

Papers³ for Windows



Faster, simpler, yet more powerful

Log on

Journals

Gateways



journal of the
international society
of sports nutrition

IMPACT
FACTOR
1.91

Search JISSN

for

Go

Home Articles Authors Reviewers About this journal My JISSN

Advanced search

Research article

Highly accessed

Open Access

Sodium bicarbonate intake improves high-intensity intermittent exercise performance in trained young men

Peter Krstrup^{1,2}, Georgios Ermidis³ and Maani Mohr^{4,5}*

* Corresponding author: Magni Mohr magnim@setur.fo

Author
Affiliations

¹ Department of Nutrition, Exercise and Sports, Section of Human Physiology, Copenhagen Centre for Team Sport and Health, University of Copenhagen, Copenhagen, Denmark

² Sport and Health Sciences, College of Life and Environmental Sciences, St. Luke's Campus, University of Exeter, Exeter, UK

³ Democrite University of Thrace, Komotini 69100, Greece

⁴ Faculty of Natural and Health Sciences, University of the Faroe Islands, Jónas Broncks gøta 25. 3rd floor, Tórshavn, Faroe Islands

⁵ Department of Food and Nutrition, and Sport Science, Center of Health and Human Performance, University of Gothenburg, Gothenburg, Sweden

For all author emails, please [log on](#).

Journal of the International Society of Sports Nutrition 2015, **12**:25
doi:10.1186/s12970-015-0087-6

Published: 4 June 2015

Abstract

Background

Sodium bicarbonate intake has been shown to improve exercise tolerance, but the effects on high-intensity intermittent exercise are less clear. Thus, the aim of the present study was to determine the effect of sodium bicarbonate intake on Yo-Yo intermittent recovery test level 2 performance in trained young men.

Journal of the
International
Society of
Sports Nutrition
Volume 12

Viewing options

Abstract

Full text
PDF (469KB)
ePUB (48KB)
Additional files

Associated material

PubMed record
Readers'
comments

Related literature

Cited by
Google blog
search
Other articles by
authors
on Google
Scholar

Krstrup P
Ermidis G
Mohr M
on PubMed
Krstrup P
Ermidis G
Mohr M

Method

Thirteen men aged 23 ± 1 year (height: 180 ± 2 cm, weight: 78 ± 3 kg; VO_2 max: 61.3 ± 3.3 ml $\text{O}_2 \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$; means \pm SEM) performed the Yo-Yo intermittent recovery test level 2 (Yo-Yo IR2) on two separate occasions in randomized order with (SBC) and without (CON) prior intake of sodium bicarbonate ($0.4 \text{ g} \cdot \text{kg}^{-1}$ body weight). Heart rate and rating of perceived exertion (RPE) were measured during the test and venous blood samples were taken frequently.

Results

Yo-Yo IR2 performance was 14 % higher ($P=0.04$) in SBC than in CON (735 ± 61 vs 646 ± 46 m, respectively). Blood pH and bicarbonate were similar between trials at baseline, but higher ($P=0.003$) immediately prior to the Yo-Yo IR2 test in SBC than in CON (7.44 ± 0.01 vs 7.32 ± 0.01 and 33.7 ± 3.2 vs 27.3 ± 0.6 mmol $\cdot \text{l}^{-1}$, respectively). Blood lactate was 0.9 ± 0.1 and 0.8 ± 0.1 mmol $\cdot \text{l}^{-1}$ at baseline and increased to 11.3 ± 1.4 and 9.4 ± 0.8 mmol $\cdot \text{l}^{-1}$ at exhaustion in SBC and CON, respectively, being higher ($P=0.03$) in SBC. Additionally, peak blood lactate was higher ($P=0.02$) in SBC than in CON (11.7 ± 1.2 vs 10.2 ± 0.7 mmol $\cdot \text{l}^{-1}$). Blood glucose, plasma K^+ and Na^+ were not different between trials. Peak heart rate reached at exhaustion was 197 ± 3 and 195 ± 3 bpm in SBC and CON, respectively, with no difference between conditions. RPE was 7 % lower ($P=0.003$) in SBC than in CON after 440 m, but similar at exhaustion (19.3 ± 0.2 and 19.5 ± 0.2).

Conclusion

In conclusion, high-intensity intermittent exercise performance is improved by prior intake of sodium bicarbonate in trained young men, with concomitant elevations in blood alkalosis and peak blood lactate levels, as well as lowered rating of perceived exertion.

Keywords: Fatigue; Yo-Yo IR2 performance; Blood pH and lactate; Plasma potassium; Buffer capacity

Sign up to receive new article alerts from *Journal of the International Society of Sports Nutrition*

[Sign up](#)

Related articles/pages on Google on Google Scholar on PubMed

Tools

Download references
Download XML
Order reprints
Post a comment

[Download to ...](#)

Share this article

Citeulike LinkedIn
Email
Del.icio.us
Facebook
Google+ Mendeley
Twitter Reddit

with the latest news and content from JISSN and BioMed Central.

[Sign up](#)

Journal App



[Terms and Conditions](#) | [Privacy statement](#) | [Press](#) | [Information for advertisers](#) | [Jobs at BMC](#) | [Support](#) | [Contact us](#)

© 2015 BioMed Central Ltd unless otherwise stated. Part of Springer Science+Business Media.

Springer

Try out the new beta version of our site

[Take me there](#)