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Effect of fish and omega 3 supplements on the heart health of young adults

Submission date 01/12/2025	**Recruitment status** Recruiting	[X] Prospectively registered [_] Protocol [_] Statistical analysis plan [_] Results [_] Individual participant data [X] Record updated in last year
Registration date 03/12/2025	**Overall study status** Ongoing	
Last Edited 23/01/2026	**Condition category** Circulatory System	

Plain English summary of protocol

Background and study aims
Heart disease is one of the leading causes of death, but research shows that about 75% of cases could be prevented. Omega-3 fats, found in fish, are known to help reduce inflammation and lower the risk of heart disease. A useful measure of omega-3 levels in the body is called the omega-3 index (O3I). People with an O3I above 8% have the lowest risk of heart disease, but most people have an O3I of only 4–5%. Eating fish or taking omega-3 supplements can help increase this level, but it's not clear if current advice is enough to reach the target. This study will look at whether eating fish or taking omega-3 supplements can improve omega-3 levels and blood vessel health in young adults.

Who can participate?
Healthy men and women aged 18–30 who eat very little fish (less than two portions per month) and do not take fish oil or protein supplements can take part. Participants must have an omega-3 index below 6% and not be allergic to seafood.

What does the study involve?
Participants will be randomly placed into one of three groups:
-A group that eats fish meals
-A group that takes omega-3 supplements
-A group that takes placebo supplements
Those in the fish group will visit Ulster University twice a week for 12 weeks to receive two fish-based lunches (about 280g of fish per week). Blood samples will be taken to measure omega-3 levels and assess vascular health.

What are the possible benefits and risks of participating?
You may benefit from improved omega-3 levels and better heart health in the long term. Risks are minimal but include mild discomfort from blood sampling and, for those eating fish, the usual risks linked to seafood (such as allergies, which will be screened for).

Where is the study run from?
The study is run at the Human Intervention Studies Unit at Ulster University, Coleraine (UK)

When is the study starting and how long is it expected to run for?
The study will run for 12 weeks once participants are enrolled.

Who is funding the study?
The study is funded by Northern Ireland Chest Heart and Stroke's Research Grant Programme.

Who is the main contact?
Professor Emeir McSorley
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Contact information

Type(s)
Principal investigator, Scientific, Public

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Additional identifiers

Study information

Scientific Title
The effects of fish consumption and omega 3 supplementation in reducing risk of cardiovascular disease in young adults (CardioFish)

Acronym
CardioFish

Study objectives
The primary aim of this study is to determine the effect of following current guidance for fish consumption and omega 3 supplementation on the O3I of young adults aged between 18-30 years. Secondary aims will explore the effects of fish or omega 3 supplements on the health of young adults including vascular health, markers of vascular inflammation and lipid profiles.

Ethics approval required
Ethics approval required

Ethics approval(s)

approved 02/09/2025, Ulster University Research Governance (Ulster University, Belfast Campus. Room BD-04-005 2-24 York Street, Belfast, BT15 1AP, United Kingdom; +442895365028; researchgovernance@ulster.ac.uk), ref: REC/25/0033

Primary study design
Interventional

Allocation
Randomized controlled trial

Masking
Blinded (masking used)

Control
Placebo

Assignment
Parallel

Purpose
Basic science, Efficacy

Study type(s)

Health condition(s) or problem(s) studied
Cardiovascular disease prevention

Interventions
Arm 1 – 2 portions of fish (280g) per week
Arm 2 – Daily 1g omega 3 supplement – 400mg EPA+ 200mg DHA per day.
Arm 3 – Daily 1g placebo supplement (corn oil)

All three study arms will receive a 12-week intervention. Outcome assessments will be conducted at baseline and at the end of the 12-week intervention period; no additional follow-up beyond 12 weeks is planned. Randomisation will be performed by an independent researcher who is not involved in participant recruitment or assessment. Allocation will be conducted using MINIM software to ensure balanced distribution across study arms.

Intervention Type
Mixed

Primary outcome(s)
1. Omega 3 index: Percentage of EPA and DHA omega-3 fatty acids in red blood cell membranes measured using GC/MS at Baseline (Week 0) and post-intervention (week 12)

Key secondary outcome(s))
1. Polyunsaturated fatty acid status [LA, AA, ALA, EPA, DHA (mg/ml)] measured using GC/MS at Baseline (Week 0) and post-intervention (week 12)

2. Inflammatory status – Cytokine concentration (IL-5, IFN-g, IL-10, IL-1β, IL-4, IL-6, TNF-α (pg/ml)) measured using Validated Immunoassays at Baseline (Week 0) and post-intervention (week 12)

3. Cardiovascular inflammatory markers (Adhesion molecules; ICAM-1, VCAM-1, Selectins (E-Selectin and P-Selectin) measured using Validated Immunoassays at Baseline (Week 0) and post-intervention (week 12)

4. Plasma lipid profile (Triglycerides, HDL, LDL, total cholesterol (mmol/l)) measured using Automated biochemistry analyser at Baseline (Week 0) and post-intervention (week 12)

5. Vascular health measured using Blood pressure, flow mediated dilation (FMD), pulse wave velocity (PWV), and pulse wave analysis (PWA) at Baseline (Week 0) and post-intervention (week 12)

Completion date
21/12/2026

Eligibility

Key inclusion criteria
1. Omega-3 index < 6%
2. Healthy males or females
3. Aged 18–30 years old
4. Low consumers of fish (< 2 portions/month)
5. Willing to consume 2 portions (280 grams) of fish per week
6. Not consuming fish oil supplements
7. Not consuming protein supplements
8. Within a BMI of 18–30 kg/m²
9. Not allergic to seafood

Healthy volunteers allowed
Yes

Age group
Adult

Lower age limit
18 years

Upper age limit
30 years

Sex
All

Total final enrolment
0

Key exclusion criteria
1. Omega-3 index > 6%
2. Regularly consume fish
3. Are allergic to seafood
4. Are taking fish oil supplements (e.g., fish oil, cod oil, krill oil, GLA, or evening primrose) or

protein supplements (e.g., whey protein)
5. Are pregnant or lactating
6. Have existing health conditions such as Diabetes Mellitus or known hypertension
7. Have dietary restrictions resulting in the exclusion of fish (e.g., vegan)

Date of first enrolment
02/02/2026

Date of final enrolment
21/09/2026

Locations

Countries of recruitment
United Kingdom

Northern Ireland

Study participating centre
Nutrition Innovation Centre for Food and Health (NICHE) Ulster University Coleraine
Ulster University, Cromore Road
Coleraine
Northern Ireland
BT521SA

Sponsor information

Organisation
University of Ulster

ROR
https://ror.org/01yp9g959

Funder(s)

Funder type

Funder Name
Northern Ireland Chest Heart and Stroke

Alternative Name(s)

Northern Ireland Chest Heart & Stroke, Northern Ireland Chest Heart & Stroke's, NI Chest Heart & Stroke's, Northern Ireland Chest, Heart and Stroke, nichestheartandstroke, NI Chest Heart & Stroke - Belfast, NICHS

Funding Body Type
Private sector organisation

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

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not expected to be made available