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Arm support as hidden assistance during Sit-To-Stand movement: a systematic review

[Biomedizinische Technik](#) • Review • Open Access • 2026 • DOI: 10.1515/bmt-2025-0348 [Abd Aziz, Musfirah](#)^a; [Hamzaid, Nur Azah](#)^b ; [Manaf, Haidzir](#)^c; [Abdul Malik, Noreha](#)^d^a Biomechatronics and Neuroprosthetics Laboratory, Department of Biomedical Engineering, Faculty of Engineering, Universiti Malaya, Kuala Lumpur, Malaysia[Show all information](#)

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Abstract

Sit-To-Stand (SitTS) training is often performed by patients who may require arm assistance to perform it successfully. This study examines the role of arms in performing the SitTS maneuver to better understand their contribution and clinical significance. This review synthesizes the reported outcome measures of arm-assisted SitTS exercise programs in people with physical impairments. Web of Science (WoS) and Scopus™ databases were searched for relevant studies up to May 2025. Inclusion and exclusion criteria were used to screen the titles and abstracts of articles identified using key search terms related to SitTS activity and arm support. Only articles that met the key terms were extracted and analyzed in this study. A total of 47 studies reported arm support measures during SitTS, either in clinical or biomechanical contexts. These studies highlighted various methods and tools used to assess the body's state during the rising movement. Joint angle and SitTS duration are clinically applicable and more easily measured compared to seat, foot, and arm forces which require specialized instrumentation. Balancing clinical measures with detailed biomechanical

assessments is important in enabling practitioners and researchers to evaluate and enhance SitTS interventions that involve arm assistance, ultimately improving rehabilitation outcomes. © 2026 the author(s)

Author keywords

arm assistance; arms contribution; biomechanics; rehabilitation; Sit-To-Stand

Indexed keywords

MeSH

Arm; Biomechanical Phenomena; Humans; Movement

Engineering controlled terms

Patient rehabilitation

Engineering uncontrolled terms

Arm assistance; Arm contribution; Arm support; Exercise programs; Outcome measures; Physical impairments; Sit-to-stand; Sit-to-stand movements; Systematic Review; Web of Science

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Engineering main heading

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