**Editorial Age Ageing**

**Sarcopenia: a new geriatric giant - time to translate research findings into clinical practice**

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Geriatricians have long been aware of immobility and instability as geriatric giants but we have perhaps been slower to recognise the importance of underlying changes in ageing skeletal muscle. This situation is however rapidly changing and sarcopenia, the loss of skeletal muscle mass and function with age1, is the focus of intense research activity and increasingly recognised in clinical practice. It is therefore timely to consider how the emerging research findings can be translated into the improved care of older people.2

One of the landmark papers in the field was published by Cruz-Jentoft and colleagues in Age and Ageing in 2010. It describes the European Working Group on Sarcopenia in Older People (EWGSOP) consensus guidelines on the definition and diagnosis of sarcopenia. These include initial identification of impaired physical function, characterised by slow gait speed, followed by ascertainment of either low muscle strength, assessed by handheld dynamometry, or low muscle mass measured by a range of methods.3

This standardised approach has been enthusiastically adopted in prevalence studies across a range of settings and helpfully facilitated comparative research. For example a UK prevalence of 4.6 % in men and 7.9% in women average age 67 years using the EWGSOP approach was reported last year.4 Now there has been further consensus and the European group have joined forces with a wider group including experts from the US and Asia to form the International Sarcopenia Initiative (ISI). In this issue of the journal, Cruz-Jentoft and colleagues report on a systematic review of prevalence and intervention studies focusing on those using the EWGSOP approach.5

Regional, age-related and care setting variations in prevalence are reported as might be expected with the highest prevalence of 14 – 33% described for long term care populations, an intermediate prevalence of 1 – 29% for community dwelling populations, and 10% for the only acute hospital-care population studied. However despite restricting the studies to those utilising the EWGSOP approach, there remained methodological differences in the ascertainment of muscle mass, strength and physical performance as well as variation in the cut offs used between studies. These factors are likely to have contributed to the wide ranges in prevalence reported. The authors appropriately highlight the need for adequately powered studies in clearly defined populations with standardised methodology going forward and recently published work involving an epidemiological evidence-based comparison of operational criteria for the presence of sarcopenia is likely to aid this.6

With regard to exercise, a number of systematic reviews have reported improved muscle mass, strength and physical performance particularly in response to resistance exercise. However less has been done within the specific context of sarcopenia and this is the focus of the intervention studies considered here where the authors also found evidence of benefit. However translation of these findings into clinical practice is challenging. The type, duration and intensity of exercise is variable between studies, so an ‘off the shelf’ exercise prescription for sarcopenia remains an aspiration. Furthermore reproducing the intensive support available in trials is often not feasible in clinical practice meaning more pragmatic solutions need to be sought.7 Nevertheless this remains the intervention of choice and it is an area well suited for implementation science,wherethe study of methods to promote integration of research findings and evidence into healthcare policy and practice could usefully be harnessed going forward.

What about the place of nutrition in sarcopenia? Disappointingly the findings remain equivocal. This may reflect the generally small, heterogeneous studies in the field or a real lack of benefit but the jury remains out.8 Large, well-designed studies of nutrition particularly in combination with exercise are needed, ideally across healthcare settings. A similar approach would be highly beneficial to make sense of the emerging literature involving small studies of specific dietary components such as leucine and its metabolite hydroxymethylbutyrate, and omega 3-fatty acids. In terms of implications for clinical practice here and now, basing nutritional guidance on the evidence available from the wider health context is probably the best approach with little contention in the goals of replacing vitamin D where deficient, and ensuring an adequate intake of calories and protein, although there is debate about whether currently recommended protein intake levels are optimal. 9

The focus of research on interventions for sarcopenia to date has understandably focused on later life but there is emerging evidence that a life course approach to understanding sarcopenia may be beneficial. 10 This recognises that muscle mass and strength in later life reflect not only the prevailing rate of loss but also the peak attained earlier in life and therefore focuses attention on factors associated with peak muscle strength such as birth weight and early nutrition. Importantly with regard to developing interventions, the lifecourse approach widens the potential window for intervention to midlife and earlier rather than just when sarcopenia is established, although evidence to date is limited.

On the basis of the findings of this review, the authors propose that clinicians consider screening for sarcopenia in community and geriatric settings. However this is premature in the absence of unequivocal evidence of short and long term benefit for the existing interventions. Nevertheless as geriatricians we should have a high index of suspicion for sarcopenia in our patients across healthcare settings, be willing to measure as well as interpret gait speed , muscle strength and mass, and consider how best we can institute exercise programmes where indicated, together with dietary advice. It is time to translate existing research findings into clinical practice.

**Key Points**

Sarcopenia is common in older people across healthcare settings

It can be identified by assessing muscle mass, strength and physical performance

Exercise, particularly resistant exercise, is beneficial

The evidence for nutritional interventions at present is equivocal

**Key words** Sarcopenia Muscle strength Geriatric assessment Exercise Nutrition

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**References**

1. Morley JE, Baumgartner RN, Roubenoff R, Mayer J, Nair KS. Sarcopenia. J Lab Clin Med 2001;137:231-243.
2. Sayer AA. Sarcopenia. BMJ 2010; 341:c4097.
3. Cruz-Jentoft AJ, Baeyens JP, Bauer JM, Boirie Y, Cederholm T, Landi F, Martin FC, Michel JP, Rolland Y, Schenider SM, Topinkova E, Vandewoude M, Zamboni M, European Working Group on Sarcopenia in Older People. Sarcopenia: European consensus on definition and diagnosis: report the European Working Group on Sarcopenia in Older People. Age Ageing 2010;39:412-423.
4. Patel HP, Syddall HE, Jameson K, Robinson S, Denison H, Roberts HC, Edwards M, Dennison E, Cooper C, Aihie Sayer A. Prevalence of sarcopenia in community-dwelling older people in the UK using the European Working Group on Sarcopenia in Older People (EWGSOP) definition: findings from the Hertfordshire Cohort Study (HCS). Age Ageing 2013;42(3):378-384.
5. Cruz-Jentoft A, Landi F, Schneider SM, Zuniga C, Arai H, Boirie Y, Chen L-K, Fielding RA, Martin F, Michel J-P, Stout JR, Studenski SA, Vellas B, Woo J, Zamboni M, Cederholm T, Sieber C. Prevalence of and interventions for sarcopenia in ageing adults – a systematic review. Report of the International Sarcopenia Initiative (EWGSOP and IWGS). Age Ageing 2014 In press.
6. Dam TT, Peters KW, FragalaM, Cawthon PM, Harris TB, mcLean R, Shardell M, Alley DE, Kenny A, Ferrucci L, Guralnik J, Kiel DP, kritchevsky S, Vassileva MT, Studenski S. An evidence-based comparison of operational criteria for the presence of sarcopenia. J Gerontol A Biol Sci Med Sci 2014;69(5):584-590.
7. McMurdo ME. Exercise in old age: time to unwrap the cotton wool. Br J Sports Med 1999;33(5):295-296.
8. Robinson SM, Cooper C, Sayer AA. Nutrition and sarcopenia: a review of the evidence and implications for preventive strategies. J Aging Res. 2012;2012:510801.
9. Volpi E, Campbell WW, Dwyer JT, Johnson MA, Jensen GL, Morley JE, Wolfe RR. Is the optimal level of protein intake for older adults greater than the recommended dietary allowance? J Gerontol A Biol Sci Med Sci 2013;68(6):677-681.
10. Sayer AA, Robinson SM, Patel HP, Shavlakadze T, Cooper C, Grounds MD. New horizons in the pathogenesis, diagnosis and management of sarcopenia. Age Ageing 2013;42(2):145-150.