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The effect of a single session compared with three daily sessions of football training on fat levels in the blood following a meal

Submission date
04/03/2019

Recruitment status
No longer recruiting

Registration date
05/04/2019

Overall study status
Completed

Last Edited
26/10/2020

Condition category
Nutritional, Metabolic, Endocrine

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
When people eat high-fat meals, levels of a component of fat called triglycerides increase in their blood. High blood triglyceride levels are linked to an increased risk of cardiovascular (heart and blood circulation) disease. Playing football is a form of exercise that has been shown to have several health benefits, however it is not known what is the most appropriate number of weekly sessions. This study aims to compare the effect of football training on a single day or over three consecutive days on triglyceride, other fat components, insulin and glucose levels in the blood.

Who can participate?
Men aged 20-40 years with no current medical conditions or injuries and in general good health, who are capable of performing intense exercise

What does the study involve?
Participants will be randomly allocated to perform either one football training session (on day 7) or three consecutive days (on days 5, 6 and 7) of football training. On the first visit (day 1), all participants will visit the clinic without having eaten for at least 10 hours. A sample of blood will be taken. Then the participants will consume a high-fat milkshake containing ice cream and cream, with the amount of milkshake adjusted for their body weight. Blood samples will be taken 45 minutes and 2, 4 and 6 hours after the meal. The participants will then do 1 hour of football training on their allocated days. On day 8, they will again visit the clinic without having eaten for at least 10 hours. A sample of blood will be taken. Then the participants will consume a high-fat milkshake containing ice cream and cream, with the amount of milkshake adjusted for their body weight. Blood samples will be taken 45 minutes and 2, 4 and 6 hours after the meal.

What are the possible benefits and risks of participating?
Playing football has been shown to have many health benefits (physical, physiological, psychological and social). There may be a small risk of injury performing the training sessions.

Where is the study run from?
This study will work across two centres, Aspetar Sports Medicine and Orthopaedic Hospital and

the University of Copenhagen. The actual study will be performed and managed from Aspetar Sports Medicine Hospital (Qatar).

When is the study starting and how long is it expected to run for?
August 2014 to August 2018

Who is funding the study?
Aspetar Sports Medicine Hospital (Qatar)

Who is the main contact?
Darren Paul (Exercise Physiologist, Aspetar Sports Medicine Hospital)
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Contact information

Type(s)
Public

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Additional identifiers

Protocol serial number
F2015000112

Study information

Scientific Title
The effects of a single versus three consecutive sessions of football training on postprandial lipaemia

Acronym
FTPL

Study objectives
Performing three consecutive sessions of football training will attenuate postprandial lipaemia more than a single football session

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 23/11/2015 and renewed 20/11/2016, Anti-Doping Lab Qatar Institutional Review Board (PO Box 27775, Doha, Qatar; 974 4413 2900; info.adl@adlqatar.com), ref: E20140000014

Primary study design
Interventional

Study design
Randomised controlled trial

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Hyperlipidemia

Interventions
15 males performed either one (1FOOT; n= 7) or three (3FOOT; n= 8) 60-min football training sessions. On day 1, participants arrived at the laboratory at approximately 08:00 hrs after an overnight fast (>10 h). Following a 15-min seated rest period and debrief, a cannula was inserted into an antecubital vein and a baseline venous sample was collected by a qualified phlebotomist. Participants were then given a high-fat meal, in the form of a Belgian chocolate ice cream (Häagen-Dazs) and whipping cream (Elmlea) shake, with the meal being well tolerated by all participants. On day 1, a blood sample was collected at fasted (0 min) and 0.75, 2, 4, 6 h after the high-fat meal. Participants were then randomly allocated to either 1 day (1FOOT; day 7) or 3 days (3FOOT; days 5, 6, 7) of football training. On day 8, they repeated the high-fat meal and blood sampling for the 6 hours following the meal. To control for confounding variables, participants were instructed to fast for >10 h before arrival to the laboratory for the high-fat meal consumption and subsequent blood sampling, record and replicate the same dietary intake for 24 h before the laboratory procedure, abstain from caffeine and dietary supplements for 24 h before the laboratory procedure, and wake between 06:00 and 07:00 prior to each laboratory trial. Participants were instructed to abstain from exercise training for 1 week prior to testing.

Intervention Type
Behavioural

Primary outcome(s)
1. Postprandial triglyceride levels in blood taken at 0.75, 2, 4 and 6 h after a high-fat meal on days 1 and 8
2. Postprandial insulin levels in blood taken at 0.75, 2, 4 and 6 h after a high-fat meal on days 1 and 8
3. Postprandial glucose levels in blood taken at 0.75, 2, 4 and 6 h after a high-fat meal on days 1 and 8
4. Postprandial non-esterified fatty acid levels in blood taken at 0.75, 2, 4 and 6 h after a high-fat meal on days 1 and 8
5. Postprandial high-density lipoprotein (HDL) levels in blood taken at 0.75, 2, 4 and 6 h after a

high-fat meal on days 1 and 8
6. Postprandial low-density lipoprotein (LDL) levels in blood taken at 0.75, 2, 4 and 6 h after a high-fat meal on days 1 and 8

Key secondary outcome(s)
1. Inflammatory marker (high-sensitivity C-reactive protein [hs-CRP], IL-6, monocytes, macrophages, leukocytes) levels in blood taken at 0.75, 2, 4 and 6 h after a high-fat meal on days 1 and 8
2. Activity profiles recorded during each football training session using a wGT3X-BT actigraph placed on the hip and calculated using the integrated tri-axial accelerometer Freedson vector magnitude equation
3. Subjective rating of perceived exertion assessed within 10 min of completing the training by participants verbally provided their exertion level of the training intervention on the Borg CR10 scale

Completion date
26/08/2018

Eligibility

Key inclusion criteria
1. Healthy males
2. Recreationally active
3. Written consent obtained following detailed instructions by the principal investigator

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Adult

Sex
Male

Total final enrolment
15

Key exclusion criteria
1. Cardiovascular, pulmonary or metabolic disease
2. Contraindications to exercise testing as established by the American College of Sports Medicine
3. Dietary restrictions regarding the meal provided

Date of first enrolment
01/06/2018

Date of final enrolment

01/08/2018

Locations

Countries of recruitment
Qatar

Study participating centre
Aspetar Orthopaedic and Sports Medicine Hospital
Sports City Zone
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Sponsor information

Organisation
Aspetar Orthopaedic and Sports Medicine Hospital

ROR
https://ror.org/00x6vsv29

Funder(s)

Funder type
Government

Funder Name
Qatar Foundation

Alternative Name(s)
Qatar Foundation for Education, Science and Community Development, , QF

Funding Body Type
Private sector organisation

Funding Body Subtype
Trusts, charities, foundations (both public and private)

Location
Qatar

Results and Publications

Individual participant data (IPD) sharing plan

The data sharing plans for the current study are unknown and will be made available at a later date.

IPD sharing plan summary

Data sharing statement to be made available at a later date

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	22/08/2019	26/10/2020	Yes	No