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Diagnosis and Classification of Sarcopenia: The Singapore Multidisciplinary Consensus Recommendations on Muscle Health in Older Adults

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Objectives

- What is Sarcopenia?
- The 4 Steps in Diagnosis of Sarcopenia
- How to Classify Sarcopenia

Disclosure

- Disclosures for **Samuel TH Chew**:
  - Honoria for speaking engagement from Abbott

Consensus Recommendations On Muscle Health in Older Adults

- Multidisciplinary
- Pragmatic
- Comprehensive
- Continuum of Care
- Framework for Research

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BMC Geriatrics

RESEARCH ARTICLE Open Access

Singapore multidisciplinary consensus recommendations on muscle health in older adults: assessment and multimodal targeted intervention across the continuum of care

Samuel T. H. Chew[1,2*], Geetha Kayambu[3], Charles Chin Han Lew[4], Tze Pin Ng[5], Fangyi Ong[4], Jonathan Tan[6], Ngiap Chuan Tan[7] and Shuen-Loong Tham[8,9]

Chew STH, Kayambu G, Lew CCH, et al. Singapore multidisciplinary consensus recommendations on muscle health in older adults: assessment and multimodal targeted intervention across the continuum of care. BMC Geriatr. 2021;21(1):314.

What is Sarcopenia?

Sarcopenia

- Rosenberg 1988
- Derived from Greek
- Used to denote "*involuntary loss of skeletal muscle mass and consequently of strength*" - Rosenberg
- Muscle Strength Better Predictor of Health Outcomes and Muscle Function
- Primacy of Muscle Strength

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How to Diagnose Sarcopenia in the Community Setting?

Diagnosis of Sarcopenia: 4 Step Process

Case Finding

Assess Muscle Strength

Assess Muscle Mass

Assess Physical Performance

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Step 1: Case Finding

- **Healthy Patients**
  - SARC-F Questionnaire

- **Patients with Pre-existing Medical Conditions**
  - Very elderly
  - Malnutrition
  - Frailty
  - Cognitive impairment
  - Chronic Illness

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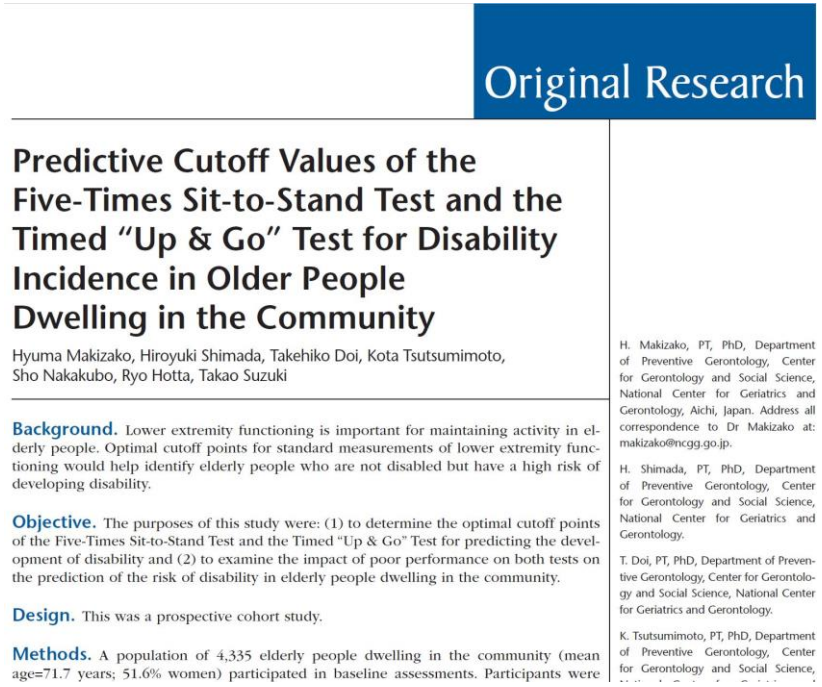
Step 2: Assess Muscle Strength

- **Handgrip Strength**
  - Most commonly used
- **5 Chair Stand Test**
  - Surrogate Measure Lower Limb Strength
  - Makizako et al
    - 4,335 participants ≥65
    - 2 years follow up
    - 5CST ≥10s
      - poor lower limb function
      - predicts future disability and need for care



Original Research

Predictive Cutoff Values of the Five-Times Sit-to-Stand Test and the Timed "Up & Go" Test for Disability Incidence in Older People Dwelling in the Community

Hyuma Makizako, Hiroyuki Shimada, Takehiko Doi, Kota Tsutsumimoto, Sho Nakakubo, Ryo Hotta, Takao Suzuki

Background. Lower extremity functioning is important for maintaining activity in elderly people. Optimal cutoff points for standard measurements of lower extremity functioning would help identify elderly people who are not disabled but have a high risk of developing disability.

Objective. The purposes of this study were: (1) to determine the optimal cutoff points of the Five-Times Sit-to-Stand Test and the Timed "Up & Go" Test for predicting the development of disability and (2) to examine the impact of poor performance on both tests on the prediction of the risk of disability in elderly people dwelling in the community.

Design. This was a prospective cohort study.

Methods. A population of 4,335 elderly people dwelling in the community (mean age=71.7 years; 51.6% women) participated in baseline assessments. Participants were

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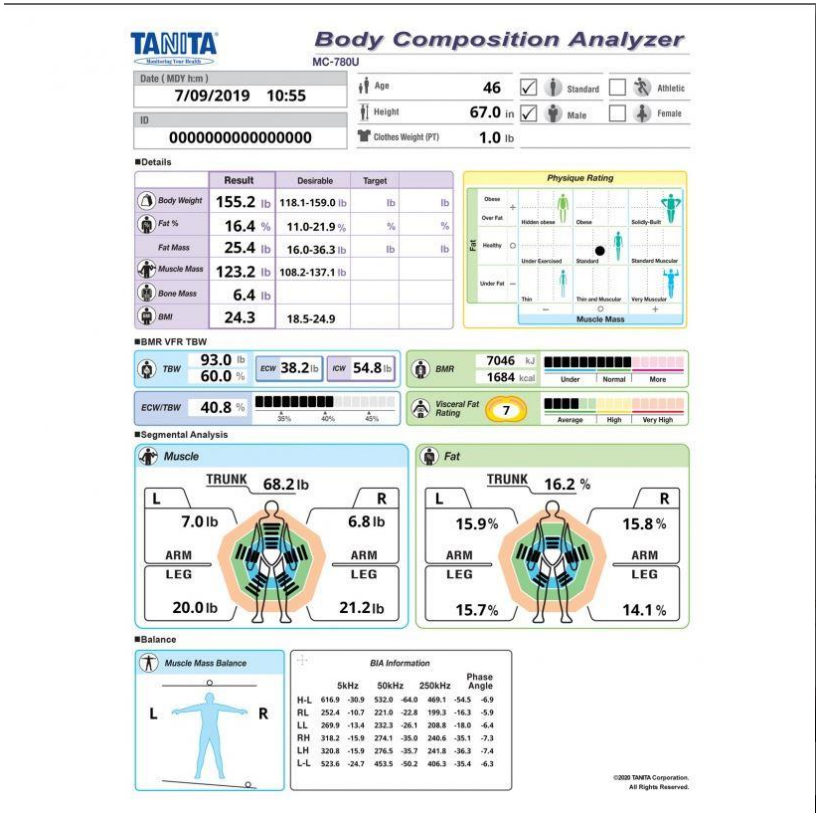
Step 3: Assess Muscle Mass

- **Bio-electrical Impedance Analysis (BIA)**
  - Measure of choice in the community setting
  - Safe, fast, easy to use

- **Calf Circumference**
  - Surrogate marker low muscle mass
  - Correlates with Appendicular Skeletal Mass Index measured BIA and DEXA
  - Cut-offs of 34cm for men, and 33cm for women



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Step 4: Assess Physical Performance

- **Usual Gait Speed**
  - Slowness defined as speed ≤1 m/s
  - Space is a premium
- **5 Chair Stand Test as Surrogate for Gait Speed**
  - Nishimura et al
  - 5CST 11.6 seconds equivalent 6 m Gait Speed 1.0 m/s
  - Hence 5CST >12s = low gait speed

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METHODOLOGICAL REPORT

Usefulness of chair stand time as a surrogate of gait speed in diagnosing sarcopenia

Takayuki Nishimura,[1] Kazuhiko Arima,[1] Takuhiro Okabe,[1,2] Satoshi Mizukami,[2] Yoshihito Tomita,[1,2] Mitsuo Kanagae,[2] Hisashi Goto,[3] Itsuko Horiguchi,[4] Yasuyo Abe[1] and Kiyoshi Aoyagi[1]

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Aim: Determining gait speed as a measure of physical performance is recommended in diagnosing sarcopenia. Gait speed measurements require a certain amount of space (e.g. a 6-m course), and might not be feasible in clinical settings or heath checkup examination sites. We developed a formula to estimate chair stand time based on gait speed, and examined the validity (sensitivity and specificity) of using the estimated chair stand time cut-off point as a surrogate for the recommended gait speed cut-off point.

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Classification of Sarcopenia

- Sarcopenia can be classified as:
  - Probable Sarcopenia
  - Sarcopenia
  - Severe Sarcopenia

- Sarcopenia can also be classified as:
  - Primary or Age related
  - Secondary

Probable Sarcopenia

SARC-F Positive

Low Muscle Strength

- Assess for Reversible Causes
- Assess Risk of Malnutrition
- Start Intervention

1. Chew STH, Kayambu G, Lew CCH, et al. Singapore multidisciplinary consensus recommendations on muscle health in older adults: assessment and multimodal targeted intervention across the continuum of care. BMC Geriatr. 2021;21(1):314.
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Sarcopenia

Low Muscle Strength

Low Muscle Mass

- Assess for Reversible Causes
- Assess Risk of Malnutrition
- Start Intervention

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Severe Sarcopenia

Low Muscle Strength

Low Muscle Mass

Low Physical Performance

- Assess for Reversible Causes
- Assess Risk of Malnutrition
- Start Intervention

- Need More Support/Tailor Intervention Accordingly

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Primary and Secondary Sarcopenia

- **Primary Sarcopenia**
  - Age-related Sarcopenia
- **Secondary Sarcopenia**
  - Inactivity
  - Malnutrition
  - Chronic Diseases

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Summary

- Muscle Health Important
- Assessments Easy to Perform, Valid and Reliable
- SARC-F, Handgrip Strength, 5CST, Calf Circumference, BIA
- Clinical Judgement Important

Thank you

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