

## PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form ([see an example](#)) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

This paper was submitted to the BMJ but declined for publication following peer review. The authors addressed the reviewers' comments and submitted the revised paper to BMJ Open. The paper was subsequently accepted for publication at BMJ Open.

### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	The evidence underpinning sports performance products: a systematic assessment
<b>AUTHORS</b>	Heneghan, Carl ; O'Neill, Braden; Gill, Peter; Howick, J; Lasserson, Daniel; Cohen, Deborah; Davis, Ruth; Ward, Alison; Smith, Adam; Jones, Greg; Thompson, Matthew

### VERSION 1 - REVIEW

<b>REVIEWER</b>	Noakes, Timothy University of Cape Town, Human Biology  My Unit currently receives funding for studies testing sports supplements for the company DSM and for developing a new sports drink for a South African company. Neither of those products appears on the list of products that have been evaluated in this study.
<b>REVIEW RETURNED</b>	17-Jun-2012

<b>GENERAL COMMENTS</b>	The paper reports a study that is extremely timely. The work has been carefully conducted; the data were appropriately collected and properly analyzed and the analysis does not suffer from any of the limitations of the "studies" that were analyzed.  The conclusions are appropriate and have important implications at many levels which will no doubt be emphasized in other sections of the journal.
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<b>REVIEWER</b>	Fogelholm, Mikael Academy of Finland, Health Research Unit
<b>REVIEW RETURNED</b>	15-Jun-2012

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<b>GENERAL COMMENTS</b>	<p>This study evaluates claims related to products (drinks, equipment, etc.) intended to improve sports performance. The results show that the evidence behind these claims is almost non-existent. I would not consider the result to be very surprising, but I kind of liked the way the study was carried out and reported. Especially the description of procedures was really enjoyable to read. My general concern is if this paper is of adequate general interest for BMJ, or should it rather be in a more specific journal, e.g., Br J Sports Med.</p> <p>I have some additional comments and/or suggestions (some of them are minor):</p> <p>p. 3, line 29: "energy drinks" (if these are the same as, e.g., Red Bull) are not really meant to improve sports performance. They should not be mixed with sports drinks that really intend to be performance enhancing.</p> <p>p. 6, line 41: Is it slightly too much to "demand" systematic reviews. In the end, aren't the claims mostly product-specific and therefore the most relevant data should also be done by using that product.</p> <p>p. 7, line 5: The abbreviation RR is a little strange here. Does it refer to risk ratio? I am more familiar with seeing RR as a measure of real risks (for morbidity or mortality) in epidemiological studies, rather than showing that the prevalence of one thing is almost three times as high as for the other thing.</p> <p>p. 13: Is this table really needed? It is interesting, no doubt, but with a proper reference, all readers can find the original publication with this table, if they are interested.</p> <p>p. 14: 1) were all 3 references found in magazine adverts also appropriate for critical appraisal techniques (the two parallel figures should be as identical as possible); 2) Could you explain what the products with references were?; 3) How many of the 74 studies (bottom box in the right figure) were related to Poweraid?</p> <p>p. 15: My suggestion is to remove Figure 3. It is technically complicated, the data are mostly found elsewhere (Fig. 2 and table 1) and the remaining data could easily be presented simply in the text.</p>
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### VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

The paper reports a study that is extremely timely. The work has been carefully conducted; the data were appropriately collected and properly analyzed and the analysis does not suffer from any of the limitations of the "studies" that were analyzed.

The conclusions are appropriate and have important implications at many levels which will no doubt be emphasized in other sections of the journal.

Response: We thank the reviewer for the comments and have nothing to add

Reviewer: 2

I have some additional comments and/or suggestions (some of them are minor):

p. 3, line 29: "energy drinks" (if these are the same as, e.g., Red Bull) are not really meant to improve sports performance. They should not be mixed with sports drinks that really intend to be performance enhancing.

Response: the review does not contain energy drinks such as Red Bull as there advertising did not specifically include sports performance or recovery claims. To reduce the confusion we have removed the term energy form the introduction it now read as:

'The marketing of sports products has become a multibillion dollar industry, [6] and the consumption of so called energy drinks is increasing year on year [7] but research in this area...'

p. 6, line 41: Is it slightly too much to "demand" systematic reviews. In the end, aren't the claims mostly product-specific and therefore the most relevant data should also be done by using that product.

Response: As a question we feel it is not too demanding to ask for systematic reviews of the relevant information. We feel that it actually should be mandatory. The studies we found are small and often lack power to draw robust conclusions. In addition, the argument is stronger for systematic reviews if only one product underpins a claim. The use of systematic reviews in medical decision making is now seen as mandatory. We perceive this study will initiate a debate about the exact nature of evidence required for claims for sports products. This is also an important point if the evidence for sports products is not only used to target the general public but also to target top end athletes.

p. 7, line 5: The abbreviation RR is a little strange here. Does it refer to risk ratio? I am more familiar with seeing RR as a measure of real risks (for morbidity or mortality) in epidemiological studies, rather than showing that the prevalence of one thing is almost three times are high as for the other thing.

Response: to reduce the confusion we have removed the abbreviation.

The sentence now reads as:

'Nearly three times (423:146) as many sportspersons or teams endorsed products than evidence was made available.'

p. 13: Is this table really needed? It is interesting, no doubt, but with a proper reference, all readers can find the original publication with this table, if they are interested.

We have removed the table (actually figure 1) and referenced it appropriately.

Reference 10

10. \* OCEBM Levels of Evidence Working Group: Jeremy Howick, I.C., Paul Glasziou, Trish Greenhalgh, Carl Heneghan, Alessandro Liberati, Ivan Moschetti, Bob Phillips, Hazel Thornton, Olive Goddard and Mary Hodgkinson. The Oxford 2011 Levels of Evidence 2011 30th May 2012]; Available from: <http://www.cebm.net/index.aspx?o=5653>.

p. 14: 1) were all 3 references found in magazine adverts also appropriate for critical appraisal techniques (the two parallel figures should be as identical as possible); 2) Could you explain what the products with references were?; 3) How many of the 74 studies (bottom box in the right figure) were related to Poweraid?

Response: All three references were appropriate for critical appraisal:

- 1) Saunders MJ, Kane MD and Todd MK. Effects of a carbohydrate-protein beverage on cycling endurance and muscle damage. *Medicine & Science in Sports & Exercise*, 36:1233-1238, 2004
- 2) Seifert J, Harmon J, DeClercq P. Protein added to sports drinks improves fluid retention. *International Journal of Sports Nutrition and Exercise Metabolism*, 16: 421-429, 2006.
- 3) Saunders MJ, Todd MK, Valentine RJ. Inter-study examination of physiological variables associated with improved performance with carbohydrate/protein administration. *Medicine & Science in Sports & Exercise*. 38(5): S113-S114, 2006

They referred to just one product: ACCELERADE

We have added to the text the following (page 5, line 5 of the results)

'we found only 3 (2.7%) references for one product (ACCELERADE) to back up these claims which were appropriate for critical appraisal, and 22 (42%) products which were endorsed by athletes.'

Figure 3 has been removed as per the next point outlined below by the reviewer.

We have added the figures for Powerade as well to the text which is consistent with the overall findings.

We have added the following to Page 6 line 8

'One site ([www.poweradegb.com/](http://www.poweradegb.com/)) provided approximately 1/3rd (46) of the references found, of which 24 (52%) were appropriate for critical appraisal.'

p. 15: My suggestion is to remove Figure 3. It is technically complicated, the data are mostly found elsewhere (Fig. 2 and table 1) and the remaining data could easily be presented simply in the text.

Response: we have removed figure 3 as per the reviewer's suggestion