small crossover study in middle-aged women with overweight

The short answer: The hydrogen-water period produced better exercise-test results than placebo. After 28 days, measured VO2 max was about 2.0 mL/kg/min higher, and time to exhaustion and total work also improved. However, this evidence comes from only 12 women and was reported as a non-peer-reviewed conference abstract, not a full paper.

EVIDENCE NOTE

This study is available as a 2018 conference abstract/poster in Medicine & Science in Sports & Exercise and on F1000Research, where it is labelled not peer reviewed. Only a brief summary of the methods and results is publicly reported.

How was the study organised?

12 women Mean age 53.8 years; average BMI 28.8 kg/m2; low baseline aerobic capacity	Crossover trial Randomised, double-blind and placebo-controlled; each participant was intended to receive both conditions
Hydrogen period 1 litre daily for 28 days, reported as approximately 9 ppm H2 (about 9 mg H2 per day)	Placebo period Tap water; participants were asked to keep their usual lifestyle and diet and avoid other supplements

The primary outcome was cardiorespiratory endurance (VO2 max). Secondary measures included time to exhaustion, total work, weight-related quality of life and blood-cell measurements.

What did the study report?

Outcome	Reported result after 28 days	Plain-English meaning
VO2 max	26.2 +/- 4.8 mL/kg/min with hydrogen-rich water versus 24.2 +/- 4.1 with placebo (P=0.03).	Aerobic capacity measured on the exercise test was modestly higher after the hydrogen period.
Time to exhaustion	Reported as improved with hydrogen-rich water compared with placebo (P<0.05); the abstract gives no numerical values.	Participants reportedly exercised longer, but the size and consistency of the difference cannot be checked from the abstract.
Total work	Reported as improved with hydrogen-rich water compared with placebo (P<0.05); no numerical values were supplied.	The exercise test recorded more completed work, but the magnitude is not available.
Quality of life	Weight-related quality-of-life scores were not significantly affected (P>0.05).	The laboratory exercise improvement did not translate into a detected quality-of-life change over 28 days.
Blood measures	Haematological markers were not significantly affected (P>0.05).	The abstract did not identify a meaningful change in the tested blood-cell measures.

WHAT THE RESULTS REALLY MEAN

Promising exercise results - very early evidence

Why the result is interesting

A randomised crossover design can be efficient: each participant receives both interventions and acts as her own comparison. The reported VO2 max difference was statistically significant, and two related exercise outcomes moved in the same direction.

The result is relevant to a group often underrepresented in sports-supplement studies: middle-aged women with overweight and relatively low aerobic fitness.

What ‘exercise capacity’ means here

It refers to results from an incremental exercise test: VO2 max, time until exhaustion and total work completed. It does not mean that everyday energy, strength, weight loss or long-term cardiovascular health improved. Those outcomes were not demonstrated.

Important limitations

• Only 12 participants; a single unusual result can strongly affect such a small sample.
• Conference abstract/poster only, explicitly not peer reviewed; no full paper was identified.
• The abstract does not report the washout period, period-order effects, dropouts, adherence or complete statistical model.
• Baseline and change scores for each treatment period are not fully shown.
• No numerical results or effect sizes are provided for time to exhaustion or total work.
• Diet and activity were requested to remain usual but were not described as measured or controlled.
• Tap water was called placebo, but matching, hydrogen preparation and concentration verification are not explained.
• The study received public/university funding and support from HRW Natural Health Products Inc.

Best interpretation

In this very small study, 28 days of high-concentration hydrogen-rich water was associated with better laboratory exercise-test performance than placebo. The findings are encouraging but preliminary and should be confirmed in a fully reported, peer-reviewed trial with more participants.

Quick glossary

VO2 max	The greatest rate at which the body can use oxygen during progressively harder exercise
Crossover trial	Each participant receives both interventions in different periods, ideally separated by a suitable washout
P value	A measure used to assess compatibility with chance; it does not show how large or useful an effect is
Peer review	Independent expert assessment before formal journal publication; conference abstracts usually contain much less detail

Original report Ostojic SM, Korovljev D, Stajer V, Javorac D. 28-Days Hydrogen-Rich Water Supplementation Affects Exercise Capacity in Mid-Age Overweight Women. Medicine & Science in Sports & Exercise. 2018;50(5S):728-729. Conference abstract 225. View the original poster record | DOI: 10.1249/01.mss.0000538402.25953.d2