ISRCTN18069414 https://doi.org/10.1186/ISRCTN18069414

The impact of carotenoids and omega-3s on parameters of health and performance in field sports athletes

Submission date 26/11/2026	**Recruitment status** No longer recruiting	[_] Prospectively registered [_] Protocol
Registration date 27/11/2026	**Overall study status** Ongoing	[_] Statistical analysis plan [_] Results
Last Edited 27/11/2026	**Condition category** Other	[_] Individual participant data [X] Record updated in last year

Plain English summary of protocol

Background and study aims
Hurling and camogie are amateur field sports native to Ireland. Match play is a combination of high-intensity intermittent exercise and dynamic skills related to catching the ball high or low, striking the ball from the ground and air, hooking, blocking, and tackling opponents. Considering the visual and physical demands of hurling and camogie match play, in combination with the high incidences of injury in competition and training, effective strategies for improving physical and visual performance, while also promoting recovery, are of substantial interest. As a result, interest in nutritional interventions for improving physical performance, enhancing visual function, and promoting recovery has increased in recent years. This study aims to understand the the impact of combined supplementation with carotenoids and omega-3s on outcome measure related to physical performance, visual function, and recovery in hurling and camogie players.

Who can participate?
Healthy hurling and camogie athletes, currently participating in their sport, aged 17 years and above.

What does this study involve?
This study involves the consumption of a daily dietary supplement containing carotenoids and omega-3s over a 6-month period. Participants are required to complete testing at baseline, 7-weeks, and 6-months, while wearing a wearable sleep tracker over the duration of the trial.

What are the possible benefits and risks of participating?
The possible benefits of participating in this study include:
1. Complementary Whoop wearable devices with 12-months pre-paid membership
2. Eye and vision assessment conducted by qualified optometrists
The possible risks of participating in this study include:
1. Injuries related to participating in exercise protocols
2. Adverse effects of nutritional supplements

Where is the study run from?
This study is run from the Nutrition Research Centre Ireland (NRCI), South East Technological University (SETU), Waterford, Ireland.

When is the study starting and how long is it expected to run for?
January 2026 to January 2027.

Who is funding the study?
This study is being conducted as part of a co-fund PhD program. Therefore, funding costs are covered by SETU Waterford and Maravilla LLC.

Who is the main contact?
Gary Cullinane - gary.cullinane@postgrad.wit.ie
Professor John Nolan - john.nolan@setu.ie

Contact information

Type(s)
Public, Scientific

Contact name
Mr Gary Cullinane

ORCID ID
https://orcid.org/0009-0002-0230-7615

Contact details
Nutrition Research Centre Ireland,
Carriganore House,
SETU West Campus
Waterford
Ireland
X91 K236
+353 (85) 277 6007
gary.cullinane@postgrad.wit.ie

Type(s)
Principal investigator

Contact name
Prof John Nolan

ORCID ID
https://orcid.org/0000-0002-5503-7084

Contact details
Nutrition Research Centre Ireland,
Carriganore House,
SETU West Campus
Waterford
Ireland

X91 K236
+353 (87) 271 7474
john.nolan@setu.ie

Additional identifiers

Study information

Scientific Title
The effect of carotenoid and omega-3 supplementation on carotenoid response, visual performance, exercise performance, muscular recovery, and sleep performance in hurling and camogie athletes: CAMÁN

Acronym
CAMÁN

Study objectives
1. To examine if supplementation with astaxanthin, lutein, zeaxanthin, meso-zeaxanthin, and omega-3s for 6 months increases concentrations in serum, macular pigment, and the skin in hurling and camogie athletes when compared with placebo
2. To examine if supplementation with astaxanthin, lutein, zeaxanthin, meso-zeaxanthin, and omega-3s for 6 months enhances visual function and reaction-time in hurling and camogie athletes when compared with placebo?
3. To examine if supplementation with astaxanthin, lutein, zeaxanthin, meso-zeaxanthin, and omega-3s for 6 months reduces serum biomarkers of muscle damage and inflammation in hurling and camogie athletes when compared with placebo?
4. To examine if supplementation with astaxanthin, lutein, zeaxanthin, meso-zeaxanthin, and omega-3s for 6 months improves sleep quality and quantity in hurling and camogie athletes when compared with placebo?
5. To examine if supplementation with astaxanthin, lutein, zeaxanthin, meso-zeaxanthin, and omega-3s for 6 months influences rates of substrate oxidation in hurling and camogie athletes when compared with placebo?

Ethics approval required
Ethics approval required

Ethics approval(s)
1. Approved 24/09/2024, SETU Research Ethics Committee (Faculty of Health Science South East Technological University Waterford Campus, Waterford, X91 K0EK, Ireland; +353 (0)51 302 000; info@setu.ie), ref: SETU/REC/24/25/009

2. Approved 19/01/2026, SETU Research Ethics Committee (Faculty of Health Science South East Technological University Waterford Campus, Waterford, X91 K0EK, Ireland; +353 (0)51 302 000; info@setu.ie), ref: SETU/REC/25/26/055

Primary study design
Interventional

Allocation
Randomized controlled trial

Masking
Blinded (masking used)

Control
Placebo

Assignment
Parallel

Purpose
Basic science

Study type(s)

Health condition(s) or problem(s) studied
Carotenoid response, visual performance, exercise performance, muscular recovery, and sleep performance in hurling and camogie athletes

Interventions
Participants were provided with an active or placebo supplement.
The active supplement contains astaxanthin (22 mg), lutein (8 mg), meso-zeaxanthin (8 mg), zeaxanthin (1 mg), and omega-3s (265 mg).
Both active and placebo supplements were provide in soft gel capsules.
Participants were asked to consume one capsule daily, ideally with a meal, over a 6-month period.
The placebo supplement contains sunflower-seed oil.
Randomisation followed a permuted block method with blocks of ten to ensure an even balance between groups. The randomisation code list was created by a team member who had not involvement in the study design or interaction with the participants.
Participants received supplement bottles only labelled with their identification numbers.
The randomisation code will only be revealed when the study has been fully completed.

Intervention Type
Supplement

Primary outcome(s)
1. Carotenoid response measured using carotenoid levels in serum and analysed using high-performance liquid chromatography (HPLC), macular carotenoid levels will be measured using dual-wavelength autofluorescence, skin carotenoid levels will be assessed using reflection spectroscopy at baseline, 7-weeks, and 6-months for serum carotenoid levels, and baseline and 6-months for macular and skin carotenoids

2. Visual function measured using visual acuity, contrast sensitivity, and reaction time at baseline and 6-months

Key secondary outcome(s)
1. Sleep performance measured using sleep questionnaires and a wearable sleep tracker at baseline and 6-months

2. Substrate oxidation rates measured using graded-exercise test at baseline and 6-months

3. Blood biomarkers of inflammation and muscle damage measured using Luminex multiplex assays at baseline, 7-weeks, and 6-months

Completion date
09/01/2027

Eligibility

Key inclusion criteria
1. Actively participating in hurling or camogie
2. Healthy individuals
3. Aged 17 years and over

Healthy volunteers allowed
Yes

Age group
Mixed

Lower age limit
17 Years

Upper age limit
50 Years

Sex
All

Total final enrolment
66

Key exclusion criteria
1. Consumption of carotenoid supplements in past 3-months
2. Unable to maintain their current diet throughout the study
3. Fish or shellfish allergy

Date of first enrolment
28/01/2026

Date of final enrolment
09/07/2026

Locations

Countries of recruitment
Ireland

Sponsor information

Organisation
South East Technological University

ROR
https://ror.org/03fgx6868

Funder(s)

Funder type

Funder Name
Maravilla LLC

Funder Name
South East Technological University

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Other files			27/11/2026	No	No
Participant information sheet			27/11/2026	No	Yes