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**Hubungan Sarkopenia terhadap 6-Minute Walking Test pada Pasien Gagal Jantung Usia Lanjut**
Octi Guchiani, dr. Hasanah Mumpuni, SpPD-KKV, SpJP (K).; Dr. dr. Probosuseno, SpPD KGer, SE, MM, FINASIM
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# ABSTRAK

## HUBUNGAN SARKOPENIA TERHADAP *6-MINUTE WALKING TEST* PADA PASIEN GAGAL JANTUNG USIA LANJUT

Octi Guchiani[1], Hasanah Mumpuni[2], Probosuseno [3]
[1]PPDS Ilmu Penyakit Dalam FKKMK UGM
[2]Departemen Kardiologi dan Kedokteran Vaskular FKKMK UGM
[3]Divisi Geriatri, Departemen Ilmu Penyakit Dalam FKKMK UGM

**Latar Belakang:** Gagal jantung pada pasien usia lanjut sering disertai sarkopenia, yaitu sindrom geriatri berupa penurunan fungsi dan massa otot yang berpotensi memperburuk toleransi aktivitas fisik serta kapasitas fungsional pasien.
**Tujuan:** Menganalisis hubungan antara sarkopenia dengan kapasitas fungsional pasien gagal jantung usia lanjut yang diukur menggunakan metode *6-Minute Walking Test* (6MWT).
**Metode:** Desain riset ini observasional *cross-sectional* dilakukan di Poli Jantung RSUP Dr. Sardjito sejak 12 Agustus 2025 sampai dengan 18 September 2025, melibatkan total 100 subjek penelitian yang terdiri dari 31 pasien dengan sarkopenia dan 69 pasien tanpa sarkopenia. Kriteria penegakan diagnosis sarkopenia didasarkan pada *Asian Working Group for Sarcopenia* (AWGS) 2019 yang meliputi kecepatan berjalan, massa otot, dan kekuatan genggam tangan (*handgrip strength*). Analisis data bivariat menggunakan uji T independen dan analisis multivariat menggunakan regresi linier berganda.
**Hasil:** Berdasarkan analisis bivariat, jarak tempuh 6MWT pada kelompok pasien sarkopenia secara signifikan lebih rendah, yakni 246,3 ± 85,69 meter, dibandingkan dengan kelompok tanpa sarkopenia 289,14 ± 79,70 meter (p=0,017; selisih jarak -42,81 meter). Namun, analisis multivariat menunjukkan bahwa sarkopenia sebagai variabel komposit tidak berpengaruh independen secara bermakna terhadap 6MWT (B = -22,945; p=0,178). Faktor independen yang terbukti memengaruhi 6MWT secara signifikan adalah usia (B = -4,592; p=0,002) dan kelas fungsional NYHA (B = -66,632; p=0,003). Saat komponen sarkopenia dianalisis terpisah, komponen performa dan fungsi otot seperti kecepatan berjalan (B = 70,923; p=0,001) dan kekuatan genggam tangan (B = 32,163; p=0,027) menjadi prediktor independen yang kuat, sedangkan jumlah massa otot tidak signifikan mempengaruhi 6MWT (p=0,180).
**Kesimpulan:** Secara bivariat, sarkopenia berhubungan dengan berkurangnya kapasitas fungsional (6MWT), tetapi bukan merupakan prediktor independen setelah disesuaikan dengan variabel perancu seperti usia dan tingkat keparahan penyakit. Pada pasien gagal jantung usia lanjut, fungsi kinerja otot (kecepatan berjalan dan kekuatan genggam tangan) merupakan determinan yang lebih menentukan performa tes 6MWT dibandingkan kuantitas massa otot.
**Kata Kunci:** Gagal Jantung, Usia Lanjut, Sarkopenia, *6-Minute Walking Test*, Kapasitas Fungsional.

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# ABSTRACT

## ASSOCIATION BETWEEN SARCOPENIA AND THE 6-MINUTE WALKING TEST IN ELDERLY HEART FAILURE PATIENTS

Octi Guchiani[1], Hasanah Mumpuni[2], Probosuseno [3]
[1] Internal Medicine Recident FKKMK UGM
[2]Department of Cardiology and Cardiovascular Medicine FKKMK UGM
[3]Division of Geriatrics, Department of Internal Medicine FKKMK UGM

**Background:** Heart failure in the elderly population is often accompanied by sarcopenia, a geriatric syndrome characterized by the loss of muscle mass and function, which potentially exacerbates patients' functional capacity and exercise tolerance.
**Objective:** This study aimed to analyze the association between sarcopenia and functional capacity as measured by the 6-Minute Walking Test (6MWT) in elderly heart failure patients.
**Methods:** This cross-sectional observational study was conducted at the Cardiology Clinic of RSUP Dr. Sardjito between August 12, 2025, and September 18, 2025, involving a total of 100 subjects consisting of 31 patients with sarcopenia and 69 patients without sarcopenia. Sarcopenia was diagnosed based on the Asian Working Group for Sarcopenia (AWGS) 2019 criteria, which included the assessment of gait speed, muscle mass, and handgrip strength. Data were analyzed using Independent T-tests for bivariate analysis and multiple linear regression for multivariate analysis.
**Results:** The prevalence of sarcopenia among the subjects was 31%. Bivariate analysis demonstrated a significant difference in 6MWT distance, where the sarcopenia group achieved a shorter distance (246.3 ± 85.69 meters) compared to the non-sarcopenia group (289.14 ± 79.70 meters) (p=0.017; mean difference = -42.81 meters). However, multivariate analysis indicated that sarcopenia as a composite variable did not significantly influence the 6MWT independently (B = -22.945; p=0.178). Independent factors proven to significantly affect 6MWT distance were age (B = -4.592; p=0.002) and NYHA functional class (B = -66.632; p=0.003). When analyzing the specific components of sarcopenia, muscle functional components such as gait speed (B = 70.923; p=0.001) and handgrip strength (B = 32.163; p=0.027) were found to be strong independent predictors, whereas muscle mass quantity did not significantly influence the 6MWT (p=0.180).
**Conclusion:** Sarcopenia is associated with reduced functional capacity (6MWT) in bivariate analysis; however, it is not an independent predictor after adjusting for confounding variables such as age and disease severity. In elderly heart failure patients, muscle functional components (particularly gait speed and handgrip strength) are stronger determinants of 6MWT performance compared to muscle mass quantity.
**Keywords:** Heart Failure, Elderly, Sarcopenia, 6-Minute Walking Test, Functional Capacity.