

Sarcopenia in general practice:

Towards improving muscle health screening, assessment and management in Australia

Robin M Daly, Chris Bollen, Jane Bollen, Linda Govan, David Scott, Simon Willcock, Linda Xu, Solomon Yu

Background

An estimated one in five Australians aged 60 years and older have sarcopenia, marked by progressive and accelerated loss in muscle mass, strength and function. Sarcopenia is associated with considerable healthcare costs and a myriad of adverse health outcomes, including increased risk of death. Despite its clinical importance, muscle health is often overlooked in routine clinical practice, hindering diagnosis and treatment.

Objective

In July 2023, eight representatives from Australia's primary care and research communities convened to discuss barriers to sarcopenia screening, assessment and management within routine clinical practice. Solutions were proposed to improve the implementation of muscle health assessment and management in general practice. This article summarises the key discussions and outcomes from this meeting.

Discussion

Strategies to improve the implementation of muscle health assessment and management in general practice include (1) improving public awareness; (2) professional education; (3) provision of tools and resources; (4) advocacy and policy; and (5) increasing collaborative efforts between healthcare professionals, professional societies, universities, electronic medical record software vendors and the government.

AMONG THE PROMINENT CONSEQUENCES OF AGEING are the physiological and morphological changes to skeletal muscle, resulting in an involuntary loss of muscle mass, strength and function.¹ Muscle mass and strength begin to decline from 30 years of age, accelerating after 50 years of age,² resulting in a loss of approximately 20% in muscle mass and 40% in muscle strength from their peaks in early adulthood.² Physical function decline accelerates after age 65 years, resulting in an approximate 50% reduction from maximal capacity.² These declines are a leading contributor to loss of independence and poor quality of life³ and predict disability,⁴ hospitalisation⁵ and death.⁶

Sarcopenia, characterised by low muscle mass, muscle weakness and impaired physical function,⁷ is prevalent in older individuals globally (10–27% in those aged 60 years and over)⁸ and affects around one in five Australians aged 60 years and over.⁹ It is categorised as primary (age related) or secondary when there are identifiable causal factors beyond age.⁷ Risk factors include physical inactivity, malnutrition and systemic disease,⁷ with a 2020 meta-analysis reporting a higher sarcopenia prevalence in dementia (26.4%), diabetes (31.1%) and respiratory disease (13.3%).¹⁰

Sarcopenia is linked to a myriad of adverse outcomes, including functional decline, falls, fractures, hospitalisation and increased risk of death,^{5,11,12} and considerable healthcare costs.¹³ It is also associated with an increased risk of frailty, influencing the progression from robustness to pre-frailty and frailty.¹⁴ Sarcopenia and frailty, although sharing clinical features, are distinct.¹⁵ Frailty is a multidimensional age-related syndrome, with declines in physical and cognitive reserves increasing vulnerability to adverse health outcomes.¹⁶ In contrast, sarcopenia is a skeletal muscle disease, considered a physical component of and precursor to frailty.¹⁷

Timely identification and intervention for sarcopenia are critical for improving patient outcomes, including maintaining mobility, independence and quality of life.^{7,18} Several operational definitions and diagnostic criteria for sarcopenia exist,^{7,19–22} with the Australian and New Zealand Society for Sarcopenia and Frailty Research (ANZSSFR) endorsing the revised European Working Group for Sarcopenia in Older People's (EWGSOP2) definition.^{7,23}

EWGSOP2 recommends a case-finding approach using the five-item SARC-F (strength, assistance with walking, rising from a chair, climbing stairs and falls) questionnaire or clinical suspicion. Grip strength or chair stand measures assess pre-sarcopenia, while dual-energy X-ray absorptiometry (DXA) or bioelectrical impedance (BIA) detect low appendicular muscle mass and confirm sarcopenia. Severe sarcopenia is confirmed using physical performance measures like gait speed, the short physical performance battery (SPPB) test or the timed-up-and-go test (TUG).⁷ Following diagnosis, individuals should be offered resistance-based exercise,^{18,23} combined with a protein-rich diet or protein supplementation for those with inadequate intake.^{18,23} Emerging evidence suggests that nutritional interventions like creatine, beta-hydroxy-beta-methylbutyrate (HMB), vitamin D and multi-nutrient supplements might benefit muscle mass and/or strength in older adults with deficiencies and those with sarcopenia.^{24,25}

Sarcopenia is often overlooked in clinical practice,⁷ with poor awareness of the importance of skeletal muscle to health and chronic disease prevention among healthcare professionals (HCPs) and the public.^{12,26-29} Barriers identified by HCPs in the literature include lack of diagnostic tools and treatment protocols, time constraints, and insufficient awareness and motivation.¹² In July 2023, eight representatives (across three states: News South Wales, Victoria and South Australia) from Australia's primary care and research communities (two general practitioners, two geriatricians, two practice nurses and two senior academics with a background in allied health) convened to address local barriers to implementing sarcopenia screening, assessment and management. Solutions were proposed to improve the implementation of muscle health assessment and management in general practice. The half-day, face-to-face meeting involved breakout sessions focusing on (1) prioritising muscle loss in general practice and identifying instances of muscle loss and (2) strategies for screening and monitoring muscle loss. The roundtable members then reconvened to discuss and reach consensus on key barriers and ideate solutions. This article summarises the main findings and discussions from the meeting.

Strategies for enhancing muscle health in general practice

Five key barriers to sarcopenia screening, assessment and management in primary care were identified:

- inadequate awareness regarding the implications of sarcopenia and its link to chronic disease among the public
- insufficient knowledge and training among HCPs in recognising and managing poor muscle health in older patients
- absence of tools, resources and clear protocols for assessing and managing muscle health in primary care
- time constraints and workforce shortages
- limitations in both patient access to services and specific funding for these services.

Strategies for implementing muscle health assessment and management involve five main themes: (1) public awareness, (2) professional education, (3) tools and resources, (4) advocacy and policy and (5) collaborative efforts (Figure 1).

Theme 1: Improving public awareness and engagement

Despite sarcopenia's clinical significance, public awareness is low,²⁷ particularly compared to other age-related conditions like dementia and osteoporosis.²⁸ Recent research by ANZSSFR, utilising a consumer Delphi process, found that consumers value outcomes related to sarcopenia, such as maintaining physical function and preventing falls, and most reported a willingness to undergo assessment and treatment.³⁰ However, due to its onset with age, symptoms might be inadvertently overlooked by patients, attributed to normal ageing or viewed as less critical than widely understood health conditions, hindering early diagnosis and preventative strategies. Initiatives should prioritise public engagement, emphasising sarcopenia's seriousness and adverse effects and the importance of maintaining muscle health into old age. It should also be emphasised that this condition is not an inevitable part of ageing; with early detection and intervention, proactive measures can be taken (and should be recommended early in mid-life) to prevent and slow its progression. A shift in perspective is needed, with sarcopenia no longer being categorised as a condition exclusive to older adults. A 'life course approach' should be adopted

to prioritise building and preserving muscle mass through healthy behaviours formed early in life and maintained through adulthood to minimise impairment in older age.¹⁸⁻²⁰

Theme 2: Professional education

To enable early detection, intervention and prevention of poor muscle health, education to promote awareness and adequate knowledge among HCPs, particularly general practitioners, is needed.³¹ Previous research highlighted limited awareness and knowledge among HCPs,^{12,26,29} with only 14.7% correctly identifying sarcopenia as a disease with limited knowledge about the diagnostic criteria.¹² Despite sarcopenia being recognised formally as a disease since 2016 (2019 in Australia),^{32,33} muscle health is rarely considered in routine practice, and sarcopenia screening and diagnoses are uncommon.^{34,35} Continuing professional development (CPD) should be prioritised to educate current HCPs on the importance of muscle health and screening and diagnostic assessments.¹² Importantly, CPD can help inform HCPs about recommended prevention and treatment strategies, including the latest evidence on the benefits of exercise (in particular resistance training), ensuring adequate energy and protein intake, and the use of oral nutritional supplements (ONS – powdered or ready-made drinks that provide calories, protein, vitamins and minerals) when nutritional intake is inadequate, as well as establishing referral pathways to relevant allied HCPs. The current GP curriculum limits the availability of professional education and training on sarcopenia.³⁶ Thus, as a priority, there is a need for an improved curriculum within undergraduate medical/health programs that integrates key competencies, learning outcomes and case studies covering the clinical importance of muscle health and sarcopenia, including how to identify and treat this disease as well as highlighting the importance of prevention in mid-life.

Theme 3: Provision of tools and resources

Despite available screening and assessment tools for sarcopenia, the global lack of agreement and standardisation leads to varied diagnostic cut-offs and criteria.²³ ANZSSFR recommends adopting the EWGSOP2 sarcopenia definition in Australia and New Zealand.²³ Although no

international consensus on the definition of sarcopenia exists, efforts to address this issue are under way by the Global Leadership Initiative in Sarcopenia (GLIS).^{23,37} The eight experts also noted the lack of practical resources for primary care professionals when considering muscle health. Clearly

defined evidence-based protocols, care pathways and primary care toolkits are needed. Furthermore, diagnostic tools must be validated, standardised, simple and affordable for easy adoption into routine practice. Integrating diagnosis into electronic medical record (EMR) software is

recommended to streamline muscle health assessment and monitoring in primary care. Finally, the inclusion of sarcopenia screening, assessment and/or treatment/management as part of Medicare-funded items (eg Heart Health Checks, health assessments for people aged 45–49 years, health assessments for

Towards improved muscle health assessment and management in general practice

Policy level

Barrier

Limitations in funding and access to services



Action

Advocacy, funding and investment in preventative health
+ Improved MDT collaboration

Healthcare system level

Barrier

Limited knowledge among HCPs



Action

Professional education and training

Barrier

Absence of resources



Action

Provision of evidence-based protocols, tools and resources

Barrier

Time constraints, workforce shortages



Action

Advocacy, funding and investment in preventative health
+ Improved MDT collaboration

Consumer level

Barrier

Low awareness of muscle health



Action

Public engagement and awareness campaigns

Figure 1. Key barriers to sarcopenia screening, assessment and management in Australian primary care, along with proposed strategies to address them.

HCP, healthcare professional; MDT, multidisciplinary team.

people aged 75 years and older, chronic disease GP Management Plans and Team Care Arrangements) will be critical to reduce the future health and economic burden of this disease as our population ages.

Theme 4: Advocacy and policy

The Australian nurse shortage was identified as another barrier to widespread monitoring of sarcopenia. Health Workforce Australia predicts a shortage of over 100,000 nurses by 2025.³⁸ Adequate funding for primary healthcare is essential to support the nursing and allied health workforce, thereby improving patient access to services. A collaborative effort from government, universities and local health departments is necessary to address workforce shortages in primary care. Addressing workforce shortages and time constraints also requires improved work priority through advocacy, policy and HCP education. By raising awareness of the significance of sarcopenia, akin to osteoporosis and dementia, immediate attention can be directed to muscle health and leveraging existing healthcare resources. Furthermore, improving advocacy and policy for muscle health might help reduce the long-term demand for aged care services and promote a healthcare system that prioritises preventative health, with focused attention on pre-frailty and ageing in place.

Theme 5: Improved collaborative efforts

Due to the multifaceted nature of sarcopenia, a multidisciplinary, team-based approach in primary care is crucial for effective sarcopenia screening, assessment and management.³⁹ Although GPs and practice nurses are well placed to screen for muscle health,⁴⁰ there is a significant opportunity for other allied HCPs (eg exercise physiologists, dietitians, podiatrists, physiotherapists and community pharmacists) to actively participate to help facilitate earlier detection, provide a comprehensive understanding of the patient's condition and assist in regular monitoring. Furthermore, with exercise and diet as recommended interventions for sarcopenia, exercise physiologists and dietitians could preferentially be referred to following diagnosis. Implementing a multidisciplinary, team-based approach to the screening, assessment and management of sarcopenia would require additional

government funding to support initiatives such as the patient enrolment policy (MyMedicare) or the workforce incentive program (practice stream), which is designed to encourage multidisciplinary and team-based models of care.

Conclusion

Sarcopenia remains under-recognised in clinical practice, despite its serious consequences. Preserving muscle health is pivotal in preventing and managing chronic conditions in Australia's ageing population and promoting healthy ageing, independence and quality of life. Urgent action is needed to raise awareness and address primary care challenges in sarcopenia screening, assessment and management. This article proposes solutions and emphasises the importance of collaboration among HCPs, patients, professional societies such as the ANZSSFR, universities, EMR software vendors and the government in addressing these challenges.

Key points

- Sarcopenia is a disease defined by low muscle mass, muscle weakness and impaired function that is associated with a myriad of adverse health outcomes.
- Raising awareness among HCPs and the public about the serious consequences of poor muscle health is critical for improving patient outcomes.
- The diagnosis and management of sarcopenia is often overlooked in clinical practice, necessitating urgent action to improve screening and management in primary care.
- There is a need for increased public awareness and professional education, adequate resources for HCPs and resolution of workforce shortages.
- Collaboration among HCPs, organisations and the government is crucial for addressing challenges in sarcopenia diagnosis and management.

Authors

Robin M Daly PhD, FASMF, FASBMR, Professor and Chair in Exercise and Ageing, Institute for Physical Activity and Nutrition, School of Exercise and Nutrition Sciences, Deakin University, Geelong, Vic

Chris Bollen MBBS, MBA, FRACGP, MAICD, Director of BMP Healthcare Consulting, BMP Healthcare Consulting, Adelaide, SA

Jane Bollen RN, CertIVTAE, DipAcct, GAICD, Primary Healthcare Nurse Consultant, BMP Healthcare Consulting, Adelaide, SA

Linda Govan RN, MHA, MPH, APNA, Project Manager, Australian Primary Health Care Nurses Association, Melbourne, Vic

David Scott PhD, BHM (Hons), Associate Professor of Musculoskeletal Health, Deakin University, Melbourne, Vic; Chair, Sarcopenia Diagnosis and Management Task Force, Australian and New Zealand Society for Sarcopenia and Frailty Research, Melbourne, Vic; Associate Professor of Musculoskeletal Health, School of Clinical Sciences at Monash Health, Monash University, Melbourne, Vic

Simon Willcock MBBS, PhD, FRACGP, GAICD, Associate Professor, Clinical Director of Primary Care and Wellbeing services at MQ Health, Macquarie University Hospital and Health Sciences Centre, Sydney, NSW

Linda Xu BSc (Med) MBBS FRACP, Geriatrician and General Physician, Northern Sydney Local Health District, Sydney, NSW; NSW Council Member, Australian and New Zealand Society for Sarcopenia and Frailty Research, Sydney, NSW

Solomon Yu PhD, FRACP, FRCP, MBBS, LTCL, Associate Professor, Adelaide Geriatrics Training and Research with Aged Care Centre, School of Medicine, Faculty of Health and Medical Sciences, University of Adelaide, Adelaide, SA; Associate Professor, Aged and Extended Care Services, The Queen Elizabeth Hospital, Central Adelaide Local Health Network, Adelaide, SA; President, Australian and New Zealand Society for Sarcopenia and Frailty Research, Adelaide, SA

Competing interests: All authors received an honorarium from Abbott Australasia Pty Ltd for participation in the roundtable meeting detailed in this manuscript. The Australian and New Zealand Society for Sarcopenia and Frailty Research received the honorarium attributed to SY and LX, while The Australian Primary Health Care Nurses Association received the honorarium attributed to LG. RD has received payment from Fresenius Kabi, and DS has received grants from the National Health and Medical Research Council and Amgen Australia. CB is a Director of Bollen Health, which holds contracts with the Adelaide Primary Health Network (PHN), Gold Coast PHN, WentWest and Western Victoria PHN, and is shareholder of Sonic Healthcare and CSL.

Funding: Abbott Australasia Pty Ltd provided support and funding for the Muscle Health in General Practice Roundtable Meeting and this publication.

Provenance and peer review: Not commissioned, externally peer reviewed.

Correspondence to:
robin.daly@deakin.edu.au

Acknowledgements

Medical writing support for this manuscript was provided by Rebecca Brookfield, PhD, from Bastion Medical Education.

References

1. Volpi E, Nazemi R, Fujita S. Muscle tissue changes with aging. *Curr Opin Clin Nutr Metab Care* 2004;7(4):405-10. doi: 10.1097/01.mco.0000134362.76653.b2.
2. Suetta C, Haddock B, Alcazar J, et al. The Copenhagen Sarcopenia Study: Lean mass, strength, power, and physical function in a Danish cohort aged 20-93 years. *J Cachexia Sarcopenia Muscle* 2019;10(6):1316-29. doi: 10.1002/jcsm.12477.

3. Walston JD. Sarcopenia in older adults. *Curr Opin Rheumatol* 2012;24(6):623-27. doi: 10.1097/BOR.0b013e328358d59b.
4. Wang DXM, Yao J, Zirek Y, Reijnierse EM, Maier AB. Muscle mass, strength, and physical performance predicting activities of daily living: A meta-analysis. *J Cachexia Sarcopenia Muscle* 2020;11(1):3-25. doi: 10.1002/jcsm.12502.
5. Zhang X, Zhang W, Wang C, Tao W, Dou Q, Yang Y. Sarcopenia as a predictor of hospitalization among older people: A systematic review and meta-analysis. *BMC Geriatr* 2018;18(1):188. doi: 10.1186/s12877-018-0878-0.
6. Li R, Xia J, Zhang XI, et al. Associations of muscle mass and strength with all-cause mortality among US older adults. *Med Sci Sports Exerc* 2018;50(3):458-67. doi: 10.1249/MSS.0000000000001448.
7. Cruz-Jentoft AJ, Bahat G, Bauer J, et al; Writing Group for the European Working Group on Sarcopenia in Older People 2 (EWGSOP2), and the Extended Group for EWGSOP2. Sarcopenia: Revised European consensus on definition and diagnosis. *Age Ageing* 2019;48(1):16-31. doi: 10.1093/ageing/afy169.
8. Petermann-Rocha F, Balntzi V, Gray SR, et al. Global prevalence of sarcopenia and severe sarcopenia: A systematic review and meta-analysis. *J Cachexia Sarcopenia Muscle* 2022;13(1):86-99. doi: 10.1002/jcsm.12783.
9. Sui SX, Holloway-Kew KL, Hyde NK, et al. Prevalence of sarcopenia employing population-specific cut-points: Cross-sectional data from the Geelong Osteoporosis Study, Australia. *J Clin Med* 2021;10(2):343. doi: 10.3390/jcm10020343.
10. Pacifico J, Geerlings MAJ, Reijnierse EM, Phassouliotis C, Lim WK, Maier AB. Prevalence of sarcopenia as a comorbid disease: A systematic review and meta-analysis. *Exp Gerontol* 2020;131(March):110801. doi: 10.1016/j.exger.2019.110801.
11. Beaudart C, Zaaria M, Pasleau F, Reginster JY, Bruyère O. Health outcomes of sarcopenia: A systematic review and meta-analysis. *PLoS One* 2017;12(1):e0169548. doi: 10.1371/journal.pone.0169548.
12. Yeung SSY, Reijnierse EM, Trappenburg MC, Meskers CGM, Maier AB. Current knowledge and practice of Australian and New Zealand health-care professionals in sarcopenia diagnosis and treatment: Time to move forward! *Australas J Ageing* 2020;39(2):e185-93. doi: 10.1111/ajag.12730.
13. Bruyère O, Beaudart C, Ethgen O, Reginster JY, Locquet M. The health economics burden of sarcopenia: A systematic review. *Maturitas* 2019;119:61-69. doi: 10.1016/j.maturitas.2018.11.003.
14. Álvarez-Bustos A, Carnicero-Carreño JA, Davies B, et al. Role of sarcopenia in the frailty transitions in older adults: A population-based cohort study. *J Cachexia Sarcopenia Muscle* 2022;13(5):2352-60. doi: 10.1002/jcsm.13055.
15. Davies B, García F, Ara I, Artalejo FR, Rodríguez-Mañas L, Walter S. Relationship between sarcopenia and frailty in the Toledo Study of Healthy Aging: A population based cross-sectional study. *J Am Med Dir Assoc* 2018;19(4):282-86. doi: 10.1016/j.jamda.2017.09.014.
16. Wyrko Z. Frailty at the front door. *Clin Med (Lond)* 2015;15(4):377-81. doi: 10.7861/clinmedicine.15-4-377.
17. Wilson D, Jackson T, Sapey E, Lord JM. Frailty and sarcopenia: The potential role of an aged immune system. *Ageing Res Rev* 2017;36:1-10. doi: 10.1016/j.arr.2017.01.006.
18. Dent E, Morley JE, Cruz-Jentoft AJ, et al. International Clinical Practice Guidelines for Sarcopenia (ICFSR): Screening, diagnosis and management. *J Nutr Health Aging* 2018;22(10):1148-61. doi: 10.1007/s12603-018-1139-9.
19. Chen LK, Woo J, Assantachai P, et al. Asian Working Group for Sarcopenia: 2019 consensus update on sarcopenia diagnosis and treatment. *J Am Med Dir Assoc* 2020;21(3):300-07.e2. doi: 10.1016/j.jamda.2019.12.012.
20. Dhar M, Kapoor N, Suastika K, et al. South Asian Working Action Group on SARCOpenia (SWAG-SARCO) - A consensus document. *Osteoporos Sarcopenia* 2022;8(2):35-57. doi: 10.1016/j.afos.2022.04.001.
21. Cawthon PM, Manini T, Patel SM, et al. Putative cut-points in sarcopenia components and incident adverse health outcomes: An SDOC analysis. *J Am Geriatr Soc* 2020;68(7):1429-37. doi: 10.1111/jgs.16517.
22. Cruz-Jentoft AJ, Baeyens JP, Bauer JM, et al; European Working Group on Sarcopenia in Older People. Sarcopenia: European consensus on definition and diagnosis: Report of the European Working Group on Sarcopenia in Older People. *Age Ageing* 2010;39(4):412-23. doi: 10.1093/ageing/afq034.
23. Zanker J, Sim M, Anderson K, et al. Consensus guidelines for sarcopenia prevention, diagnosis and management in Australia and New Zealand. *J Cachexia Sarcopenia Muscle* 2023;14(1):142-56. doi: 10.1002/jcsm.13115.
24. Beaudart C, Buckinx F, Rabenda V, et al. The effects of vitamin D on skeletal muscle strength, muscle mass, and muscle power: A systematic review and meta-analysis of randomized controlled trials. *J Clin Endocrinol Metab* 2014;99(11):4336-45. doi: 10.1210/jc.2014-1742.
25. Martin-Cantero A, Reijnierse EM, Gill BMT, Maier AB. Factors influencing the efficacy of nutritional interventions on muscle mass in older adults: A systematic review and meta-analysis. *Nutr Rev* 2021;79(3):315-30. doi: 10.1093/nutrit/nuaa064.
26. Yao XM, Liu BB, Deng WY, Wang XH. The awareness and knowledge regarding sarcopenia among healthcare professionals: A scoping review. *J Frailty Aging* 2022;11(3):274-80. doi: 10.14283/jfa.2022.7.
27. Van Ancum JM, Meskers CGM, Reijnierse EM, et al. Lack of knowledge contrasts the willingness to counteract sarcopenia among community-dwelling adults. *J Aging Health* 2020;32(7-8):787-94. doi: 10.1177/0898264319852840.
28. Gilliot S, Bastijns S, Perkisas S, Cock AM. Investigating sarcopenia awareness using Google Trends. *J Frailty Sarcopenia Falls* 2021;6(1):32-35. doi: 10.22540/JFSF-06-032.
29. Offord NJ, Clegg A, Turner G, Dodds RM, Sayer AA, Witham MD. Current practice in the diagnosis and management of sarcopenia and frailty - Results from a UK-wide survey. *J Frailty Sarcopenia Falls* 2019;4(3):71-77. doi: 10.22540/JFSF-04-071.
30. Zanker J, Sim M, Anderson K, et al. The Australian and New Zealand Society for Sarcopenia and Frailty Research (ANZSSFR) sarcopenia diagnosis and management task force: Findings from the consumer expert Delphi process. *Australas J Ageing* 2023;42(1):251-57. doi: 10.1111/ajag.13164.
31. Won CW. Management of sarcopenia in primary care settings. *Korean J Fam Med* 2023;44(2):71-75. doi: 10.4082/kjfm.22.0224.
32. Anker SD, Morley JE, von Haehling S. Welcome to the ICD-10 code for sarcopenia. *J Cachexia Sarcopenia Muscle* 2016;7(5):512-14. doi: 10.1002/jcsm.12147.
33. Zanker J, Scott D, Brennan-Olsen SL, Duque G. Sarcopenia: A deserving recipient of an Australian ICD-10-AM code. *Med J Aust* 2020;212(1):45-45.e1. doi: 10.5694/mja2.50432.
34. Crosignani S, Sedini C, Calvani R, Marzetti E, Cesari M. Sarcopenia in primary care: Screening, diagnosis, management. *J Frailty Aging* 2021;10(3):226-32. doi: 10.14283/jfa.2020.63.
35. Avgerinou C. Sarcopenia: Why it matters in general practice. *Br J Gen Pract* 2020;70(693):200-01. doi: 10.3399/bjgp20X709253.
36. The Royal Australian College of General Practitioners (RACGP). 2022 RACGP curriculum and syllabus for Australian general practice. RACGP, 2022. Available at www.racgp.org.au/education/education-providers/curriculum/curriculum-and-syllabus/home [Accessed 17 September 2023].
37. Cawthon PM, Visser M, Arai H, et al. Defining terms commonly used in sarcopenia research: A glossary proposed by the Global Leadership in Sarcopenia (GLIS) Steering Committee. *Eur Geriatr Med* 2022;13(6):1239-44. doi: 10.1007/s41999-022-00706-5.
38. Health Workforce Australia. Health workforce 2025: Doctors, nurses and midwives - Volume 1. Workforce Australia, 2012. <https://apo.org.au/sites/default/files/resource-files/2012-01/apo-nid154456.pdf> [Accessed 18 August 2023].
39. Prado CM, Landi F, Chew STH, et al. Advances in muscle health and nutrition: A toolkit for healthcare professionals. *Clin Nutr* 2022;41(10):2244-63. doi: 10.1016/j.clnu.2022.07.041.
40. Roberts S, Collins P, Rattray M. Identifying and managing malnutrition, frailty and sarcopenia in the community: A narrative review. *Nutrients* 2021;13(7):2316. doi: 10.3390/nu13072316.

correspondence ajgp@racgp.org.au