FONDAZIONE ITALIANA LINFOMI

LATE EFFECTS
GUARIRE DAL LINFOMA E VIVERE BENE

La sarcopenia e la cachessia neoplastica:

prevenirla e trattarla prima e dopo il linfoma.

Bari, 17-18 febbraio 2023

Aula Magna
Università degli Studi di Bari "Aldo Moro"

Dr.ssa De Candia M.Stella
IRCCS - Bari

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Disclosures of Name Surname

Company name	Research support	Employee	Consultant	Stockholder	Speakers bureau	Advisory board	Other
Abbvie						x	

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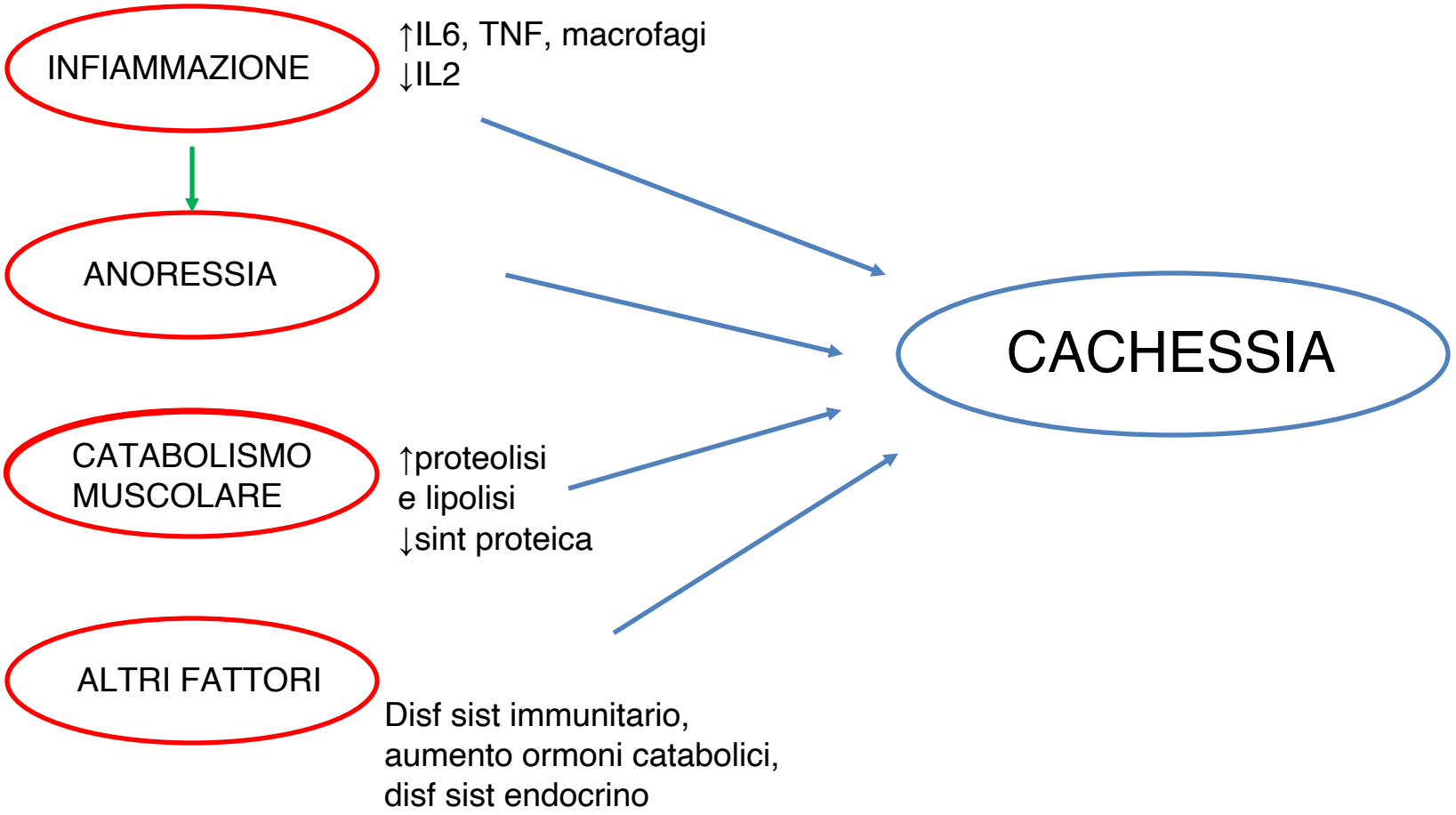
SARCOPENIA ≠ CACHESSIA

- perdita di massa muscolare associata a riduzione di:
- forza muscolare e/o di performance fisica

sindrome multifattoriale complessa caratterizzata da:
- perdita di peso
- riduzione della massa muscolare con o senza perdita di massa grassa
- aumentato catabolismo proteico
- associata a patologie croniche


INFIAMMAZIONE
↑IL6, TNF, macrofagi
↓IL2
ANORESSIA
CACHESSIA
CATABOLISMO MUSCOLARE
↑proteolisi
e lipolisi
↓sint proteica
ALTRI FATTORI
Disf sist immunitario,
aumento ormoni catabolici,
disf sist endocrino

Cachexia Index in Advanced Non-Small-Cell Lung Cancer Patients

Libertas Academica
FREEDOM TO RESEARCH

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Cachexia Index

$$CXI = \frac{SMI \times Alb}{NLR}$$

SMI=skeletal muscle index = skeletal muscle area/height
Alb = sieric albumin
NLR = neutrophil-to-lymphocyte ratio

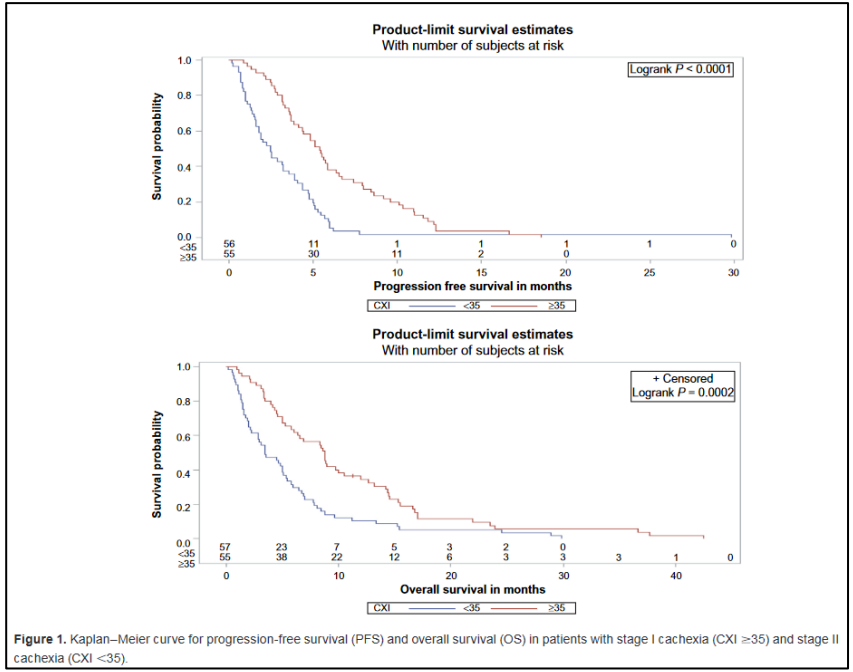
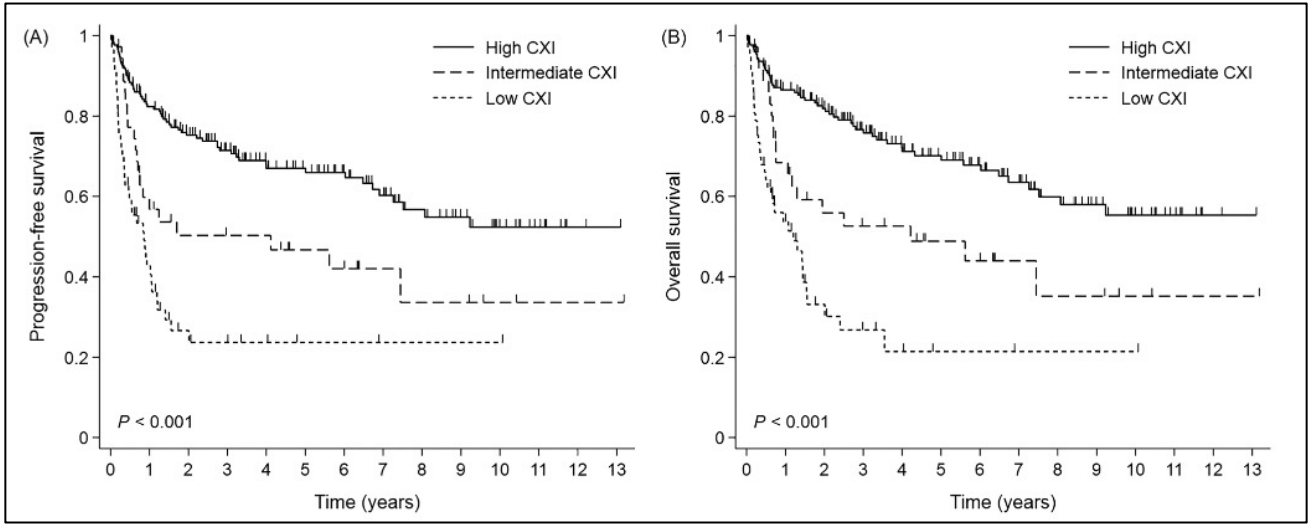


Figure 1. Kaplan–Meier curve for progression-free survival (PFS) and overall survival (OS) in patients with stage I cachexia (CXI ≥35) and stage II cachexia (CXI <35).

Cachexia index as a potential biomarker for cancer cachexia and a prognostic indicator in diffuse large B-cell lymphoma

Se- Il Go, J of Cachexia, Sarcopenia and Muscle ,2021

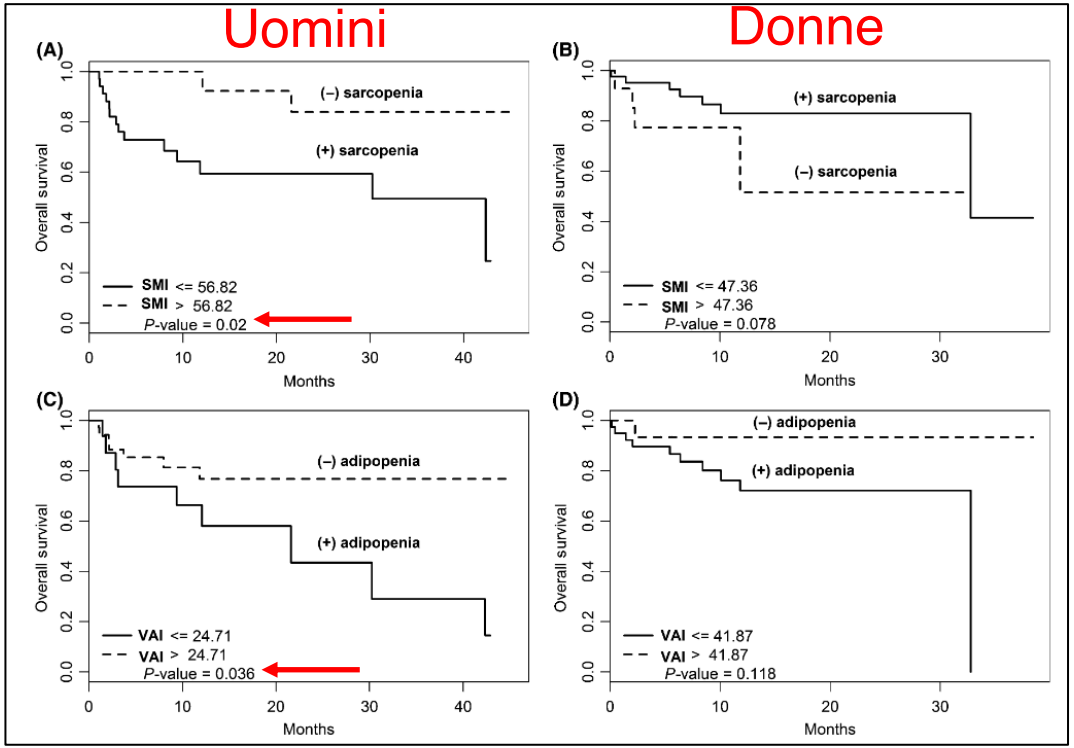


- ↑ patient's susceptibility chemotherapy-related toxicities
- ↓ responsiveness to chemotherapy
- Hypoalbuminema decreased relative dose intensity of antracycline and cyclofosfamide and increased risk of TRM

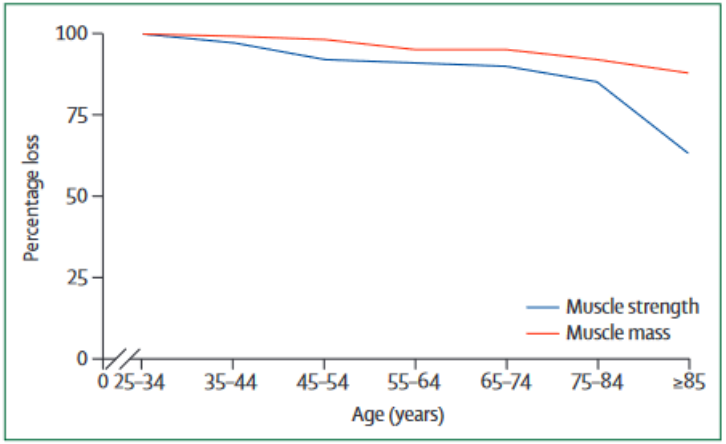
bjh research paper

Evaluation of the impact of cachexia on clinical outcomes in aggressive lymphoma

M. Burkart et al, BJH 2019

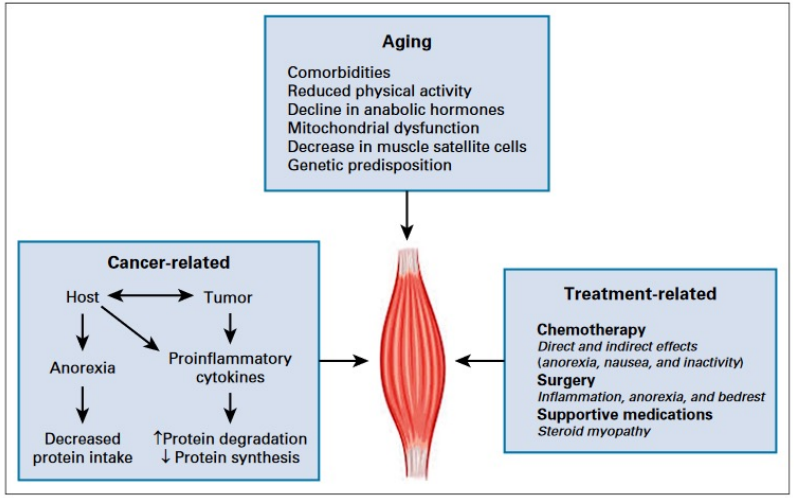


Sarcopenia



13% nei soggetti con < 70 anni
24% nei soggetti con 70-80 anni
30-50% nei soggetti con > 80 anni

Cruz-Jentoft AJ, Lancet 2019



William et al, JCO 2021

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Come indentificarla..

TABLE 3. Common Techniques for Identifying Sarcopenia

Technique	Pros	Cons	Common Definitions[a]
Anthropometry	Easily obtained and inexpensive	Relatively insensitive and significant interobserver variability	Calf circumference < 31 cm[55]
DEXA	High precision and accuracy to differentiate total body fat, lean muscle, and bone Safe for repeated measures	Differences between manufacturers and software versions Unable to quantify muscle density	ALM < 20 kg for men, < 15 kg for women[56]
CT	Highly accurate quantitative and qualitative measurements Useful in clinical settings where used as part of standard medical care	Large radiation exposure and costly if not obtained as part of routine care	Men < 52.4 cm^2/m^2 Women < 38.6 cm^2/m^2 [b,25]
BIA	Portable, safe, and inexpensive	Relies on population-specific regression equations and less accurate in altered states of hydration	Men < 10.75 kg/m^2 Women < 6.75 kg/m^2 [52]
MRI	Excellent-resolution images Most accurate method to detect body composition at tissue-organ level Safe	Costly and requires specialized personnel Cannot accommodate very large patients	No consensus definition specific to this modality[20]
Ultrasound	Portable, safe, and inexpensive	Lacks standardized techniques causing significant interobserver variability More qualitative than quantitative results Requires specialized personnel	Can provide an estimate of lean muscle mass and apply same cutoffs as DEXA (see above)[57]
Deuterated creatine (methyl-d_3)	Accurate and reproducible measure of total muscle mass Noninvasive and no radiation exposure	Needs further validation within oncology Not yet accepted by guidelines Requires urine collection on specified days after ingesting pill	D_3Cr muscle mass/body mass < 0.273[58]
Patient-reported (such as SARC-F and SarcoPRO)	Easily obtained and inexpensive	Requires confirmatory testing as primarily screening tools Not yet validated in oncology	SARC-F score of 4 or more[59]

Abbreviations: ALM, appendicular lean mass; BIA, bioelectrical impedance analysis; CT, computed tomography; D_3Cr, D_3 creatine; DEXA, dual-energy x-ray absorptiometry; MRI, magnetic resonance imaging; SARC-F, strength, assistance with walking, rising from a chair, climbing stairs, and falls; SarcoPRO, sarcopenia patient-reported outcome.

William et al, JCO 2021

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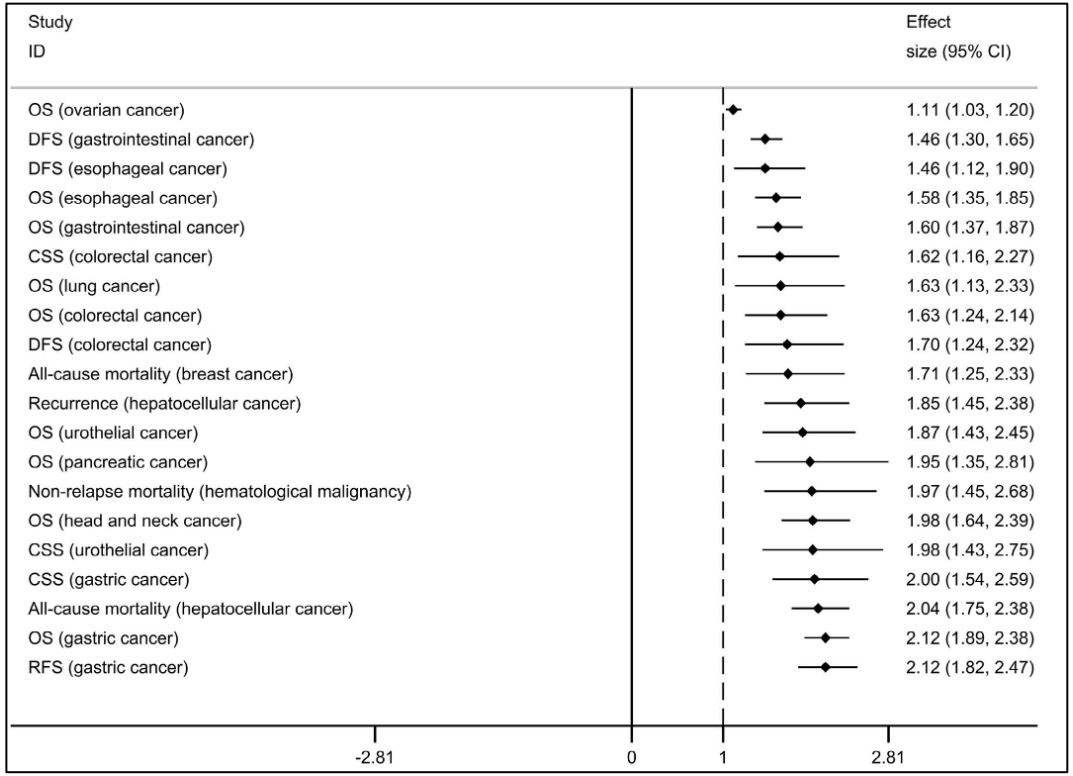
Perché misurarla..



Xia et al, Cancer Medicine 2020

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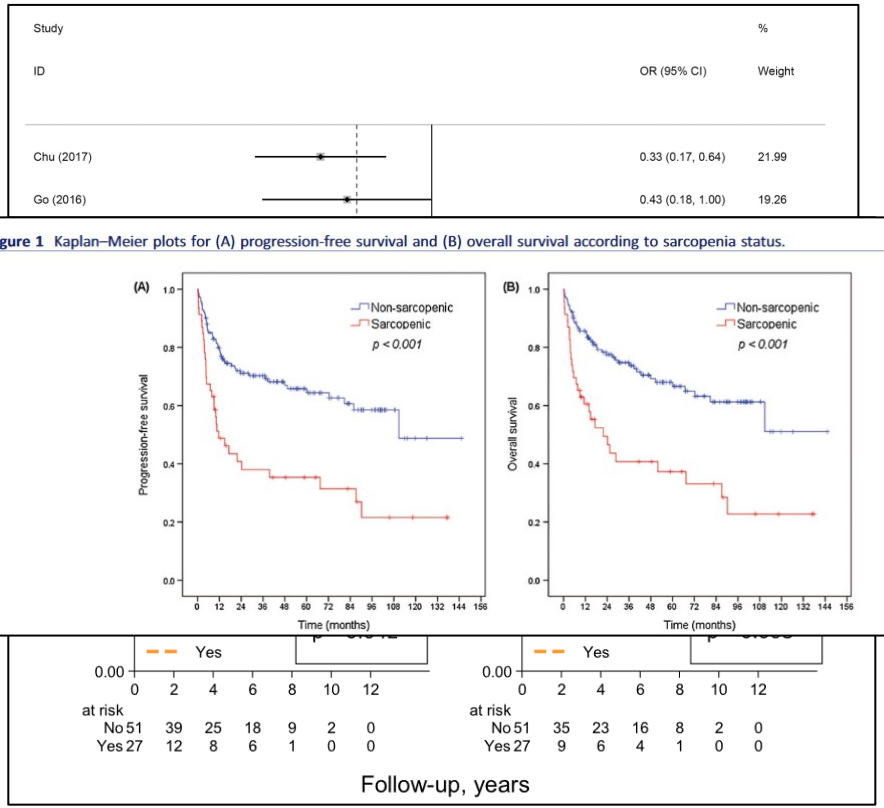
Prognostic Value of Sarcopenia in Patients With Diffuse Large B-Cell Lymphoma Treated With R-CHOP: A Systematic Review and Meta-Analysis

Xin-Tian Xu[1†], Dong-Liang He[2†], Meng-Xing Tian[3], Hui-Jing Wu[4] and Xin Jin[3]*



Prognostic impact of sarcopenia in patients with diffuse large B-cell lymphoma treated with rituximab plus cyclophosphamide, doxorubicin, vincristine, and prednisone

Se-Il Go[1†], Mi Jung Park[2†], Haa-Na Song[1], Hoon-Gu Kim[1,5], Myoung Hee Kang[1], Hyang Rae Lee[1], Yire Kim[1], Rock Bum Kim[3], Soon Il Lee[4] & Gyeong-Won Lee[1,5*]

Clinical and prognostic role of sarcopenia in elderly patients with classical Hodgkin lymphoma: a multicentre experience

Vittorio Ruggero Zilioli[1*], Domenico Albano[2], Annalisa Arcari[3], Francesco Merli[4], Alessandra Coppola[5], Giulia Besutti[6,7], Luigi Marcheselli[8], Doriana Gramegna[9], Cristina Muzi[1], Moana Manicone[7,10], Manuela Camalori[5], Patrizia Ciammella[10], Giuseppe Colloca[11] & Alessandra Tucci[9]

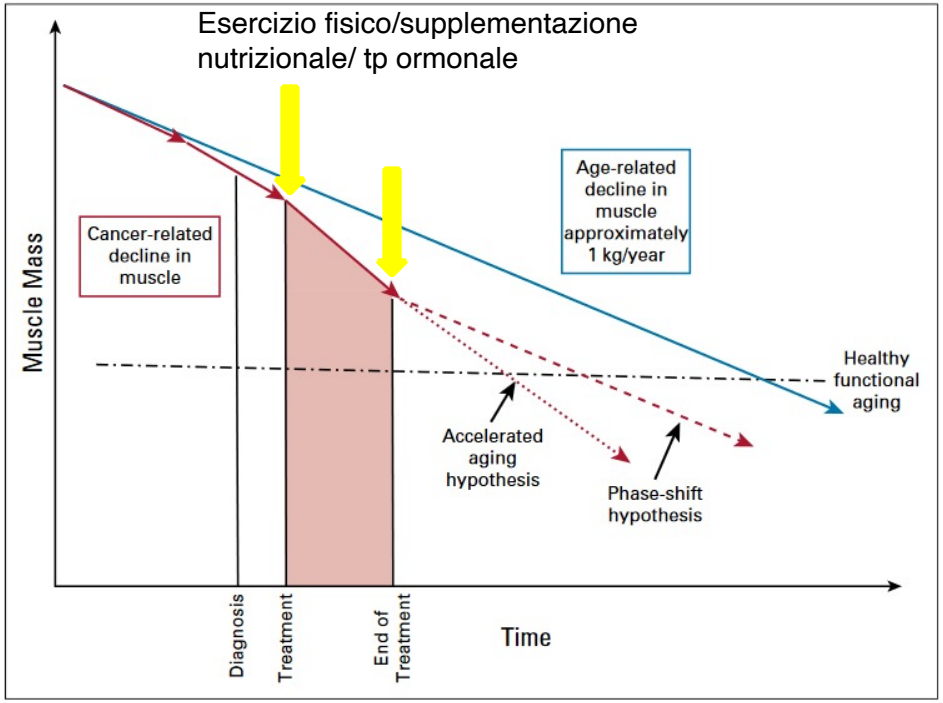
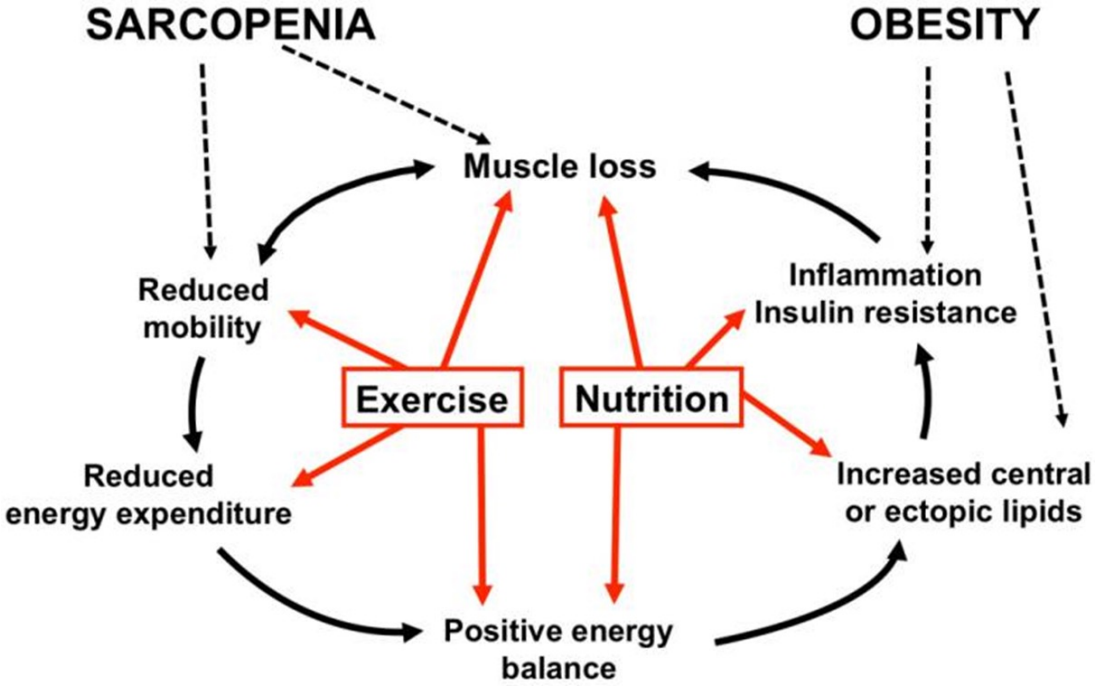


FIG 3. Hypothetical graph of the changes in muscle mass in older adults before and after a cancer diagnosis in comparison to normal age-related declines.

William et al, JCO 2021



Nutrients. 2018 May; 10(5): 605. Exercise and Nutrition Strategies to Counteract Sarcopenic Obesity Inez Trouwborst et al

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Exercise training (ET) in adult and elderly patients receiving anti-lymphoma treatments is feasible and may improve the provision of care

Maria Christina Cox[a,b,c], Sveva Maria Nusca[d,e*], Francesca Di Landro[a], Gabriella Marsilli[e], Giulia Stella[e], Matilde Sigona[e], Federica Ponzelli[e], Jasmine Passerini Desideri[f], Francesca Di Gregorio[g], Flavia Santoboni[e], Mario Vetrano[d], Donatella Trischitta[e], Renato Manno[c] and Maria Chiara Vulpiani[d,e]

Leukemia & Lymphoma 2020

Table 3. EORTC QLQ-C30: within and between groups analyses in the IG and the RG before (T0) and 6 months (T2) after the beginning of chemotherapy & exercise training (IG) or chemotherapy & observation (RG).

	Intervention Group (IG)		*p*-value	Reference Group		*p*-value	*p*-value between groups	
	T0	T2	within IG	T0	T2	within RG	T0	T2
[a]Quality of Life	41.0 (0.0–100.0)	75.0 (16.7–83.3)	.138	62.5 (0.0–91.7)	125.0 (0.0–00.0)	.141	.635	.111
[a]Physical functioning	67.0 (16.7–100.0)	83.0 (16.7–100.0)	.068	76.7 (40.0–100.0)	10.0 (0.0–40.0)	**.027**[a]	.254	**<.0001**
[a]Role functioning	50.0 (0.0–100.0)	100.0 (16.7–100.0)	**.026**[a]	66.7 (33.3–100.0)	16.7 (0.0–66.7)	**.046**[a]	.106	**.002**
[a]Emotional functioning	66.5 (16.7–100.0)	92.0 (16.7–100.0)	**.036**[a]	80.0 (33.3–100.0)	11.7 (0.0–40.0)	.046[a]	.570	**.001**
[a]Cognitive functioning	83.3 (16.7–100.0)	83.3 (67.0–100.0)	.107	75.0 (50.0–100.0)	0.0 (0.0–29.2)	**.024**	*.548*	.001
[a]Social functioning	67.0 (16.7–100.0)	100.0 (16.7–100.0)	**.016**	75.0 (66.7–100.0)	16.7 (0.0–33.3)	**.026**[a]	.444	**.001**
[b]Fatigue	61.1 (0.0–100.0)	11.0 (0.0–27.5)	**.006**	33.3 (0.0–57.0)	23.3 (0.0–40.8)	.357	.076	**.001**
[b]Nausea and vomiting	17.0 (0.0–66.7)	0.0 (0.0–16.7)	**.026**[a]	0.0 (0.0–33.3)	0.0 (0.0–50.0)	.180	.062	.645
[b]Pain	33.3 (0.0–100.0)	0.0 (0.0–17.0)	**.007**	16.7 (0.0–50.0)	0.0 (0.0–0.0)	.577	.052	.804
[b]Dyspnea	25.0 (0.0–100.0)	0.0 (0.0–33.3)	.084	0.0 (0.0–66.7)	0.0 (0.0–33.3)	.317	.413	.750
[b]Insomnia	33.0 (0.0–100.0)	0.0 (0.0–33.3)	.101	33.3 (0.0–66.7)	0.0 (0.0–66.7)	1.000	.626	.860
[b]Appetite loss	33.0 (0.0–100.0)	0.0 (0.0–16.7)	**.011**[a]	0.0 (0.0–33.3)	0.0 (0.0–33.3)	1.000	.222	.301
[b]Constipation	8.5 (0.0–100.0)	0.0 (0.0–33.3)	**.024**[a]	16.7 (0.0–66.7)	0.0 (0.0–33.3)	.564	.460	.916
[b]Dhiarroea	0.0 (0.0–66.7)	0.0 (0.0–100.0)	.564	0.0 (0.0–66.7)	0.0 (0.0–66.7)	.785	1.000	.261
[b]Financial difficulties	0.0 (0.0–33.0)	0.0 (0.0–66.7)	.578	33.3 (0.0–66.7)	0.0 (0.0–100.0)	.705	***.012***	

EORTC QLQ-C30: item European Organization Research and Treatment of Cancer-Quality of Life-C30 questionnaire, IG: intervention group; RG: reference group. Bold values suggest statistically significant at $p<.05$.
[a]Values increase with improved patient's perception.
[b]Values increase with worsen patient's perception.

- Prospective study on supervised Exercise-Training (ET), in consecutive, patients aged 18-80years, during anti-lymphoma treatments

- Median-age = 65.5y

-IG showed substantial improvements compared to the CG in cardiorespiratory fitness (Cooper test)

- Benefit in all the functional domain of the QoL questionnaire (QLQ-C30) at T2

- ET, during chemotherapy, is feasible and safe, even in patients ≥65 years

- Furthermore, it may improve the provision of care

medicina

MDPI

Article

Effects of Physical Exercise Intervention on Psychological and Physical Fitness in Lymphoma Patients

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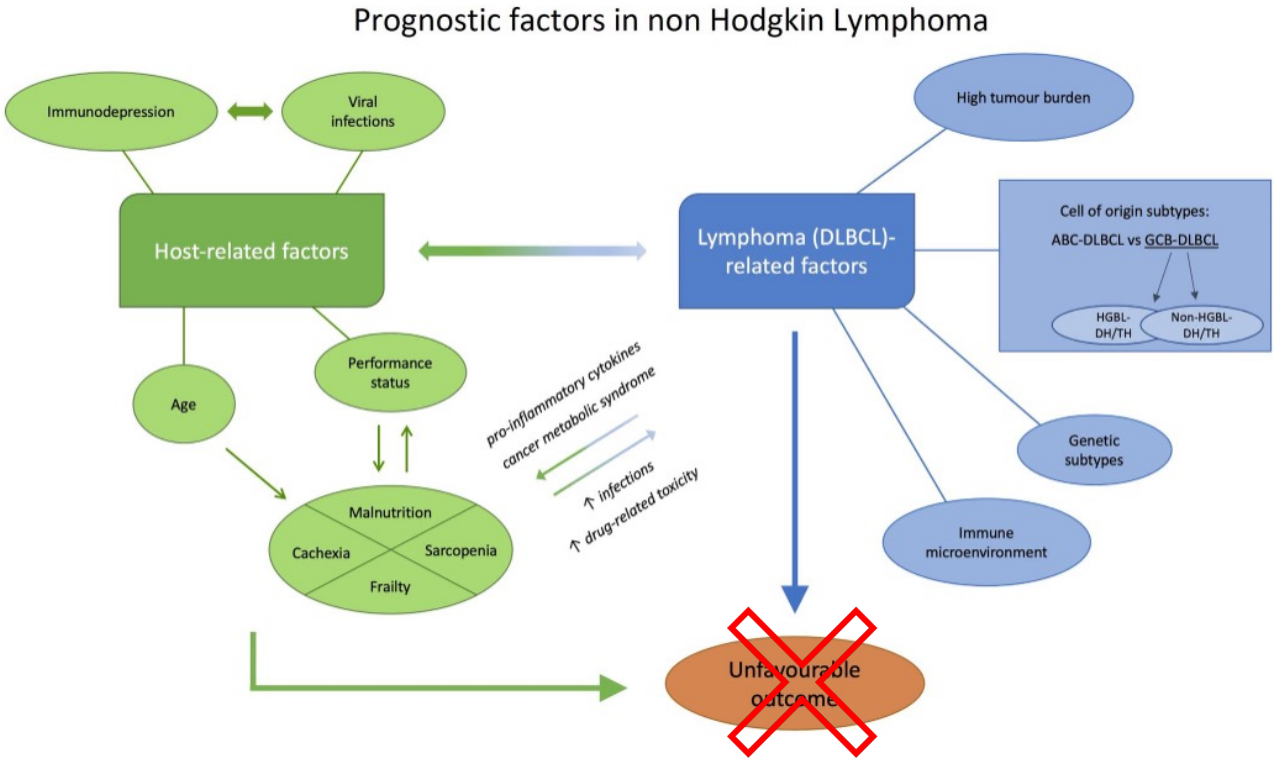
Concludendo..



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Grazie per l'attenzione..