

Informed Consent Form

Study Title: Effects of resistance-based exercise snacks with varying fragmentation patterns on lower limb function and executive cognition in pre-frail older adults

Principal Investigator: [Fanyongzhao], PhD

Institution: [Capital University of Physical Education and Sports]

Funding Source: [Self-funded]

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1: Introduction

You are invited to participate in a research study. Before you decide whether to participate, please read the following information carefully. You may ask the research team any questions you have.

Your participation is completely voluntary. Whether you participate or not will not affect your regular services or medical care at this institution.

2: Study Purpose

The purpose of this study is to compare the effects of four different fragmentation patterns of a three-exercise resistance snack (sit-to-stand, squat, and heel raise) on lower limb strength, balance, and cognitive function in pre-frail older adults.

Pre-frailty is an intermediate state between health and frailty that can be reversed through exercise intervention. Exercise snacks refer to distributing daily exercise volume into multiple short bouts, each lasting from a few tens of seconds to a few minutes.

This study will help determine: for pre-frail older adults, given the same daily exercise volume, is it better to distribute it into multiple short bouts or complete it all at once?

3: Study Procedures

If you agree to participate, you will be randomly assigned (like drawing lots) to one of four groups:

Group	Exercise Mode	Bouts per Day	Duration per Bout
Group 1	1 sit-to-stand + 1 squat + 1 heel raise per bout	15 times/day	~30 seconds
Group 2	3 sit-to-stand + 3 squat + 3 heel raise per bout	5 times/day	~90 seconds
Group 3	5 sit-to-stand + 5 squat + 5 heel raise per bout	3 times/day	~2.5 minutes
Group 4	15 sit-to-stand + 15 squat + 15 heel raise per bout	1 time/day	~7.5 minutes

All groups have the same total daily exercise volume (15 repetitions per exercise, 45 total repetitions across three exercises).

Study Duration: 8 weeks

Study Flow:

1. **Screening (Week 0):** We will conduct the following assessments:
 - Basic information and health questionnaire (~10 minutes)
 - Cognitive screening (MMSE, ~10 minutes)
 - Frailty assessment (grip strength, gait speed, etc., ~15 minutes)
2. **Baseline Testing (Week 0):** If eligible, you will complete:
 - 30-second chair stand test
 - Timed Up and Go test
 - Balance tests
 - Cognitive function tests (Stroop, Trail Making Test)
 - Falls efficacy questionnaire
3. **Intervention (Weeks 1-8):** You will perform daily exercises according to your assigned group. We will provide:
 - Demonstration videos
 - Daily exercise log
 - Weekly video check (1 time per week) to ensure correct technique
4. **Mid-Intervention Testing (Week 4):** Repeat some physical and cognitive tests

(~30 minutes)

5. **Post-Intervention Testing (Week 8):** Repeat all tests and complete satisfaction questionnaire (~45 minutes)

What we ask from you:

- Perform daily exercises as instructed
- Complete the daily exercise log
- Participate in weekly video check (via WeChat)
- Attend on-site testing at Week 4 and Week 8

4: Potential Risks and Discomforts

The exercises in this study are low-to-moderate intensity bodyweight exercises with low risk. However, the following may occur:

Possible Discomfort	Likelihood	Management
Muscle soreness (normal post-exercise soreness)	Common	Resolves with rest; heat therapy may help
Fatigue	Common	Ensure adequate rest; exercise within your limits
Mild joint discomfort	Less common	Adjust movement range; stop if necessary
Dizziness	Less common	Sit down immediately; monitor blood pressure
Fall	Rare	Perform exercises with family member present; hold chair back

Safety Measures:

- All exercises have regression options (easier versions)

- We recommend performing exercises with a family member present
- We provide a Borg CR-10 scale card and teach you self-monitoring
- You may withdraw from the study at any time if you experience severe discomfort

5: Potential Benefits

Direct benefits: This study may not directly improve your health condition. However, indirect benefits may include:

- Free 8-week professional exercise guidance
- Free comprehensive physical and cognitive function assessments (3 times)
- Understanding your own physical function status

Social benefits: The results of this study will help scientists understand which exercise pattern is most suitable for pre-frail older adults, providing evidence for future exercise guidelines.

6: Alternatives

If you choose not to participate, you may:

- Maintain your usual daily activities
- Participate in regular senior fitness activities in your community
- Consult your doctor for other exercise recommendations

7: Confidentiality

We will protect your privacy to the extent permitted by law. Your personal information will be protected as follows:

- All data will be stored using codes, not your name
- Only research team members will have access to raw data
- When study results are published, no information that could identify you will be disclosed

Study data may be reviewed by:

- Institutional Review Board
- Clinical trial registry ([ClinicalTrials.gov](https://clinicaltrials.gov))

These entities also comply with confidentiality requirements.

8: Voluntary Participation and Withdrawal

- Your participation is completely voluntary
- You have the right to withdraw from this study at any time without giving a reason
- Withdrawal will not affect any services or care you are entitled to at this institution
- If you decide to withdraw, please notify the research team. Data already provided will be retained for analysis if you agree, or destroyed if you disagree

Reasons the researcher may terminate your participation:

- Adherence rate <50% for two consecutive weeks
- Occurrence of a serious adverse event
- Inability to comply with study requirements

9: Costs and Compensation

- All assessments and exercise guidance in this study are **free**
- **No payment is required** to participate in this study
- **No financial compensation** is provided for participation

10: Contact Information

If you have any questions about this study or experience any study-related issues, please contact:

Principal Investigator:

Phone:

Email:

If you have questions about your rights as a research participant or wish to file a complaint, please contact:

Institutional Review Board: [Capital University of Physical Education and Sports]

Phone: [13051065318]

Address: [No. 11, Beisanhuan West Road, Haidian District, Beijing]

11: Consent Statement

I have read and understood the above information. I have had the opportunity to ask questions and have received satisfactory answers. I agree to participate in this study.

Participant Signature: _____

Participant Name (Printed): _____

Date: _____

Researcher Declaration: I have fully explained the content of this study to the participant, including its purpose, procedures, risks, benefits, and alternatives. I confirm that the participant understands the above information.

Researcher Signature: _____

Researcher Name (Printed): _____

Date: _____