CONSENSUS STATEMENT

The Indian Sarcopenia Staging System

SCOPE TASK FORCE

ABSTRACT

Sarcopenia is a common yet an underrecognized clinical entity that is associated with multiple health consequences including high mortality. Though diagnostic criteria are published by different international working groups, there are no unified criteria to assess severity of sarcopenia. In this brief manuscript, we propose a novel comprehensive sarcopenia staging system. This assesses risk factors, clinical presentation, and complications of sarcopenia, so as to provide a comprehensive overview of sarcopenia severity. This staging system is easy to use. It can be used not only at diagnosis but also during follow-up to assess the treatment response. However, being a novel tool, this needs validation in diverse clinical settings and across different populations.

Keywords: Sarcopenia, Indian Sarcopenia Staging System, Edmonton Obesity Staging System, Sarcopenia Severity, Sarcopenia Staging

Sarcopenia is a common syndrome that is characterized by reduced muscle strength, muscle function, and/or muscle mass[1]. Various expert groups have proposed slightly differing definitions, but the South Asian consensus defines sarcopenia in the presence of any two of the above-mentioned triad of deficits[2].

This definition, though inclusive, does not give an idea about the severity of sarcopenia. Similarly, the SARC-F questionnaire is a screening tool, and its score may not necessarily offer an accurate idea of severity. The cut-offs for tests such as hand grip strength or sit-stand test, while validated, do not provide a 360-degree assessment of sarcopenia severity[2].

NEED FOR OBJECTIVE MARKERS OF SEVERITY

It is important to determine the severity of sarcopenia, and present it in an objective manner. This allows scientific assessment of the syndrome, as well as of therapeutic interventions. An objective scoring system brings uniformity to a subjective field, encourages improvement in clinical care, and facilitates research as well. Using such a score in clinical practice facilitates risk stratification, ensures appropriate counseling and therapeutic planning, prepares one for the need for medical and supportive health care resources, as well as assists in prognosis prediction[3]. Moreover, this also helps evaluate the response to a given intervention, and facilitates crafting of tailor made therapeutic plans.

CHALLENGES

It is difficult, however, to describe the style and severity of sarcopenia in one or two words[4]. A multifactorial syndrome, sarcopenia present with complex complaints, concerns, and challenges. It is accompanied by a collection of comorbid complications and comorbidities, each of which have their own convolutions. Malnutritive, medical, surgical, orthopedic, mental, malassimilative (social) and monetary factors, all converge together in varying proportions, to form the syndrome of sarcopenia[4].

OBESITY AND SARCOPENIA

To address this situation, we take inspiration from the Edmonton Obesity Staging System (EOSS)[5]. Designed to analyze an equally perplexing disease, the EOSS stratifies obesity in five numerical stages. These stages, based upon the presence of three broad clinical complications of obesity, assessing severity of medical, mental, and functional complications[6]. This allows risk stratification and therapeutic planning in an effective and efficient manner. Moreover, this staging system has been shown to predict mortality in a much more effective manner than conventional methods of obesity assessment like body mass index.

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SARCOPENIA STAGING

On similar lines, we propose the Indian Sarcopenia Staging System (ISSS). The ISSS lists 5 stages, which are numbered from 0 to 4, based upon their severity. A descriptive term is mentioned for each stage (Table 1). These are differentiated by the presence or absence of risk factors, symptoms/signs, complications of sarcopenia, and impairment of activities of daily living (ADL). These stages can be managed by various levels of prevention (Fig. 1). Persons with mild sarcopenia may respond to dietary and exercise-based interventions, while those with moderate or severe disease will need pharmacological therapy in the form of anabolic therapy. Identification and correction of causes of secondary sarcopenia will be required at all stages[2].

- Risk factors include nonmodifiable (age, menopause, genetic syndromes) and modifiable (physical inactivity, malnutrition, chronic medical, surgical, orthopedic, or mental disease) factors.
- Signs and symptoms are best screened by SARC-F questionnaire, and confirmed by measures of muscle strength, function, and mass.
- Complications, include the medical, metabolic musculoskeletal, mood related, malassimilative (social) and monetary consequences of sarcopenia, for which causality can be demonstrated.
- Comorbidities include various medical, surgical, orthopedic, and mental conditions that are present with sarcopenia, but are not directly caused by it.

Table 1. Indian Sarcopenic Staging System

Stage		Clinical status			Level of prevention	Treatment
Numerical	Descriptive	Risk factors	Symptoms/ Signs	Complications		
0	Healthy	Absent	Absent	Absent	Primordial	Healthy lifestyle
1	Preclinical	Present	Absent	Absent	Primary	Healthy lifestyle; Treat the risk factors
2	Mild	Present	Present	Absent	Early secondary	Nutritional optimization, Exercise regimen, Treat the risk factors
3	Moderate	Present	Present	Present, without significant impairment of ADL	Advanced secondary	Nutritional optimization, Exercise regimen, Anabolic therapy, Management of complications
4	Severe	Present	Present	Present, with significant impairment of ADL	Tertiary	Nutritional optimization, Exercise regimen, Anabolic therapy, Management of complications

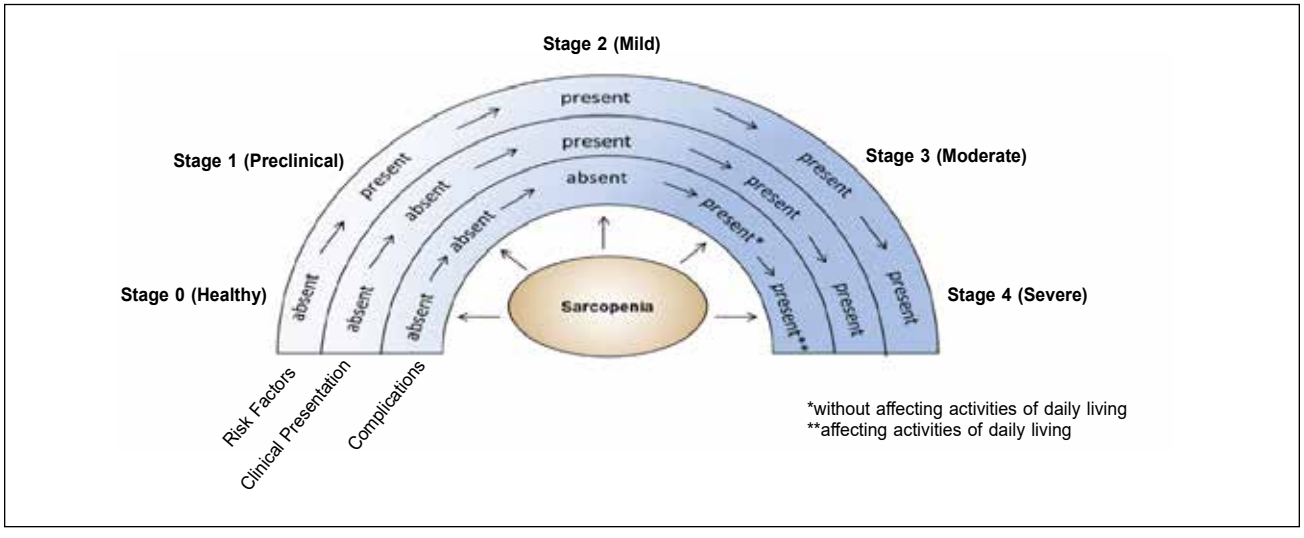

Figure 1. Indian Sarcopenic Staging System Score Card.

STRENGTHS

The ISSS lists modifiable and nonmodifiable risk factors, as well as complications and comorbidities, in a simple, reader-friendly and user-friendly style. The same scale can be used in all populations, irrespective of ethno-specific cutoffs for muscle strength.

LIMITATIONS

The ISSS needs to be used and validated in diverse clinical settings, ranging from primary care to specialist settings, and community dwellers to indoor patients. Enhanced discourse and discussion regarding the scoring system will help in improving it further as well.

THE WAY FORWARD

Sarcopenia is emerging as an important clinical and public health problem, not only in the geriatric population, but in younger age groups as well. There is a need for pragmatic and practical, staging systems to assess the severity of sarcopenia. ISSS addresses this need. Just as the EOSS has gained worldwide acceptance (202 citations as of 1 December 2024), we hope that the ISSS will be able to foster, and facilitate, better quality research in sarcopenia.

Though we use the term Indian, with pride, for the ISSS, it lends itself, humbly, to International utility and usage.

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