Timed up and go test better explains high-quality muscle mass in gynecological cancer patients

Regielly Candido Silva[1]; Gabriella Villaça Chaves[2]; Anke Bergmann[1]; Fernando Trevisan Frajacomo[1]

1 –Program of molecular Carcinogenesis – Brazilian National Cancer Institute; 2 – Department of Nutrition and Dietetics, Brazilian National Cancer Institute, Rio de Janeiro, Brazil.

INTRODUCTION

- A growing body of literature supports the shift paradigm towards loss of muscle strength and function, regardless of muscle mass, as greater importance to predict risk in elderly (McGregor et al 2014).
- Image assessments by Computerized Tomography (CT) scans are a routine in some cancer clinics and is a method of assessing muscle mass and composition through attenuation ranges (Aubrey et al., 2014).
- Emerging evidences suggest that reduced muscle radiation attenuation was associated with progression and lower survival in cancer (Van jiket al.,2017Kumar et al. 2016). However, radiation attenuation remains highly variable in cancer survivors (Aubrey et al., 2014), and the association of muscle radiation attenuation and functionality is lacking in cancer survivors.

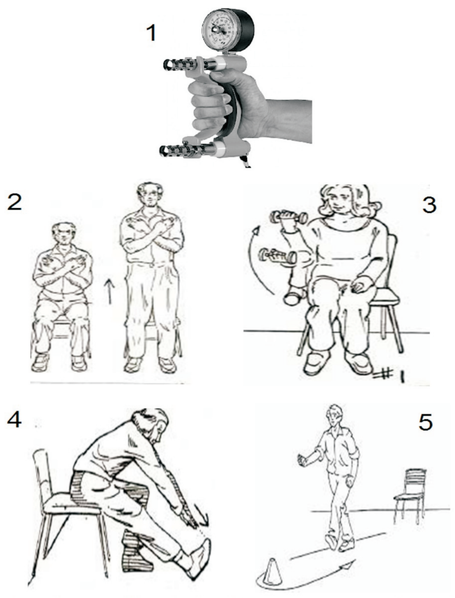
OBJECTIVE

To associate high-radiodensity skeletal muscle index with muscle strength and functionality in gynecological cancer survivors

METHODOLOGY

- Gynecological cancer atients, pre-surgical and hemonaepatients, age ≥ 18 years, and schedule to perform computed tomography for routine diagnosis were invited to participate.
- To body composition assessment, a single slice of each patient CT scan was selected at the level of L3 segmentndnalyzed using liceOmatic5.0 (omoVision Canada), able1.
- Functionalestsncludedandgriptrength(amar handgrip dynamometer), 30-sec chair stand test, 0-sec arm curl test(2kg umbell, it-and-reach test ndimed Up and Go (TUG) test (8 feet or 2.44m).

RESULTS



1. Jamar Handgrip Dynamometer. 2 to 5, Adapted from Rikli RE, Jones JC. Senior Fitness Test Manual. Human Kinetics. 2001.

Fig. 2. Functional Tests Chart

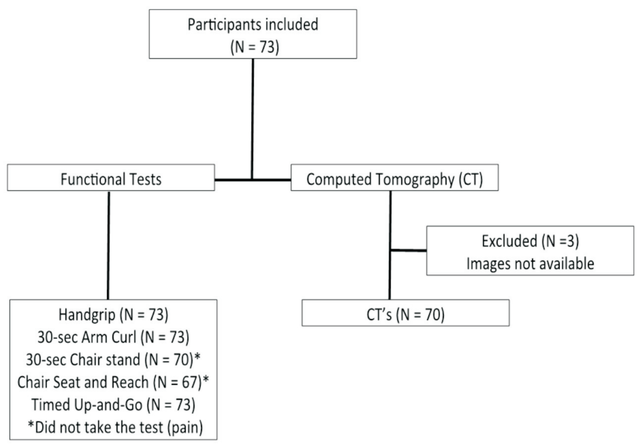


Fig. 3. Flow Diagram of Patients

Table 1. Characteristics of Participants

Patients	Mean (SD) / N	%
Age (years)	51.22 (15.14)	--
Below 65	55	75.3
Above or iqual to 65	18	24.7
Tumor site		
Cervical	44	60.3
Others	28	38.4
Lack of Information	1	1.3
Tumor stage (grouped)		
I, II, Benigns and Lack of information	43	58.9
III and IV	30	41.1
BMI[a]		
Underweight	8	11.0
Normal	22	30.1
Overweight	19	26.0
Obese	23	31.5
PG-SGA[b]		
A	39	53.4
B	30	41.1
C	4	5.5
Doninant Hand		
Right	65	89.0
Left	8	11.0
SMI/m²[c]		
Sarcopenic	24	32.9
Non-sarcopenic	46	63.0

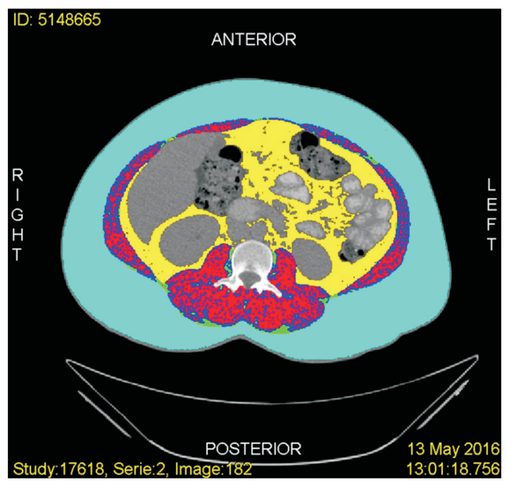


Figure 1. CT with SliceOmatic 5.0 assessment. Female, 33yrs, cervical cancer diagnosis, stage IIB, 88kg and BMI = 34.0

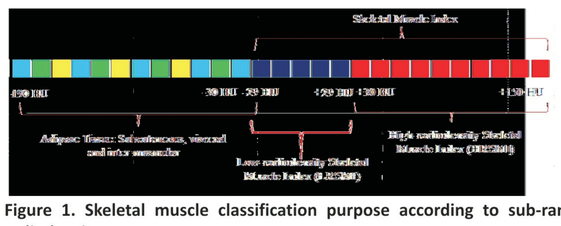


Figure 1. Skeletal muscle classification purpose according to sub-ranges of radiodensity

Table 2. Multiple linear regression between SMI and HRSMI and physical functional testicular

Independent Variables	SMI/m²			HRSMI/m²		
	Adjusted			Adjusted		
	β (95% CI)	*P* value	R^2	β (95% CI)	*P* value	R^2
Handgrip strength (Kg) (n=73)	0.26 (-0.00 to 0.52)[a]	0.052	42	0.27 (-0.01 to 0.55)[c]	0.059	33
30 sec Arm Curl (reps) (n=73)	0.37 (-0.06 to 0.80)[a]	0.092	41	0.43 (-0.03 to 0.89)[c]	0.067	32
30 sec Chair stand (reps) (n=70)	-0.02 (-0.40 to 0.35)[b]	0.905	45	0.14 (-0.26 to 0.54)[c]	0.486	32
Chair sit-and-reach (cm) (n=67)	-0.01 (-0.18 to 0.15)[b]	0.875	44	0.06 (-0.12 to 0.23)	0.531	30
Timed-up and go (sec) (n=73)	-0.41 (-1.22 to 0.40)[a]	0.315	40	**-1.45 (-2.38 to -0.52)**	**0.003**	**38**

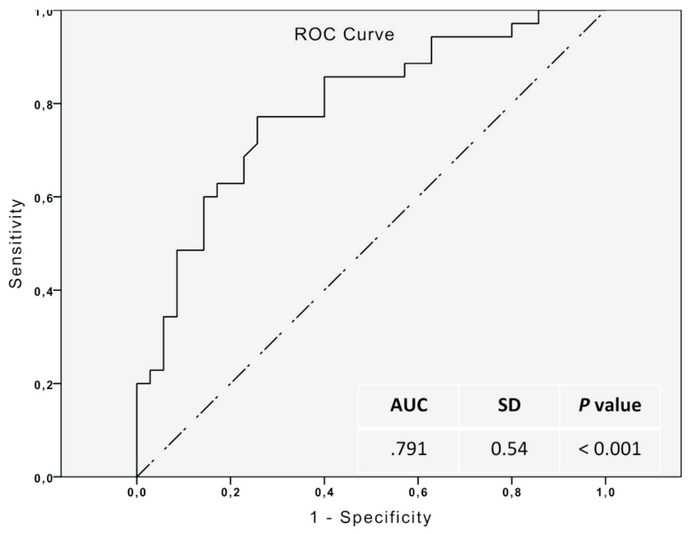


Fig. 4. TUG performance to HRSMI. Best cut-off point was set as 6.48s

RESULTS

HRSMI, regardless of total SMI, is associated with higher functionality in gynecological cancer patients.

CLINICAL IMPACT

TUG test is a surrogate marker to indicate HRSMI in gynecological cancer survivors.

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Projeto Gráfico: Setor de Edição e Informação Técnico-Científica / INCA