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Benefits of tai chi training vs strength training combined with the mental stimulation of an ICOPE program on physical and mental functional capacity in older adults

Submission date
15/05/2025

Recruitment status
No longer recruiting

Registration date
03/06/2025

Overall study status
Ongoing

Last Edited
02/06/2025

Condition category
Other

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
As people get older, staying healthy and independent becomes more important. The World Health Organization has a plan called ICOPE (Integrated Care for Older People) to help older adults stay active and live independently for as long as possible. This plan focuses on five key areas: thinking and memory, movement, nutrition, senses (like vision and hearing), and emotional health.
This study is looking at whether two types of exercise (Tai Chi and strength training) combined with mental exercises can help improve health in older adults. Researchers want to see how these activities affect things like body health, memory, mood, and quality of life.

Who can participate?
Adults aged 60 to 74 years who are generally healthy, with no serious physical or memory problems, and who haven't taken anti-inflammatory or antioxidant supplements in the past 3 months.

What does the study involve?
Participants will be randomly placed into one of three groups:
1. Tai Chi with mental exercises
2. Strength training with mental exercises
3. A control group that doesn't do either program
Before starting, and again at 6 and 12 months, participants will have health checks including blood tests, body measurements, heart tests, and assessments of memory, mood, and quality of life.
Those in the exercise groups will:
1. Do 60 minutes of physical activity, 4 days a week
2. Attend a two-hour mental stimulation session once a week
All participants will receive a smart bracelet to track their physical activity and sleep.

What are the possible benefits and risks of participating?
Participants in the exercise groups may improve their strength, memory, mood, sleep, and overall well-being.
There are no major risks, as all exercise sessions are supervised. Health checks will be done before each session, and any discomfort will be addressed by medical staff.

Where is the study run from?
The study is being conducted at the Gerontology Research Unit, Faculty of Higher Studies Zaragoza, National Autonomous University of Mexico (UNAM), in Mexico City.

When is the study starting and how long is it expected to run for?
February 2024 to December 2026.

Who is funding the study?
The study is funded by the National Autonomous University of Mexico (UNAM), through its General Management of Academic Personnel Affairs (DGAPA), under the PAPIIT Project IN307424.

Who is the main contact?
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Type(s)
Public, Scientific, Principal investigator

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Additional identifiers

Study information

Scientific Title
Effect of tai chi training vs strength training combines with mental stimulation on physical and cognitive functional capacity in older adults within the framework of ICOPE

Study objectives

Considering the scientific evidence on the effect of physical exercise combined with mental stimulation, we infer that the group participating in Tai Chi training combined with cognitive stimulation will show a significantly greater effect on clinical, anthropometric, biochemical, body composition, affective, well-being and quality of life parameters linked to physical and cognitive functional capacity than the group that performs Strength Exercise combined with the mental stimulation program within the framework of ICOPE.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 29/08/2023, Research Ethics Committee of the FES Zaragoza, UNAM (Batalla 5 de Mayo s/n esquina Fuerte de Loreto, Colonia Ejército de Oriente, Iztapalapa, Mexico City, 09230, Mexico; +52 55 5623 0724; etica.enlace@zaragoza.unam.mx), ref: FESZ/CEl/1/1/8/21/23

Primary study design
Interventional

Study design
Quasi-experimental interventional non randomized study

Study type(s)
Prevention

Health condition(s) or problem(s) studied
Physical and mental functional capacity in older adults

Interventions
All participants provide written informed consent before being included in the study. Groups will be randomly assigned using the Oxford Minimization and Randomization (OxMaR) software.

Group 1: Tai Chi combined with mental stimulation: taught over 8 weeks, Tai Chi 8-form and later 24-form training. It will be taught 4 days a week in 60-minute sessions in person. In addition, the class will be filmed so that people who cannot attend the in-person session can do the exercise at home.

Group 2: Strength training combined with mental stimulation: Multimodal exercise, including progressive strength training and other exercise components (balance, flexibility, and aerobic training), as recommended in the ICOPE guidelines. These sessions will be taught four days a week in 60-minute in-person sessions. In addition, the class will be filmed so that people who cannot attend the in-person session can do the exercise at home.
Physical training sessions design:
1. Warming: 5 minutes of joint lubrication and 5 minutes of activation exercise to increase heart rate (5 minutes).
2. Main exercise: This exercise will work on coordination, strength, and endurance, targeting the arms, legs, back, and other parts of the body (40 minutes).
3. Cool-down: Stretching and breathing exercises to improve flexibility and bring the body into a relaxed state (10 minutes).

Group 3: Older adults who are unable to participate in the physical exercise and mental stimulation program but who agree to participate in baseline, 6-month, and 12-month measurements of the study variables.

Mental stimulation program:
The program developed at the Gerontology Research Unit of the FES Zaragoza, UNAM, will be implemented. The program consists of 24 one-hour sessions once a week and includes activities to prevent and reverse mild cognitive impairment, taking into account the participants' sociocultural context. These activities include tasks to strengthen attention, executive functions, sensory stimulation, and elements of reminiscence and counselling therapy.

Each session follows the same format:
Step 1. Start: review of homework assigned in the previous session
Step 2. Main activity: group or individual exercise(s) to stimulate cognitive functions (analysis of a story, biography of a famous person, learning a song, analysis of a painting, film, and math exercises).
Step 3. Closing of the session: analysis of the activity carried out (participants' experience, guided by the workshop coordinator), assignment of homework to be completed throughout the week at home.

Intervention Type
Mixed

Primary outcome(s)
1. Cognitive functions measured using the Neuropsychological Assessment Battery: (i) Verbal fluency by category (animals); (ii) Memory using a 10-word list; (iii) Praxias; (iv) Trail Making tests A and B; (v) Montreal Cognitive Assessment (MoCA).
2. Physical performance assessed using the Short Physical Performance Battery (SPPB).
3. Body composition assessed using single-frequency bioelectrical impedance (BIA) using RJL equipment.
4. Muscle strength assessed using a Jamar handheld hydraulic dynamometer with a measurement range of 0 to 100 kg.
5. Biochemical markers of oxidative stress and inflammation: total pro-oxidant capacity, total antioxidant capacity, and markers of chronic inflammation (IL-1, IL-6, IL-8, IL-10, TNF-α).
All measured at 12 months

Key secondary outcome(s)
1. Psychological variables and sleep: depressive symptoms, sleep, well-being, and quality of life will be assessed according to standardized protocols at the Gerontology Research Unit.
2. Advanced activities of daily living: The questionnaire to assess advanced activities of daily living developed by Dias et al. (2019) will be administered.
All measured at 12 months

Completion date
31/12/2026

Eligibility

Key inclusion criteria
1. Adults aged 60 to 74 years.
2. No uncontrolled chronic non-communicable diseases.

3. No severe cognitive problems assessed with the Montreal Cognitive Assessment (MoCa) scale.
4. No terminal illnesses.
5. Sedentary in the past 6 months (less than 60 minutes of moderate-intensity aerobic activity per week and no regular resistance training).

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
60 Years

Upper age limit
74 Years

Sex
All

Key exclusion criteria
1. Older adults who do not wish to participate in the study.
2. Who do not have signed informed consent.
3. With uncontrolled chronic non-communicable diseases.
4. With limitations in physical or cognitive functional capacity.

Date of first enrolment
06/06/2024

Date of final enrolment
18/09/2024

Locations

Countries of recruitment
Mexico

Study participating centre
Gerontology Research Unit, FES Zaragoza (Unidad de Investigación en Gerontología, FES Zaragoza, UNAM).
Batalla 5 de Mayo s/n esquina Fuerte de Loreto, Colonia Ejército de Oriente, Iztapalapa
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Sponsor information

Organisation
Universidad Nacional Autónoma de México

ROR
https://ror.org/01tmp8f25

Funder(s)

Funder type
University/education

Funder Name
Universidad Nacional Autónoma de México

Alternative Name(s)
National Autonomous University of Mexico, National Autonomous University, Universidad Nacional Autónoma, National University of Mexico, UNAM

Funding Body Type
Government organisation

Funding Body Subtype
Universities (academic only)

Location
Mexico

Results and Publications

Individual participant data (IPD) sharing plan
Datasets generated or analyzed during this study will be included in the subsequent publication of the results.

IPD sharing plan summary
Published as a supplement to the results publication