frontiers | Frontiers in Stroke

TYPE Editorial
PUBLISHED 29 August 2025
DOI 10.3389/fstro.2025.1682445

OPEN ACCESS

EDITED AND REVIEWED BY
Anthony Pak Hin Kong,
The University of Hong Kong,
Hong Kong SAR, China

*CORRESPONDENCE
Arthur de Sá Ferreira
✉ asferreira@unisuam.edu.br

†These authors have contributed equally to this work and share first authorship

RECEIVED 08 August 2025
ACCEPTED 14 August 2025
PUBLISHED 29 August 2025

CITATION
Cunha F, Ferreira AS and Midgley AW (2025) Editorial: Evaluation of fitness in stroke survivors. *Front. Stroke* 4:1682445. doi: 10.3389/fstro.2025.1682445

Editorial: Evaluation of fitness in stroke survivors

Felipe Cunha[1†], Arthur de Sá Ferreira[2*†] and Adrian Wayne Midgley[3†]

[1]Laboratory of Physical Activity and Health Promotion, Institute of Physical Education and Sports, Rio de Janeiro State University, Rio de Janeiro, Brazil, [2]Laboratory of Computational Simulation and Modeling in Rehabilitation, Postgraduate Program in Rehabilitation Sciences, Centro Universitário Augusto Motta, Rio de Janeiro, Brazil, [3]Department of Sport & Physical Activity, Edge Hill University, Ormskirk, United Kingdom

KEYWORDS

stroke, recovery, rehabilitation, cardiorespiratory fitness, cardiopulmonary exercise test, balance, body composition, muscular fitness

Editorial on the Research Topic
Evaluation of fitness in stroke survivors

Stroke remains a leading cause of long-term disability worldwide, often resulting in impairments in cardiorespiratory and neuromuscular function (Tsao et al., 2023). These limitations contribute to decreased physical activity, increased fatigue, and heightened sedentary behavior, jeopardizing functional independence and increasing the risk of recurrence. This Research Topic showcase recent advances in evaluating key domains of physical fitness in stroke survivors, including cardiorespiratory fitness, muscular strength, and endurance, neuromotor control, fatigue tolerance, and body composition.

Cardiorespiratory fitness assessment remains a cornerstone of post-stroke evaluation. The cardiopulmonary exercise test (CPET) is recognized as the gold standard for determining maximal oxygen uptake (VO_{2max}), however, its validation, safety, and feasibility in stroke populations remain underexplored. Qu et al. addressed this gap by examining the decline in cardiorespiratory fitness post-stroke using resting-state functional magnetic resonance imaging, opening new perspectives for combining physiological and neuroimaging data in this population.

Accurate assessment of neuromuscular function and physical performance is equally critical. Pu et al. developed a nomogram to predict sarcopenia risk in stroke patients, incorporating anthropometric and biochemical markers, while Zhong et al. validated a Chinese version of the performance-oriented mobility assessment, ensuring reliability for use in chronic stroke survivors. Bi et al. further linked serum albumin levels to severe impairment in activities of daily living (ADLs), reinforcing the role of nutritional and metabolic markers in functional prognosis.

The interplay between physical health, psychological status, and functional independence also emerged as a key theme. Dan et al. demonstrated how depression mediates the link between stroke and fracture risk, highlighting the need for integrative assessments that include emotional and cognitive domains. Similarly, Lin and Liu proposed a predictive model for ADL dysfunction, offering clinicians a tool to anticipate limitations early in the recovery process.

Contributions addressed innovative assessment and rehabilitation strategies. Bian et al. performed a network meta-analysis comparing different physical stimulation therapies, offering evidence to guide upper limb motor rehabilitation strategies. Dai et al. explored

the concept of exercise preference in stroke survivors, emphasizing the value of patient-centered approaches when designing fitness evaluations and rehabilitation plans.

Lastly, Yin et al. analyzed thrombectomy timing by stroke subtype, and Chunjuan et al. applied machine learning clustering to inflammatory profiles, both enhancing our understanding of physiological factors influencing recovery potential.

These studies represent a multidisciplinary effort to improve the precision, relevance, and personalization of fitness assessment in stroke rehabilitation. Continued research must ensure that tools are accessible, scalable, and responsive to the specific needs of stroke survivors across the recovery continuum. We hope this Research Topic inspires further innovation and collaboration in optimizing fitness assessment and rehabilitation strategies in stroke care.

Author contributions

FC: Writing – original draft, Resources, Project administration, Validation, Funding acquisition, Conceptualization, Writing – review & editing. AF: Resources, Writing – original draft, Funding acquisition, Validation, Project administration, Writing – review & editing, Conceptualization. AM: Project administration, Writing – review & editing, Writing – original draft, Conceptualization, Resources, Validation.

Funding

The author(s) declare that financial support was received for the research and/or publication of this article. Arthur de Sá Ferreira was supported by the Fundação Carlos Chagas Filho de Apoio à Pesquisa do Estado do Rio de Janeiro (FAPERJ, grant number E-26/211.104/2021) and by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES, Finance Code 001; grant numbers 88881.708719/2022-01 and 88887.708718/2022-00). Felipe Amorim da Cunha was supported by the Fundação Carlos Chagas Filho de Apoio à Pesquisa do Estado do Rio de Janeiro (FAPERJ, grant numbers E-26/200.130/2023 and E-26/211.210/2021) and by the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq, grant number 403206/2021-9).

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

The author(s) declared that they were an editorial board member of Frontiers, at the time of submission. This had no impact on the peer review process and the final decision.

Generative AI statement

The author(s) declare that no Gen AI was used in the creation of this manuscript.

Any alternative text (alt text) provided alongside figures in this article has been generated by Frontiers with the support of artificial intelligence and reasonable efforts have been made to ensure accuracy, including review by the authors wherever possible. If you identify any issues, please contact us.

Publisher's note

References

Tsao, C. W., Aday, A. W., Almarzooq, Z. I., Anderson, C. A. M., Arora, P., Avery, C. L., et al. (2023). Heart disease and stroke statistics—2023 update: a report from the American Heart Association. *Circulation* 147:e93–e621 doi: 10.1161/CIR.0000000000001123