Abstract

Title: The effect of a high versus low carbohydrate intake on endurance performance
Author: Emma Andersson and Josefine Dahlqvist
Supervisor: Fredrik Bertz
Examiner: Frode Slinde
Programme: Dietician study programme, 180/240 ECTS
Type of paper: Examination paper, 15 hp
Date: May 22, 2013

Background
Carbohydrates play a significant role in the human metabolism, especially during training. Many studies have investigated the effects on different carbohydrate intakes on training performance. The scientific researchers have met a consensus in the fact that a higher intake of carbohydrates compared to a lower carbohydrate intake improves athletic performance. Lately, the increased interest in low carbohydrate diets has despite these recommendations gained followers globally.

Objective
To determine if a higher carbohydrate intake results in a better endurance performance, compared to a lower carbohydrate intake, for adult males and females, measured as time to exhaustion, total distance covered and power output/cadence. To be able to give nutrition recommendations to endurance athletes based on the current scientific evidence and identify if there is need for further research in this area.

Search strategy
The databases used for the literature search were PubMed and Scopus. The search words that were used were carbohydrates, performance and endurance, among others.

Selection criteria
Inclusion criteria: studies on adults over 18 years, randomized controlled trials, human studies, and nutrition interventions lasting at least one day. Exclusion criteria: studies written in other languages than English or Swedish, other current nutrition intervention, studies made solely on intake of a glucose solution ingested before or during exercise, diets with carbohydrate contents between 30 E% and 60 E%, and diets with carbohydrate contents between 3 g/kg bodyweight and 6 g/kg bodyweight.

Data collection and analysis
There were four studies included in this review article. A template from Swedish SBU was used to examine the articles design, population and results. Another grading template was used to determine the scientific evidence of each relevant outcome measure.

Main results
There was a significant difference in improved endurance performance after intake of a high carbohydrate diet compared to a diet low in carbohydrates in three of the studies. One of the studies showed no significant difference between the two diets. All four studies where given the evidence grading ”moderate” and the scientific evidence for the selected measure outcomes were each given a low evidence (++)

Conclusions
It seems that a diet high in carbohydrates compared to a diet low in carbohydrates improves endurance performance. The evidence is however low and more research is needed to further confirm these results.