Potato-based whole-foods versus designer sports nutrition; how potatoes and potato-based products can accelerate recovery following exercise

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In this research study we want to assess whether eating potato-rich food products are a good dietary strategy to recovery both liver and muscle glycogen stores following exhaustive exercise in healthy young endurance trained males over 24 hours.

Ethical review	Approved WMO
Status	Recruiting
Health condition type	Other condition
Study type	Interventional

Summary

ID

NL-OMON53222

Source
ToetsingOnline

Brief title
Potato-Glycogen study

Condition

- Other condition

Synonym
Not applicable

Health condition

Lever en spier onderzoek (geen aandoeningen)

Research involving

Human

Sponsors and support

Primary sponsor: Universiteit Maastricht
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: Liver glycogen, Muscle glycogen, Potatoes, Recovery

Outcome measures

Primary outcome

We will investigate whether (1) the ingestion of potatoes and potato-based food products do not differ from designer sports supplements to replenish muscle and liver glycogen stores throughout 24 hours of post-exercise recovery and (2) whether the ingestion of a higher carbohydrate (70 EN%) diet would replenish muscle and liver glycogen stores to a greater extent compared to a lower carbohydrate (40 EN%) diet throughout 24 hours of post-exercise recovery in endurance trained athletes.

Secondary outcome

Not applicable

Study description

Background summary

Muscle and liver glycogen stores are the most important fuel sources during exhaustive exercise. The repletion of these glycogen stores is essential for recovery after exercise, thereby allowing performance capacity to be restored. Carbohydrate ingestion is required for muscle and liver glycogen repletion in the hours following exercise and it has been suggested that liver and muscle glycogen stores can be replenished within 24 hours when adequate amounts of carbohydrate are ingested. Designer sports recovery drinks and sports

supplements are often recommended and marketed to augment carbohydrate ingestion and, as such, to support recovery in both professional and recreational athletes. However, carbohydrate intake can also be increased by ingesting more high-quality, carbohydrate-rich whole-foods. Potatoes and potato-based products may serve as an alternative to help athletes refill their glycogen stores. Therefore, we propose to investigate the capacity of consuming potatoes and potato-based foods as a dietary strategy to accelerate muscle and liver glycogen stores during recovery from exercise.

Study objective

In this research study we want to assess whether eating potato-rich food products are a good dietary strategy to recovery both liver and muscle glycogen stores following exhaustive exercise in healthy young endurance trained males over 24 hours.

Study design

Randomized cross-over design

Intervention

For this research we assess 3 different diets:
• Diet 1: Standard diet: participants will eat normal standard food products.
• Diet 2: Standard diet will be supplemented with sports supplements: participants will eat/drink additional sports supplements (e.g., sports drinks, gels, bars).
• Diet 3: Standard diet will be supplemented with potato-based products: participants will eat additional potato-based products (e.g., potatoes, mashed potatoes).

Study burden and risks

The burden and risks associated with participation are low. Participants will come to the university four times: 1 screening (2 hours) and 3 experimental trials (each 15 hours). During the screening visit, we will perform a DEXA, a rest metabolism assessment, and determine their VO2max with a cycling test. For 2 days prior to the experimental trials, participants will be asked to keep their diets as consistent as possible and to refrain from consuming alcohol or performing any type of intense physical exercise. We will ask the participants to fill out a medical questionnaire and record their food intake and physical activity for the last 2 days prior to the experimental trials. For the experimental trial, participants will be fasted and will need to refrain from eating or drinking (except for water) from 22h00 the evening before. During the experimental trials, participants will complete an exercise session, additionally they will receive all nutrition and drinks from the researchers

(outside of what we will provide, they are only allowed to drink water). The researchers involved will collect blood samples en perform MRI procedures. For blood collection, insertion of the catheters is comparable to a blood draw and could result in a small hematoma. We will take 51 blood samples (8 mL) during the experimental trial. The total amount of blood drawn (408 mL) is less than the amount of a blood donation (500 mL) and will be completely restored in approximately 1 month. There is no direct benefit for the participants except for their contribution to the scientific knowledge and this will provide the basis for novel nutritional interventions to accelerate post-exercise recovery for elite and recreational athletes, which will be obtained from this study and used in the future.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)

Inclusion criteria

Males, aged between 18 and 40 y
BMI between 18.5 and 30 kg/m2
Well-trained endurance athletes (cyclists, runners, triathletes), with a VO2max > 50 ml/kg/min.
Having given informed consent

Exclusion criteria

Female
Having food allergies related to the products in the study
Diagnosed GI tract disorders or diseases
Diagnosed musculoskeletal disorders
Diagnosed metabolic disorders (e.g., diabetes)
Donated blood 2 months prior to test day
Vegetarian and/or vegan

Study design

Design

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

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	09-01-2025
Enrollment:	12
Type:	Actual

Ethics review

Approved WMO Date:	11-12-2023
Application type:	First submission
Review commission:	METC academisch ziekenhuis Maastricht/Universiteit Maastricht, METC azM/UM (Maastricht)

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	NL84291.068.23