

Sarcopenia: a rising geriatric giant

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Chapter 8

Valorisation

The research in this thesis sheds light on the prevalence of sarcopenia and has identified various characteristics, health, and economic outcomes of community-dwelling older adults with sarcopenia. This chapter will assess the scientific results that have emerged from the research in relation to their importance for society. In this chapter respectively the relevance of the study results, target groups for dissemination of results, activities (to be) undertaken, and future directions will be discussed.

1. Relevance

More than 600 skeletal muscles are the driving spirit of the human body.¹ Stand straight, keep balance, walk, run, bend over, scratch your knee, get dressed, go shopping, carry a bag, you name it. Those actions are all possible because of our skeletal muscles. When the muscles are healthy and function normally, one might not realize all the tasks that they perform. But when muscle mass and function decrease, difficulties may arise in performing activities of daily living and as a result quality of life and autonomy may decrease while the risk of care dependency and subsequent institutionalization increases.

Currently, in the Netherlands, older adults with difficulties in performing activities of daily living are eligible to receive home care, or may qualify for housing in a residential living facility. However, due to governmental regulation residential living facilities will dissolve soon and older adults will be more and more empowered to live independently as long as possible (also called ‘aging in place’). Nevertheless, this also corresponds to the wish of the majority of older adults themselves, who prefer to stay at home as long as possible. Aging in place has several advantages for older adults, such as preservation of their personal network and environmental landmarks.² In addition, aging in place is thought to reduce the burden of health care services and has therefore attracted attention of most western governments. Sarcopenia may threaten the trend towards aging in place, considering its association with difficulties performing activities of daily living and institutionalization. Insight in the prevalence of sarcopenia, its characteristics, health and economic outcomes is of importance to 1) know which community-dwelling older adults are at risk of sarcopenia, and 2) to know what are the target areas for a tailored-made approach to prevent/treat sarcopenia and contribute to a sustainable, affordable health care system. The results of the studies in this thesis provide guidance for a psychometrically sound measurement of sarcopenia, and they show that the prevalence and incidence of sarcopenia in several subgroups of community-dwelling older adults and the associated health care costs are substantial. Moreover they help to understand the link between sarcopenia and frailty and confirm the association between sarcopenia and disability in activities of daily living.

2. Target Groups

Dissemination of research findings to target groups such as older adults, (older) patients, health care professionals, policy makers etcetera enables them to benefit optimally from the new knowledge. It gives them a hand in exploring possibilities to prevent exposure of unnecessary risks and unnecessary healthcare expenditure.³ The results of this thesis are of interest to several target groups, as explained below.

2.1 Older Adults

Sarcopenia occurs in older adults living in the community, but also hospital patients and nursing homes resident are at risk of sarcopenia. Furthermore, younger adults that are temporarily immobile due to disease or injury might also face loss of muscle mass. Many of them will have never heard of sarcopenia, as the translation of sarcopenia research from science to practice has not yet been established. Informing these people (and their informal care givers) about the development, causes and consequences of sarcopenia will help them to recognize it and become aware that there are ways to delay the onset and progression of sarcopenia.

2.2 Health Care Professionals

Health care professionals working with people with (a risk of) sarcopenia such as nursing staff, home care workers, physiotherapists, general practitioners, nurse practitioners, occupational therapists, geriatricians and dieticians, can in the future help to identify older adults with (a risk of) sarcopenia. Also, health care professionals working with frail older adults, or older adults with osteoporosis should be attentive to sarcopenia. Chapter two of this thesis provides relevant information on the validity and reliability of tools that are feasible to screen for sarcopenia in older adults. Health care professionals may use these tools to identify older adults with (a risk of) sarcopenia. Although so far no consensus approach or national guidelines to treat sarcopenia are available, older adults identified with low muscle mass and/or function can be advised to start an exercise program or participate in a physical activity stimulating activity.⁴ In addition, fitness centres could play a preventive or curative role by providing facilities and a welcoming environment for older adults to exercise. They could also function as ‘walk-in’ for support with (self-) monitoring of health by older adults. Regarding nursing homes, recent research showed that nursing home residents are lying down or are seated for about 90% of the time.⁵ A mind-set shift within nursing staff from ‘take good care and so take over tasks of the resident’ to ‘let residents do it themselves where possible’ could contribute to more physical activity in this setting. Supplementation of specific nutrients (protein, vitamins, etc.) could be valuable as well, especially when combined with an exercise component.⁶ Furthermore, educating older adults about proper nutrition may further empower people to take responsibility for their own process of healthy (muscle) aging.

2.3 Industry

The studies in this thesis show that especially in residential living facilities the prevalence of sarcopenia is substantial. Bearing in mind that for older adults living in these facilities resistance exercise might not always be feasible, nutritional supplementation or pharmacological agents may be of support in reducing functional decline.⁷ In 2015, a taskforce made up of researchers, leaders from the pharmaceutical and nutritional industries, and representatives from non-profit organizations came together to discuss issues relating to drugs for frailty and sarcopenia.⁸ The results of this thesis support the option of combining treatment for sarcopenia and frailty, as has been shown that the two frailty criteria that were mostly present in frail older adults were weakness (poor grip strength) and slow walking speed, therewith showing much ground in common with sarcopenia.

In addition to the pharmaceutical and nutritional industries, advancements in technology are of interest for older adults with sarcopenia. For example, using a smartphone for self-monitoring of physical activity with direct feedback and goal setting has been shown effective in increasing physical activity levels in older adults with chronic obstructive pulmonary disease and diabetes.⁹ This new technology might also be suitable for counteracting (the negative consequences of) sarcopenia.

2.4 Health Insurance Companies

The results presented in this thesis demonstrate that sarcopenic older adults imply a considerable economic burden for health care. Interventions to prevent or delay the onset or progression of sarcopenia might lead to health benefits and subsequently reduce health care costs. At this moment health insurance companies are on the sideline, as sarcopenia is not officially recognized as a geriatric syndrome in Dutch health care. However, in the near future sarcopenia will have its own ICD-10 code, and will thereupon be visible for all stakeholders in health care. The Dutch Healthcare Authority obliges health care providers to register ICD-10 codes indicating the disease(s) of their patients. In the Netherlands health care providers do not have to forward the ICD-10 codes to the health insurance companies yet. However, the existence of an ICD-10 code will facilitate reimbursement, resource allocation, and decision making regarding future drug, nutritional or exercise treatment. By stimulating early identification and treatment of sarcopenia, health insurance companies could contribute to a reduction of the health and economic burden of sarcopenia.

2.5 Policy Makers

Dutch municipalities could contribute to awareness raising and counteracting sarcopenia as part of their role in aging in place. The municipality has the responsibility to advise and inform their inhabitants about possibilities for aging in place.¹⁰ On top of that they could provide a safe and challenging environment and stimulate the organization of (social) activities to improve physical activity.

3. Activities/Products

Public awareness is a key feature when trying to translate research into practice.¹¹ Several activities were undertaken to inform the target groups about sarcopenia and the study results. Before the start of the MaSS study a special website was launched, including information on the study procedures, but also links to general information about sarcopenia. In addition, an interview on sarcopenia was given to a local newspaper. Information about sarcopenia and the MaSS study have been disseminated to pharmacies and residential living facilities, and the latter facilities also placed a short summary of the results in their newsletters. Participants of the MaSS study received a brief overview of their individual scores on muscle strength, physical performance and nutritional status. Participants furthermore received a Dutch summary of the final research findings. A short preventive message based on the current evidence base was added to this summary. In addition the research findings have been presented at several national and international geriatric and gerontology conferences. The results of this thesis can furthermore be spread to relevant health care provider associations and associations for older adults.

Maastricht University offers bachelor students in Health Sciences a course in which sarcopenia is discussed. As these students might become future health care providers or employees at health insurance companies, informing this group is of importance. The particular studies in this thesis might be added to the resources provided to students.

4. Future Directions

The research in this thesis has contributed to unravelling the burden of sarcopenia in community dwelling older persons, and provides information on tools to identify older adults with sarcopenia. Now it is time to put the money where the mouth is. Advancements in the field of sarcopenia lag because of the absence of a universally accepted definition (including cut-off points) of sarcopenia. With this in mind, coming to a consensus definition followed by registration of an ICD-10 code is urgently needed to progress from the stage of sarcopenia research and awareness raising to acceptance and adoption of sarcopenia screening and treatment by the clinical community. Only then this geriatric giant will receive the attention it needs.

This thesis provides information on tools to identify older adults with sarcopenia, which can be used for screening purposes. Initiatives such as the SPRINT-T initiative are undertaken to identify proper strategies to counteract sarcopenia.¹² After proven effective, these interventions can be tested for feasibility in health care practice. Also the acceptance of new technologies to stimulate physical activity could be explored, such as bicycles for 2-4 persons. Cycling is a habit of many Dutch people, and these 2-4 person bicycles enable older adults to exercise in a safe way, if needed with an informal care giver or nursing staff as driver. However, as it will take some time to explore these opportunities, in the meantime disseminating information about sarcopenia to relevant target groups is of importance.

References

1. Guyton AC, Hall JE. Textbook of medical physiology. 11th ed. Philadelphia: Elsevier Saunders, 2005.
2. Luppá M, Luck T, Weyerer S, König HH, Brahler E, Riedel-Heller SG. Prediction of institutionalization in the elderly: a systematic review. *Age Ageing* 2010;39:31-38.
3. Grimshaw JM, Eccles MP, Lavis JN, Hill SJ, Squires JE. Knowledge translation of research findings. *Implement Sci* 2012;7:50.
4. Bosaeus I, Rothenberg E. Nutrition and physical activity for the prevention and treatment of age-related sarcopenia. *Proc Nutr Soc* 2015;1:1-7.
5. Den Ouden MD, Bleijlevens MH, Meijers JM, et al. Daily (in)activities of nursing home residents in their wards: an observation study. *J Am Med Dir Assoc* 2015;16:963-968.
6. Tieland M, Dirks ML, Van der Zwaluw N, et al. Protein supplementation increases muscle mass gain during prolonged resistance-type exercise training in frail elderly people: a randomized, double-blind, placebo-controlled trial. *J Am Med Dir Assoc* 2012;13:713-719.
7. Rolland Y, Onder G, Morley JE, Gillette-Guyonnet S, Abellan van Kan G, Vellas B. Current and future pharmacologic treatment of sarcopenia. *Clin Geriatr Med* 2011;27:423-447.
8. Cesari M, Fielding R, Benichou O, et al. Pharmacological interventions in frailty and sarcopenia: report by the International Conference on Frailty and Sarcopenia Research Task Force. *The J Frailty Aging* 2015;4:114-120.
9. Van der Weegen S, Verwey R, Spreeuwenberg M, Tange H, Van der Weijden T, De Witte L. It's LiFe!: mobile and web-based monitoring and feedback tool embedded in primary care increases physical activity: a cluster randomized controlled trial. *J Med Internet Res* 2015;17:e184.
10. Rijksoverheid. Langer zelfstandig wonen ouderen. Available from: <https://www.rijksoverheid.nl/onderwerpen/ouderenzorg/inhoud/ouderen-langer-zelfstandig-wonen>, last access January 2016.
11. Green LA, Seifert CM. Translation of research into practice: why we can't "just do it". *J Am Board Fam Pract* 2005;18:541-545.
12. Sarcopenia & Physical Frailty in older people: multi-component Treatment strategies. Why an innovative study in Geriatrics? [S.l.]: SPRINTT, 2015. Available from: <http://www.mysprintt.eu/>, last access January 2016.