Participant Information Sheet

Study public title	Can personalized nutrition plus resistance training improve muscle mass and function in older adults at risk of sarcopenia?
Scientific title	Effects of precision nutrition combined with structured resistance training on muscle mass and function in older adults at risk of sarcopenia: a randomized controlled trial
Short title	Precision nutrition and resistance training in sarcopenia
Version/date	Version 1.0 - 15 January 2026
Principal investigator	Yan Shi, Associate Professor, School of Physical Education, University of Sanya
Ethics reference	IRB-2026-001

Invitation

You are invited to consider taking part in a research study about maintaining muscle mass and physical function in older adults who are at risk of sarcopenia. Please read this information carefully before deciding. You may discuss it with family, friends or a healthcare professional. Ask the study team about anything that is unclear.

Why is this study being done?

Older adults can lose muscle strength and muscle mass, which can make everyday activities more difficult. Resistance training can improve strength, while adequate dietary protein may support muscle adaptation. This study compares the same structured resistance-training programme in two groups. One group receives individualized PRIME nutrition support, while the other receives standard non-personalized nutrition guidance. The study aims to determine whether the individualized nutrition approach provides additional benefit.

Why have I been invited?

You may be eligible because you are aged 65 years or older, live in the community, and screening suggests that you are at risk of or have probable sarcopenia. Eligibility includes an assessment of muscle strength, physical activity, dietary protein intake, medical safety and kidney function.

Do I have to take part?

No. Participation is voluntary. If you decide not to participate, your usual healthcare and services will not be affected. If you take part, you may withdraw at any time without giving a reason. Data collected before withdrawal may be retained and used in de-identified form where permitted by the approved study procedures and applicable research-governance requirements.

What will happen if I take part?

After screening and written consent, baseline measurements will be completed and you will be assigned by chance to one of two groups. Randomization is stratified to help balance sex and baseline protein intake between the groups. Outcome assessors will not be told which group you are in.

What will both groups do?

Both groups complete supervised structured resistance training for 12 weeks, three sessions per week, for approximately 60 minutes each session. Exercises include leg press, knee extension, hamstring curl, calf raise, chest press, seated row, overhead press and loaded sit-to-stand. Loads begin at a moderate level and are increased gradually according to performance and safety. Attendance, exercise load, repetitions and any symptoms are recorded.

What is different in the PRIME nutrition group?

The PRIME group receives an individualized protein prescription from a trained dietitian. The usual target is about 1.2 g of protein per kg of body weight per day, with adjustment up to 1.5 g/kg/day where appropriate. Advice also covers spreading protein across three main meals and consuming protein after exercise. Three-day food records are reviewed every 2 weeks. If intake remains below target, counselling is intensified and a food-first protein top-up may be recommended.

What does the control group receive?

The control group receives the same resistance-training programme and the same schedule of nutrition contacts, but nutrition advice is general and is not individualized by body weight or meal-level targets. Control participants complete the same food records so that study measurements are comparable between groups.

What measurements will be taken?

At baseline and week 12, skeletal muscle mass is estimated using bioelectrical impedance analysis and handgrip strength is measured using a digital hand dynamometer. Gait speed, five-times sit-to-stand, Timed Up-and-Go and the Short Physical Performance Battery are also assessed. Food records are collected every 2 weeks. Exercise attendance and training progression are recorded throughout the programme.

What are the possible benefits?

You may improve your strength, muscle mass, physical function, exercise confidence or dietary habits. These benefits cannot be guaranteed. Information from the study may help improve future nutrition and exercise programmes for older adults at risk of sarcopenia.

What are the possible risks or disadvantages?

Resistance exercise may cause temporary muscle soreness, fatigue or joint discomfort. Less commonly, people may experience a strain, fall, dizziness or other exercise-related symptom. Exercise is supervised, technique is monitored and loads are progressed gradually. You should tell staff immediately about pain, chest discomfort, unusual shortness of breath, dizziness or any other concerning symptom.

Increasing protein intake can cause gastrointestinal discomfort in some people. People with moderate-to-severe renal impairment are excluded because higher protein intake may not be appropriate. Nutrition recommendations are individualized and can be adjusted if tolerance or medical circumstances change.

Will my information be confidential?

Yes. Study records will be identified using study codes where practicable. Personal information will be accessible only to authorized members of the research team and institutional oversight bodies when required. Research results will be reported in grouped or de-identified form so that individual participants are not identified. Records will be stored securely in accordance with University of Sanya research-governance requirements and applicable law.

What happens if I withdraw?

You may stop study visits, nutrition contacts or exercise sessions at any time. The research team will discuss whether information already collected may continue to be used in de-identified form and whether a final safety contact is appropriate.

What will happen to the results?

Results may be published in scientific journals, presented at conferences and entered in a public clinical-trial registry. No publication or registry record will identify you personally. De-identified study data may be shared for legitimate research purposes only when permitted by ethics, confidentiality and institutional governance requirements.

Who has reviewed the study?

The study was approved by the Ethics Committee of University of Sanya on 15 January 2026, reference IRB-2026-001. Institutional ethics/research-governance contact: University Research Office, University of Sanya, No. 191 Xueyuan Road, Jiyang District, Sanya, Hainan 572022, China; telephone +86 898 88386011; email research@sanyau.edu.cn.

Who can I contact?

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Funding and conflicts of interest

Funding: None. Conflict of interest: None.