

Post exercise rehydration: effect of beer consumption on fluid balance

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Objective: To assess the effect of beer consumption, with a range of alcohol content, on fluid balance after exercise-induced dehydration. Hypothesis: Based on the glucose and electrolyte composition of beer, and the blurred effect of alcohol in the...

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Other condition
Study type	Interventional

Summary

ID

NL-OMON37603

Source

ToetsingOnline

Brief title

Post-exercise Rehydration STudy (PRooST)

Condition

- Other condition

Synonym

dehydration, fluid balance

Health condition

dehydratie (na inspanning)

Research involving

Human

Sponsors and support

Primary sponsor: Wageningen Universiteit

Source(s) of monetary or material Support: European hydration institute / Kennisinstituut Bier

Intervention

Keyword: beer, dehydration, exercise, fluid balance

Outcome measures

Primary outcome

The main study parameter will be fluid balance. This will be determined by measuring urine production up to five hours after post-exercise rehydration (t=0,1,2,3,5 hours).

Secondary outcome

Urine samples will be analysed for osmolality and sodium and potassium content.

Body composition (total body water) will be assessed by Bio-Impedance Analysis (BIA/BIS), immediately after exercise and at 2 and 5 hours after the start of rehydration.

For safety purposes, breath alcohol concentration will be assessed up to five hours after post-exercise rehydration (t=0,1,2,3,5 hours). In addition, this assessment will give an indication of the velocity of alcohol degradation by the dehydrated body.

Study description

Background summary

Adequate rehydration after endurance exercise is important. Among amateur team-based sports, it is common to drink moderate to large amounts of alcoholic

beverages, mainly beer, after training or competition. Alcohol is known to increase urine output, which could interfere with adequate rehydration after exercise. It is suggested the diuretic effect of alcohol is blurred when the body is dehydrated. Moreover, rehydration drinks typically consist of water, carbohydrates and electrolytes, i.e. sodium. Beer contains - besides alcohol - water, carbohydrates and a small amount of electrolytes. The final consequences for rehydration and fluid balance after exercise for beer with different alcohol contents are not completely clear. Therefore, the objective of this proposal is to assess the effect of beer consumption, with a range of alcohol content, on fluid balance after exercise-induced dehydration. The rehydration capacity of these beverages is compared with a rehydration drink.

Study objective

Objective: To assess the effect of beer consumption, with a range of alcohol content, on fluid balance after exercise-induced dehydration.

Hypothesis: Based on the glucose and electrolyte composition of beer, and the blurred effect of alcohol in the dehydrated state, it is expected that non-alcoholic and low-alcohol beer result in a comparable fluid balance as a hypotonic glucose-electrolyte rehydration drink, while lager beer (5% alcohol) is associated with an increased urine production and a retarded rehydration, like water.

Study design

Cross-over intervention trial.

Intervention

Participants will receive five test-drinks in a random order: beer (lager), low-alcohol beer, non-alcoholic beer, water and rehydration drink. At least 7 days will be considered between test days.

Study burden and risks

There are minor risks for the participants during this study. Subjects are only mildly dehydrated and receive drinks, equal to their fluid loss directly after exercise. A maximum amount of three alcoholic beverages will be provided during each condition. Participants are not allowed to leave the research facilities until the breath alcohol test is within the accepted range (i.e. 0,22 mg/L expired air, $\sim 0,5$ ‰). The exercise test will result in fatigue, and can give rise to some muscle soreness afterwards. All functional measurements (urine volume, urine osmolality, body weight, body composition (BIA/BIS) and breath alcohol concentration) are non-invasive and risks are therefore minimal. Subjects have to adhere to specific guidelines one day before every test

(standardized diet, no physical activity, overnight fast, no alcohol consumption, drinking at least 2 liters of fluid) and have to fill out a questionnaire for screening purposes. There is no direct (health-related) benefit for the participant. The time investment requested from the participants excluding travel time is in total 37 hours for 6 visits and screening.

Participants that complete the study will receive \approx 180.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age

Adults (18-64 years)

Elderly (65 years and older)

Inclusion criteria

- Age between 18-35 yrs
- Male gender
- Performing sports 1-4 times a week

- Normal BMI (20-25 kg/m²)
- Body weight 70-80kg.
- Healthy (no medication use)
- Used to drink beer.
- No family history of alcoholism.

Exclusion criteria

Unable to perform exercise

- Drinking more than 14 alcoholic beverages a week
- Use of drugs
- Medication use

Study design

Design

Study type:	Interventional
Intervention model:	Crossover
Allocation:	Randomized controlled trial
Masking:	Open (masking not used)
Control:	Active
Primary purpose:	Basic science

Recruitment

NL	
Recruitment status:	Recruitment stopped
Start date (anticipated):	10-09-2012
Enrollment:	12
Type:	Actual

Ethics review

Approved WMO

Date: 29-06-2012

Application type:

First submission

Review commission:

METC Wageningen Universiteit (Wageningen)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL39718.081.12