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Effect of an energy-restricted Mediterranean diet, physical activity and behavioral intervention on the primary prevention of cardiovascular disease

Submission date
28/05/2014

Recruitment status
No longer recruiting

Registration date
24/07/2014

Overall study status
Completed

Last Edited
30/06/2025

Condition category
Circulatory System

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

Plain English summary of protocol

Background and study aims
Predimed-plus is a study that will measure how successful an intensive weight-loss lifestyle intervention involving an energy-restricted (calorie controlled) Mediterranean diet (Mediet), promotion of physical activity and behavioral support (intervention group) is compared to a less intensive intervention (control group) also involving a Mediterranean diet but no energy restrictions and no lifestyle or physical activity programmes. The aim is to see whether the more intensive intervention is more likely to result in long-term weight-loss, a reduced risk of developing cardiovascular disease and a greater quality of life for older people with metabolic syndrome (the medical term for the combination of diabetes, high blood pressure and obesity) than when adopting the Mediterranean diet alone.

Who can participate?
Men aged 55 to 75 years and women aged 60-75 years with a body mass index (BMI) ≥27 to <40 kg/m2, no cardiovascular disease and with metabolic syndrome.

What does the study involve?
Participants are randomly allocated into one of two groups. The low-intensity intervention group are given a non-energy restricted Mediet. The intensive intervention group are given an energy-restricted Mediet, physical activity and behavioral support and weight loss goals. Changes in body weight or any event of cardiovascular disease is recorded once a year, as well as other variables of lifestyle, educational achievement, history of illnesses, medication use, physical activity, dietary habits, and electrocardiography, blood pressure, and anthropometric measurements, neuropsychological and quality of life evaluations, and collection of fasting blood samples and morning spot urine.

What are the possible benefits and risks of participating?
Not provided at registration

Where is the study run from?
Human Nutrition Unit, University Hospital of Sant Joan de Reus, Department of Biochemistry and Biotechnology, Pere Virgili Institute for Health Research, Rovira i Virgili University, Reus, Spain (IP: Jordi Salas-Salvadó); Department of Preventive Medicine and Public Health, University of Navarra-Navarra Institute for Health Research (IdiSNA), Pamplona, Spain (IP: Miguel Ángel Martínez-González); Department of Preventive Medicine, University of Valencia, University Jaume I, Conselleria de Sanitat de la Generalitat Valenciana, Valencia, Spain (IP: Dolores Corella); Cardiovascular Risk and Nutrition Research Group, Servicio de Endocrinología, IMIM (Hospital del Mar Medical Research Institute), Barcelona. Departament de Medicina, Universitat Autònoma de Barcelona, Barcelona, Spain (IP: Montse Fitó); Nutritional Epidemiology Unit, Miguel Hernandez University, ISABIAL-FISABIO, Alicante, Spain (IP: Jesús Vioque); Hospital Son Espases (HUSE) and Institute for Health Research Illes Balears (IdISBa), Palma de Mallorca, Spain (IP: Dora Romaguera); Department of Nutrition, Food Sciences, and Physiology, Center for Nutrition Research, University of Navarra, Pamplona, Spain (IP: J.Alfredo Martínez); Department School of Nursing, School of Health Sciences, University of Málaga-IBIMA, Málaga, Spain (IP: Julia Wärnberg); Lipids and Atherosclerosis Unit, Department of Internal Medicine, Maimonides Biomedical Research Institute of Cordoba (IMIBIC), Reina Sofia University Hospital, University of Cordoba, Cordoba, Spain (IP: Jose lopez-Miranda); Department of Internal Medicine, Institut d' Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), Hospital Clínic, University of Barcelona, Barcelona, Spain (IP: Ramon Estruch); Department of Preventive Medicine and Public Health, University of Granada, Granada, Spain (IP: Aurora Bueno-Cavanillas); OSI ARABA, University Hospital Araba, Vitoria, Spain (IP: Fernando Arós); Research Group on Community Nutrition & Oxidative Stress, University of Balearic Islands, Palma de Mallorca, Spain (IP: J.Antonio Tur); Virgen de la Victoria Hospital, University of Málaga, Málaga, Spain (IP: Francisco J. Tinahones); University of Las Palmas de Gran Canaria, Las Palmas, Spain (IP: Lluis Serra-Majem); Biomedicine Institute (IBIOMED); University of León, and Primary Health Care Management of León (Sacyl), León, Spain (IP: Vicente Martín);Department of Family Medicine, Research Unit, Distrito Sanitario Atención Primaria Sevilla, Sevilla, Spain (IP: José Lapetra); Department of Endocrinology, Foundation Jiménez-Díaz, Madrid, Spain (IP: Clotilde Vázquez); Lipids and Vascular Risk Unit, Internal Medicine, University Hospital of Bellvitge, Hospitalet de Llobregat, Barcelona, Spain (IP: Xavier Pintó); Department of Endocrinology, IDIBAPS, Hospital Clinic, University of Barcelona, Barcelona, Spain (IP: Josep Vidal); Nutritional Genomics and Epigenomics Group, Institute IMDEA-Food, CEI UAM+CSIC, Madrid, Spain (IP: Lidia Damiel); Division of Preventive Medicine, University of Jaén, Jaén, Spain (IP: Miguel Delgado-Rodríguez); Department of Endocrinology and Nutrition, Institute for Health Research Hospital Clínico San Carlos (IdISSC), Madrid, Spain (IP: Pilar Matias).

When is the study starting and how long is it expected to run for?
September 2013 to December 2024

Who is funding the study?
Instituto de Salud Carlos III (several grants, Coordinator, jordi.salas@urv.cat), and the European Research Council (Advanced Research Grant to Miguel A. Martínez-Gonzlaéz, mamartinez#unav.es)

Who is the main contact?
1. Dr Jordi Salas-Salvadó
jordi.salas@urv.cat
2. Miguel A. Martínez-Gonzáléz
mamartinez@unav.es

Study website

http://www.predimedplus.com

Contact information

Type(s)
Scientific

Contact name
Dr Jordi Salas-Salvadó

ORCID ID
https://orcid.org/0000-0003-2700-7459

Contact details
Human Nutrition Unit Universitat Rovira i Virgili. C/ Sant Llorenç 21/ Dpto Medicina Preventiva y Salud Pública / Universidad de Navarra. Irunlarrea 1 / Internal Medicine Department Hospital Clinic of Barcelona. Villarroel
170
jordi.salas@urv.cat/ mamartinez@unav.es / restruch@clinic.ub.es
Reus (Tarragona) / Pamplona / Barcelona
Spain
43201 / 31008 / 08036
+34 (0)977759313
jordi.salas@urv.cat

Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
ERC 340918 & FIS PI13/00462

Study information

Scientific Title
Cardiovascular effect of an intensive weight-loss lifestyle intervention based on an energy-restricted traditional Mediterranean diet (Mediet) together promotion of physical activity and behavioral support in comparison with a less intensive program using Mediet, but without energy restriction or other lifestyle changes: a randomized field trial

Acronym
PREDIMED-Plus

Study objectives
An intensive lifestyle intervention with an energy-restricted Mediet, promotion of physical activity, and behavioral support in comparison with Mediet alone, without other lifestyle

changes, will reduce the risk of major cardiovascular outcomes (myocardial infarction, stroke, and cardiovascular mortality), be effective for weight loss and long-term weight-loss maintenance, and improve quality of life in older individuals with metabolic syndrome.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Institutional Review Board of all participating centers

Study design
Randomized controlled trial

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Other

Study type(s)
Prevention

Participant information sheet
Not available in web format, please use the contact details to request a patient information sheet

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

Interventions
Participants are randomly assigned into two equal groups:
1. Low-intensity intervention with a 14-item Mediet (with supplemental extra-virgin olive oil and tree nuts given at no cost for the participant) without energy-restriction, without weight loss goals and without a physical activity program.
2. Intensive intervention with an energy-restricted Mediet (with supplemental extra-virgin olive oil and tree nuts given at no cost for the participant) together with promotion of physical activity, behavioral support and weight loss goals.

All participants will follow a 4-week run-in period to ensure compliance with the protocol. If compliant, they will be randomly allocated to one of the 2 interventions.

Added 04/06/2018:
Each recruiting center randomly assigned candidates in a 1:1 ratio to either the intervention or the control group. Randomisation was performed using a centrally controlled, computer-generated random-number internet-based system with stratification by center, sex, and age categories (<65, 65-70, >70-years) and using blocks of 6 participants. Couples living in the same household who both met eligibility criteria were randomized together as clusters. Consequently the second member of each household was not individually randomised. In the specific cases of

couples in which the spouse was recruited at different times, the last spouse entering the study was assigned (not randomised) to the same study arm than his/her partner.

Intervention Type
Other

Phase
Not Applicable

Primary outcome measure
Current primary outcome measures as of 04/06/2018:
1. A composite endpoint of cardiovascular death, non-fatal myocardial infarction, and non-fatal stroke
2. Changes in body weight
All participants are evaluated yearly for primary and secondary endpoints

Previous primary outcome measures:
1. A composite endpoint of cardiovascular death, non-fatal myocardial infarction, and non-fatal stroke
2. Changes of body weight
3. Changes in quality of life
All participants are evaluated yearly for primary and secondary endpoints

Secondary outcome measures
Current secondary outcome measures as of 15/07/2019:
Death of any cause, changes in waist circumference, and incidence of acute coronary syndrome (unstable angina), coronary revascularization (percutaneous or surgical), atrial fibrillation, peripheral artery disease, heart failure, venous thrombosis, type 2 diabetes mellitus and its complications, dementia, Parkinson disease, major unipolar depression, osteoporotic fractures, cholelithiasis or cholecystectomy, symptomatic gout, transient ischemic attack, cataract, venous thromboembolism or cancer (breast, prostate, lung, colorectal, or stomach) and serum metabolome changes.

Other intermediate outcomes are changes in:
1. Blood pressure
2. Fasting blood sugar
3. Serum lipid profile
4. Markers of inflammation
5. Other intermediate markers of cardiovascular risk
6. Overall diet and nutrient intake
7. Medication use
8. ECGs
9. Cognitive function, quality of life, and psychological and neuropsychological scores
10. Microbiome
11. Epigenetic tags (methylation, miRNA, lncRNA)
12. Genetic polymorphisms
13. Gene expression
13. Taste and odor perception tests

All participants are evaluated yearly for primary and secondary endpoints

Previous secondary outcome measures as of 06/02/2019:
Death of any cause, changes in waist circumference, and incidence of acute coronary syndrome (unstable angina), coronary revascularization (percutaneous or surgical), atrial fibrillation, peripheral artery disease, heart failure, venous thrombosis, type 2 diabetes mellitus and its complications, dementia, Parkinson disease, major unipolar depression, osteoporotic fractures, cholelithiasis or cholecystectomy, symptomatic gout, transient ischemic attack, cataract, venous thromboembolism or cancer (breast, prostate, lung, colorectal, or stomach).

Other intermediate outcomes are changes in:
1. Blood pressure
2. Fasting blood sugar
3. Serum lipid profile
4. Markers of inflammation
5. Other intermediate markers of cardiovascular risk
6. Overall diet and nutrient intake
7. Medication use
8. ECGs
9. Cognitive function, quality of life, and psychological and neuropsychological scores
10. Microbiome
11. Epigenetic tags (methylation, miRNA, lncRNA)
12. Genetic polymorphisms
13. Gene expression
13. Taste and odor perception tests

All participants are evaluated yearly for primary and secondary endpoints

Previous secondary outcome measures as of 04/06/2018:
Death of any cause, changes in waist circumference, and incidence of acute coronary syndrome (unstable angina), coronary revascularization (percutaneous or surgical), atrial fibrillation, peripheral artery disease, heart failure, type 2 diabetes mellitus and its complications, dementia, Parkinson disease, major unipolar depression, osteoporotic fractures, cholelithiasis or cholecystectomy, symptomatic gout, transient ischemic attack, cataract, venous thromboembolism or cancer (breast, prostate, lung, colorectal, or stomach).

Other intermediate outcomes are changes in:
1. Blood pressure
2. Fasting blood sugar
3. Serum lipid profile
4. Markers of inflammation
5. Other intermediate markers of cardiovascular risk
6. Overall diet and nutrient intake
7. Medication use
8. ECGs
9. Cognitive function, quality of life, and psychological and neuropsychological scores

All participants are evaluated yearly for primary and secondary endpoints

Previous secondary outcome measures:
Death of any cause and incidence of angina leading to a revascularization procedure, atrial fibrillation, peripheral artery disease, heart failure, diabetes mellitus and its complications, dementia, Parkinson disease, major unipolar depression, osteoporotic fractures, cholelithiasis or cholecystectomy, symptomatic gout or cancer (breast, prostate, lung, colorectal, or stomach).

Other intermediate outcomes are changes in:
1. Blood pressure
2. Fasting blood sugar
3. Serum lipid profile
4. Markers of inflammation
5. Other intermediate markers of cardiovascular risk
6. Overall diet and nutrient intake

All participants are evaluated yearly for primary and secondary endpoints

Overall study start date
05/09/2013

Completion date
22/12/2024

Eligibility

Key inclusion criteria
1. Participants are community-dwelling high-risk people.
2. Men aged 55 to 75 years and women aged 60 to 75 years
3. Body mass index (BMI) between ≥ 27 y < 40 kg/m2
4. No cardiovascular disease (CVD) at enrolment
5. Who fulfil at least 3 of the criteria for the metabolic syndrome (Alberti et al., 2009). Diabetic participants will represent not more than 25% of the final sample.

Participant type(s)
Patient

Age group
Senior

Lower age limit
55 Years

Upper age limit
75 Years

Sex
Both

Target number of participants
6000

Total final enrolment
6874

Key exclusion criteria

Current exclusion criteria as of 04/06/2018:
1. Illiteracy or inability/unwillingness to give written informed consent or communicate with study staff
2. Institutionalization (the participant is a permanent or long-stay resident in a nursing home)
3. Documented history of previous CVD, including angina; myocardial infarction; coronary revascularization procedures; stroke (either ischemic or haemorrhagic, including transient ischemic attacks); symptomatic peripheral artery disease; ventricular arrhythmia; uncontrolled atrial fibrillation; congestive heart failure (new york heart association class II or IV); hypertrophic cardiomyopathy; or history of aortic aneurysm
4. Active malignant cancer or history of malignancy within the last 5 years (with exception of non-melanoma skin cancer)
5. Impossibility to follow the recommended diet (for religious reasons, swallowing disorders, or other reasons) or to perform physical activity
6. A low predicted likelihood to change dietary habits according to the Prochaska and Diclemente stages of change model (Nigg et al., 1999)
7. Inability to follow the scheduled intervention visits (institutionalized individuals, lack of autonomy, unable to walk, lack of a stable address, travel plans, or other reason that render the subject unable to attend scheduled visits)
8. Body weight loss > 5 kg during the 6 months prior to the screening visit
9. Intention to undergo bariatric surgery in the next 6 months
10. History of very low-caloric diet during the 6 months prior to the screening visit
11. Prior bariatric surgery or indication and willingness to receive a surgical procedure for weight loss in the near future
12. History of inflammatory bowel disease or small bowel resection
13. Obesity of known endocrine origin (with the exception of treated hypothyroidism)
14. Food allergy to any Mediet component
15. Immunodeficiency or HIV-positive status
16. Liver cirrhosis or chronic renal failure
17. Serious psychiatric disorders: schizophrenia, bipolar disease, eating disorders, depression with hospitalization in past 6 months
18. Any severe co-morbid condition with less than 24-month life expectancy
19. Alcohol abuse or addition (total daily alcohol intake >50 g) or drug abuse within the past 6 months
20. History of major organ transplantation
21. Concurrent therapy with immunosuppressive drugs or cytotoxic agents
22. Current treatment with systemic corticosteroids
23. Current use of weight loss medication
24. Concurrent participation in another randomised clinical trial
25. Patients with an acute infection or inflammation (i.e., pneumonia) are allowed to participate in the study 3 months after resolution of their condition
26. Any other condition that may interfere with the completion of the study protocol

Previous exclusion criteria:
1. Unable or unwilling to give written informed consent or communicate with study staff
2. Documented history of previous CVD, including angina; myocardial infarction; coronary revascularization procedures; stroke (either ischemic or haemorrhagic, including transient ischemic attacks); symptomatic peripheral artery disease; ventricular arrhythmia; uncontrolled atrial fibrillation; congestive heart failure (new york heart association class II or IV); hypertrophic cardiomyopathy; or history of aortic aneurysm
3. Active malignant cancer or history of malignancy within the last 5 years (with exception of non-melanoma skin cancer)
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other reasons)
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12. Obesity of known endocrine origin (with the exception of treated hypothyroidism)
13. Food allergy to any Mediet component
14. Immunodeficiency or HIV-positive status
15. Liver cirrhosis or chronic renal failure
16. Psychiatric disorders: schizophrenia, bipolar disease, eating disorders, depression with hospitalization in past 6 months
17. Any severe comorbid condition with less than 24-month life expectancy
18. Alcohol (total daily alcohol intake >50 g) or drug abuse within the past 6 months
19. History of major organ transplantation
20. Illiteracy
21. Concurrent therapy with immunosuppressive drugs or cytotoxic agents
22. Current treatment with systemic corticosteroids
23. Current use of weight loss medication
24. Concurrent participation in another randomised clinical trial
25. Patients with an acute infection or inflammation (i.e., pneumonia) are allowed to participate in the study 3 months after resolution of their condition
26. Any other condition that may interfere with the completion of the study protocol

Date of first enrolment
05/09/2013

Date of final enrolment
05/12/2016

Locations

Countries of recruitment
Spain

Study participating centre
Human Nutrition Unit
University Hospital of Sant Joan de Reus
Department of Biochemistry and Biotechnology
Pere Virgili Institute for Health Research
Rovira i Virgili University

Reus
Spain
-

Study participating centre
Department of Preventive Medicine and Public Health
University of Navarra-Navarra Institute for Health Research (IdiSNA)
Pamplona
Spain
-

Study participating centre
Department of Preventive Medicine
University of Valencia
University Jaume I
Conselleria de Sanitat de la Generalitat Valenciana
Valencia
Spain
-

Study participating centre
Cardiovascular Risk and Nutrition Research Group
Servicio de Endocrinología, IMIM (Hospital del Mar Medical Research Institute)
Barcelona
Spain
-

Study participating centre
Departament de Medicina
Universitat Autònoma de Barcelona
Barcelona
Spain
-

Study participating centre
Nutritional Epidemiology Unit
Miguel Hernandez University
ISABIAL-FISABIO
Alicante
Spain
-

Study participating centre
Hospital Son Espases (HUSE) and Institute for Health Research Illes Balears (IdISBa)
Palma de Mallorca
Spain
-

Study participating centre
Department of Nutrition, Food Sciences, and Physiology
Center for Nutrition Research
University of Navarra
Pamplona
Spain
-

Study participating centre
Department School of Nursing
School of Health Sciences
University of Málaga-IBIMA
Málaga
Spain
-

Study participating centre
Lipids and Atherosclerosis Unit
Department of Internal Medicine
Maimonides Biomedical Research Institute of Cordoba (IMIBIC)
Reina Sofia University Hospital
University of Cordoba
Cordoba
Spain
-

Study participating centre
Department of Internal Medicine
Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS)
Hospital Clínic
University of Barcelona
Barcelona
Spain
-

Study participating centre
Department of Preventive Medicine and Public Health
University of Granada
Granada
Spain
-

Study participating centre
OSI ARABA, University Hospital Araba
Vitoria
Spain
-

Study participating centre
Research Group on Community Nutrition & Oxidative Stress
University of Balearic Islands
Palma de Mallorca
Spain
-

Study participating centre
Virgen de la Victoria Hospital
University of Málaga
Málaga
Spain
-

Study participating centre
University of Las Palmas de Gran Canaria
Las Palmas
Spain
-

Study participating centre
Biomedicine Institute (IBIOMED)
University of León
Primary Health Care Management of León (Sacyl)
León

Spain
-

Study participating centre
Department of Family Medicine
Research Unit
Distrito Sanitario Atención Primaria Sevilla
Sevilla
Spain
-

Study participating centre
Department of Endocrinology
Foundation Jiménez-Díaz
Madrid
Spain
-

Study participating centre
Lipids and Vascular Risk Unit
Internal Medicine
University Hospital of Bellvitge
Hospitalet de Llobregat
Barcelona
Spain
-

Study participating centre
Department of Endocrinology
IDIBAPS
Hospital Clinic
University of Barcelona
Barcelona
Spain
-

Study participating centre
Nutritional Genomics and Epigenomics Group
Institute IMDEA-Food
CEI UAM+CSIC
Madrid

Spain
-

Study participating centre
Division of Preventive Medicine
University of Jaén
Jaén
Spain
-

Study participating centre
Department of Endocrinology and Nutrition
Institute for Health Research Hospital Clínico San Carlos (IdISSC)
Madrid
Spain
-

Sponsor information

Organisation
European Research Council (Belgium) / The Carlos III Health Institute (Instituto De Salud Carlos III) (Spain)

Sponsor details
Place Rogier 16, COV2 24/009 / C. Sinesio Delgado 4
Brussels / Madrid
Belgium / Spain
rtd-erc@ec.europa.eu / oficina.informacion@isciii.es
Brussels / Madrid
Belgium
BE-1049 / ES 28

Sponsor type
Other

Website
http://erc.europa.eu

ROR
https://ror.org/0472cxd90

Funder(s)

Funder type
Research council

Funder Name
European Research Council Advanced Research Grant (Grant Agreement No.: 340918) (Belgium)

Alternative Name(s)
ERC

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location

Funder Name
Instituto de Salud Carlos III

Alternative Name(s)
SaludISCIII, InstitutodeSaludCarlosIII, Instituto de Salud Carlos III | Madrid, Spain, Carlos III Institute of Health, Institute of Health Carlos III, Carlos III Health Institute, ISCIII

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
Spain

Funder Name
Ciberobn, Fis-Coordinated Grant PI13/00462, Rd 06/0045

Results and Publications

Publication and dissemination plan
Not provided at time of registration

Intention to publish date

Individual participant data (IPD) sharing plan

The datasets generated and analyzed during the current study are not expected to be made available outside the core research group, as neither participants' consent forms or ethics approval included permission for open access. However, the researchers will follow a controlled data sharing collaboration model, as in the informed consent participants agreed with a controlled collaboration with other investigators for research related to the project's aims. Therefore, investigators who are interested in this study can contact the PREDIMED Plus Steering Committee by sending a request letter to predimed_plus_scommittee@googlegroups.com. A data sharing agreement indicating the characteristics of the collaboration and data management will be completed for the proposals that are approved by the Steering Committee.

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	13/11/2018		Yes	No
Results article	taste perception and genomics results	01/06/2019	23/04/2019	Yes	No
Results article	results	15/10/2019	16/10/2019	Yes	No
Results article	results	01/11/2019		Yes	No
Results article	results	01/02/2020	24/12/2019	Yes	No
Results article	results	23/12/2019	31/12/2019	Yes	No
Results article	results	01/05/2019	22/01/2020	Yes	No
Results article	results	01/10/2020	19/02/2020	Yes	No
Results article	results	19/02/2020	24/02/2020	Yes	No
Results article	baseline cross-sectional analysis results	26/02/2020	28/02/2020	Yes	No
Results article	results	04/01/2021	10/12/2020	Yes	No
Results article	results	10/12/2020	11/12/2020	Yes	No
Results article	results	06/01/2021	12/01/2021	Yes	No
Results article	results	28/01/2021	22/02/2021	Yes	No
Results article	diet adherence and cardiometabolic risk factors results	01/05/2021	05/05/2021	Yes	No
Results article	gut microbiome analysis results	21/05/2021	24/05/2021	Yes	No
Results article	Data-Driven Clustering results	10/06/2021	14/06/2021	Yes	No
Results article	two-year follow up results	01/06/2021	18/06/2021	Yes	No
Results	Validity of the energy-restricted Mediterranean Diet Adherence Screener	06/07	09/08		

article		/2021	/2021	Yes	No
Results article	substudy results	28/09 /2021	29/09 /2021	Yes	No
Results article		08/02 /2021	05/11 /2021	Yes	No
Results article		29/10 /2021	16/11 /2021	Yes	No
Results article	longitudinal analysis	30/11 /2021	01/12 /2021	Yes	No
Results article	Association between cardiovascular risk factors and depression in participants with metabolic syndrome		14/04 /2022	Yes	No
Results article	Role of NAFLD on the Health Related QoL Response to Lifestyle in Patients With Metabolic Syndrome	29/06 /2022	19/07 /2022	Yes	No
Results article	Impulsivity is longitudinally associated with healthy and unhealthy dietary patterns in individuals with overweight or obesity and metabolic syndrome within the framework of the PREDIMED-Plus trial	08/08 /2022	09/08 /2022	Yes	No
Results article	Association of dietary carbohydrate quality with visceral fat deposition and other adiposity indicators	20/08 /2022	12/09 /2022	Yes	No
Results article	Impact of COVID-19 pandemic on the trial	12/01 /2023	31/01 /2023	Yes	No
Results article	Increase from low to moderate, but not high, caffeinated coffee consumption is associated with favorable changes in body fat	11/02 /2023	06/03 /2023	Yes	No
Results article	Prospective cohort analysis of water intake and hydration status	08/03 /2023	08/03 /2023	Yes	No
Results article	Environmental sustainability	24/05 /2023	30/05 /2023	Yes	No
Results article	Metabolic syndrome criteria and severity and carbon dioxide (CO2) emissions	13/07 /2023	17/07 /2023	Yes	No
Results article	Effect of a 3-year lifestyle intervention on telomere length in participants from PREDIMED-Plus: A randomized trial	10/07 /2023	24/07 /2023	Yes	No
Results article	Association of monetary diet cost of foods and diet quality in Spanish older adults	25/07 /2023	11/08 /2023	Yes	No
Results article	Association of adiposity with COVID-19 risk in older adults with overweight/obesity and metabolic syndrome	13/10 /2023	16/10 /2023	Yes	No
Results article		02/10 /2023	19/10 /2023	Yes	No
Results article		02/10 /2023	19/10 /2023	Yes	No
Results article	Mediterranean diet linked to microbial phenolic metabolites associated with better cognitive performance in an older population	07/12 /2023	18/12 /2023	Yes	No
Results article	Effect of 1-year lifestyle intervention with energy-reduced Mediterranean diet and physical activity promotion on the gut metabolome and microbiota: a randomized clinical trial	28/02 /2024	04/03 /2024	Yes	No
Results article	Beverage consumption and environmental sustainability	03/03 /2024	13/03 /2024	Yes	No
Results article	Associations of Alcohol Consumption With Left Atrial Morphology and Function in a Population at High Cardiovascular Risk	27/03 /2024	28/03 /2024	Yes	No

Results article	sex, APOE genotype, endocannabinoids and cognitive change	12/06/2024	25/06/2024	Yes	No
Results article	Long-term association between water intake and kidney function in a population at high cardiovascular risk	12/08/2024	14/08/2024	Yes	No
Results article	Body composition and CO2 dietary emissions	17/01/2025	04/02/2025	Yes	No
Results article	Pasta consumption and cardiometabolic risks	19/02/2025	20/02/2025	Yes	No
Results article		17/04/2025	23/04/2025	Yes	No
Protocol file		03/04/2018	30/06/2025	No	No
Results article	Secondary analysis of bone mineral density	01/04/2025	30/06/2025	Yes	No
Statistical Analysis Plan	version 2	31/07/2019	30/06/2025	No	No