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Musculoskeletal aging in the Geneva Retirees Cohort

Submission date
13/07/2016

Recruitment status
No longer recruiting

Registration date
21/07/2016

Overall study status
Completed

Last Edited
17/07/2026

Condition category
Musculoskeletal Diseases

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

Plain English summary of protocol
Background and study aims
Musculoskeletal aging, leading to osteoporosis (a health condition where the bone becomes brittle and fragile) and sarcopenia (a condition where muscle loses its mass – so it shrinks – and strength) , results in falls and fractures that largely contribute to mortality (disease and ill-health) and loss of quality of life in the elderly. In order to provide a more complete understanding of bone and muscle aging and a rationale for targeted interventions (treatments) to prevent falls and osteoporotic (bone)fractures, this study aims at identifying the intrinsic and extrinsic determinants of musculo-skeletal aging, and their contribution to quality of life.

Who can participate?
1036 retired community-dwelling healthy volunteers (men and women) from the Geneva area, at the age of 63-67 (Geneva Retirees Cohort (GERICO)).

What does the study involve?
Each participant in the study attends a study visit every three years to assess their current state of bone and muscle health. These are determined by measuring bone mineral density (measuring the amount of minerals in the bone) and the architecture of the bone (structure), muscle mass, how the muscles function and physical performance. Medical conditions are also noted, as are the number of fractures and falls, the participants nutrient intake and how physically active they are.

What are the possible benefits and risks of participating?
Participant will benefit from a comprehensive assessment of their bone and muscle health. No specific risk is expected.

Where is the study run from?
Service of Bone diseases, University Hospitals of Geneva (Switzerland)

When is study starting and how long is it expected to run for?
February 2008 to December 2018

Who is funding the study?
Geneva University Hospitals and Faculty of Medicine Clinical Research Centre (Switzerland)

Who is the main contact?
Dr Emmanuel Biver

Contact information

Type(s)
Public

Contact name
Dr Emmanuel Biver

Contact details
Division of Bone Diseases, Geneva University Hospitals and Faculty of Medicine
4 Rue Gabrielle Perret-Gentil
Geneva 14
Switzerland
1211

Additional identifiers

Study information

Scientific Title
Musculoskeletal aging in the Geneva Retirees Cohort (GERICO): a prospective analysis of its determinants and contribution to fractures and quality of life

Acronym
GERICO (Geneva Retirees Cohort)

Study objectives
Predictors of falls and fractures, two major outcomes of osteoporosis and sarcopenia contributing to age-related disabilities and quality of life alterations, would be identifiable at time of retirement.

Ethics approval required
Old ethics approval format

Ethics approval(s)
1. Central Ethics Committee on Research on human beings of Geneva University Hospitals, 17/08/2008, ref: 08-036 (Psy 08-007)
2. Central Ethics Committee on Research on human beings of Geneva University Hospitals, 04/05/2012, ref: 11-256 (Psy 11-031)
3. Geneva Cantonal Committee of Research Ethics, 08/07/2015, ref: CER 15-133

Primary study design
Observational

Study design
Prospective single-center observational cohort study

Study type(s)
Prevention

Health condition(s) or problem(s) studied
Musculoskeletal diseases

Interventions
The Geneva Retirees Cohort (GERICO) is a prospective observational cohort study of community-dwelling women and men recruited between 2008 and 2011 at the age of 65±1.4 yrs and followed longitudinally every 3 years after their first visit to assess the determinants of bone and muscle health alterations with aging. A second visit (follow-up 1) was initiated in 2012 and completed in 2014, and a third visit (follow-up 2) is undergoing since August 2015 until 2018.

Participants are assessed at each visit for:
1. Medical conditions, fractures and falls history, nutrition, physical activity.
2. Bone mineral density and micro-architecture
3. Muscle mass and function and physical performance (from second visit)
4. Blood tests

Intervention Type
Other

Primary outcome(s)
Incident fractures, assessed by face-to-face or and auto-administered questionnaires (clinical fractures) and vertebral fracture assessment (VFA) by DXA (morphometric vertebral fractures) at follow-up 1 (after 3 years) and 2 (after 6 years). Written confirmation (eg, discharge summary, radiologist report) will be requested.

Key secondary outcome(s)
1. Bone phenotype at baseline, follow-up 1 (after 3 years) and 2 (after 6 years)
1.1. Bone mineral density using DXA (lumbar spine, hip, radius)
1.2. Bone microstructure and strength using high resolution peripheral computerized tomography (HR-pQCT) at distal radius and tibia
2. Muscle phenotype at follow-up 1 and 2
2.1. Muscle mass and appendicular lean mass adjusted for height mass (kg/m2) using DXA.
2.2. Muscle function and physical performance
3. Falls in the past years of follow-up 1 and 2
4. Genotyping at baseline using exome chip
5. Biochemical measurements of bone and mineral metabolism at baseline, follow-up 1 and 2.
6. Nutrition (calcium and protein intakes) using a food frequency questionnaire at baseline, follow-up 1 and 2
7. Physical activity using a face-to-face administered questionnaire at baseline, follow-up 1 and 2
8. Ten-year fracture probability using FRAX tool at baseline, follow-up 1 and 2
9. Assessment of quality of life using auto-administered questionnaires at follow-up 2

Completion date
31/12/2018

Eligibility

Key inclusion criteria
1. Recently retired workers from the Geneva area
2. Both genders
3. Age 63 to 67 years
4. Rural and urban communities

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
63 Years

Upper age limit
67 Years

Sex
All

Total final enrolment
853

Key exclusion criteria
1. History of cancer treated in the past 5 years
2. Chronic renal failure
3. Chronic liver or lung disease
4. Current corticosteroid therapy
5. Primary hyperparathyroidism
6. Paget disease of bone
7. Malabsorption
8. Any neurological or musculoskeletal condition affecting skeletal health

Date of first enrolment
22/07/2008

Date of final enrolment
15/10/2014

Locations

Countries of recruitment
Switzerland

Study participating centre
Service of Bone Diseases, Department of Internal Medicine Specialties, Geneva University Hospital
4 Rue Gabrielle Perret-Gentil
Geneva 14
Switzerland
1211

Sponsor information

Organisation
Division of Bone Diseases, Geneva University Hospitals and Faculty of Medicine

ROR
https://ror.org/01m1pv723

Funder(s)

Funder type
Hospital/treatment centre

Funder Name
Geneva University Hospitals and Faculty of Medicine Clinical Research Centre

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?
Results article		01/09/2013		Yes	No
Results article		01/08/2015		Yes	No
Results article		01/11/2016		Yes	No

Results article		01/02/2017		Yes	No
Results article		01/02/2018		Yes	No
Results article		01/08/2018		Yes	No
Results article		01/10/2020	20/07/2020	Yes	No
Results article		21/03/2022	05/08/2024	Yes	No
Results article		17/06/2026	17/07/2026	Yes	No
Other publications	Development of a personalized fall rate prediction model	30/03/2023	31/03/2023	Yes	No