FORCE
Focus On Research & CarE

IL RUOLO DELL'ESERCIZIO FISICO NELLE PATOLOGIE ONCOLOGICHE: LA TEORIA

Dott.ssa Alice Avancini

alice.avancini@univr.it

IL RUOLO DELL'ATTIVITA' FISICA NELLA PREVENZIONE PRIMARIA

TABLE 1. The level of evidence linking physical activity with lower risk and sitting time with higher risk of cancer in 2008 (43) and 2018 (9) according to the Physical Activity Guidelines for Americans Advisory Committee.

Cancer	Physical Activity and Lower Risk, 2008	Physical Activity and Lower Risk, 2018	Sitting Time and Higher Risk, 2018
Colon	Strong	Strong	Moderate
Breast	Strong	Strong	—
Kidney	—	Strong	—
Endometrial	Limited	Strong	Moderate
Bladder	—	Strong	—
Esophageal (adenocarcinoma)	—	Strong	—
Stomach (cardia)	—	Strong	—
Lung	Limited	Moderate	Moderate
Hematologic	—	Limited	—
Head and neck	—	Limited	—
Pancreas	—	Limited	—
Prostate	No effect (limited)	Limited	—
Ovary	Limited	Limited	—
Brain	—	Not assignable	—
Thyroid	—	No effect (limited)	—
Rectal	No effect (limited)	No effect (limited)	

- Vi sono ***«forti» evidenze*** che mostrano il ruolo protettivo dell'attività fisica (riduzione del rischio tra 10%-24%) per i seguenti tipi di cancro: colon, mammella, rene, endometrio, vescica, esofago e stomaco;
- ***Evidenze «moderate»*** per quanto riguarda il ruolo protettivo nel cancro polmonare;
- 28% di aumento del rischio di melanoma

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150 -300 MINUTI A SETTIMANA

DI ATTIVITÀ FISICA AD INTENSITÀ MODERATA

O

75 -150 MINUTI A SETTIMANA

DI ATTIVITÀ FISICA AD INTENSITÀ VIGOROSA

- le maggiori evidenze derivano da studi di coorte, nel quale vengono somministrati questionari;
- molti tipi di attività non sono ancora stati indagati (es. attività di forza);
- la precisa quantità di attività fisica necessaria per ridurre il rischio di cancro rimane ancora da determinare.

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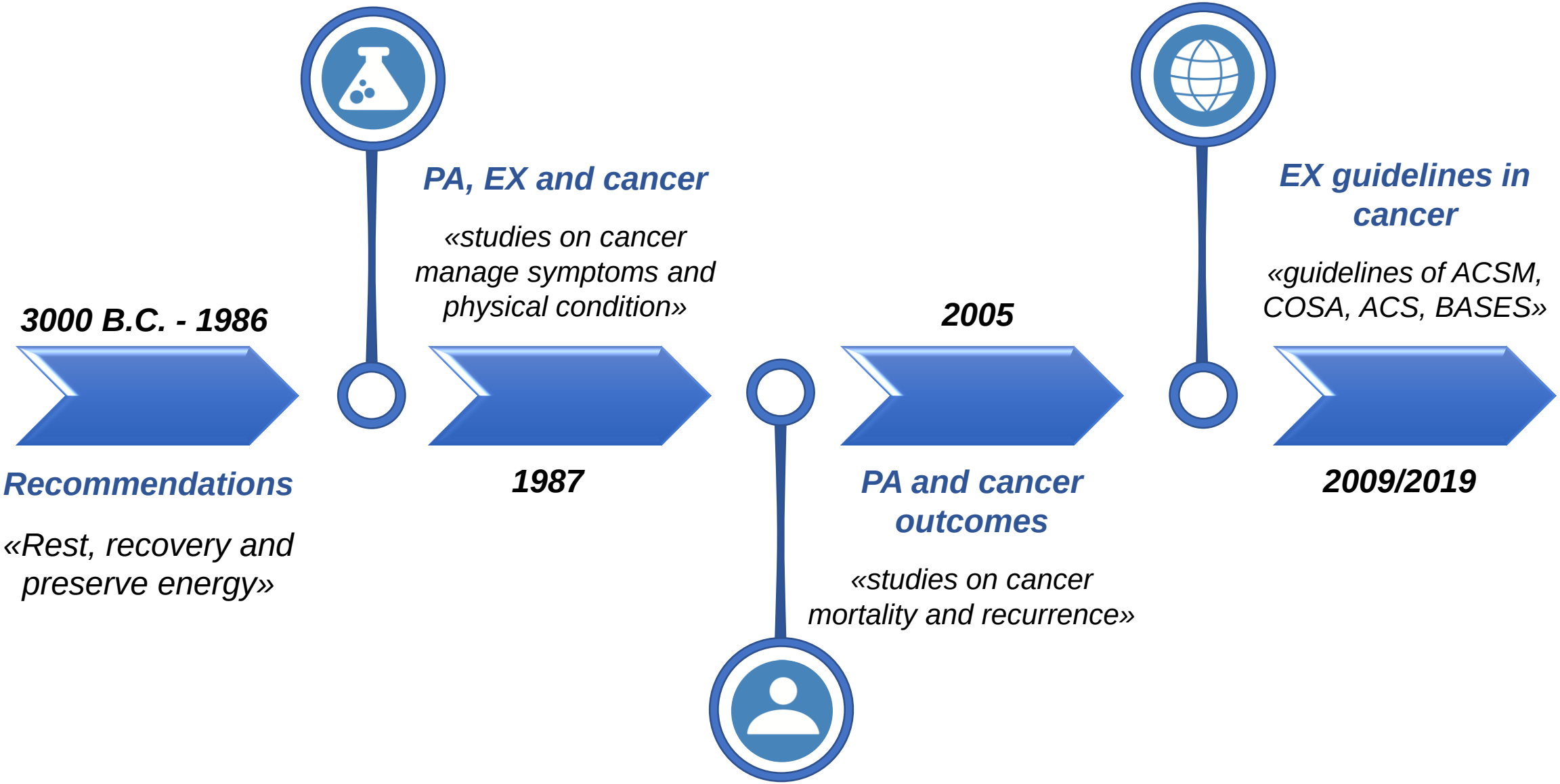

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TABLE 3. Summary of risk estimates for prediagnosis and postdiagnosis physical activity in relation to cancer-specific and all-cause mortality among cancer survivors.

	Prediagnosis Physical Activity				Postdiagnosis Physical Activity			
	Cancer-Specific Mortality		All-Cause Mortality		Cancer-Specific Mortality		All-Cause Mortality	
Cancer Site	*N*[a]	RR (95% CI)	*N*	RR (95% CI)	*N*	RR (95% CI)	*N*	RR (95% CI)
Breast	17	0.82 (0.73–0.92)	17	0.79 (0.72–0.86)	12	0.69 (0.56–0.84)	13	0.59 (0.48–0.71)
Colorectal	8	0.77 (0.68–0.87)	7	0.75 (0.68–0.83)	7	0.70 (0.54–0.90)	9	0.62 (0.50–0.77)
Prostate	6	0.99 (0.86–1.15)	2	0.87 (0.80–0.96)	4	0.67 (0.52–0.87)	3	0.55 (0.40–0.76)
Endometrium	2	1.04 (0.81–1.36)	2	0.92 (0.77–1.10)	—	—	—	—
Ovarian	2	1.01 (0.80–1.27)	3	0.90 (0.71–1.13)	—	—	—	—
Kidney	1	0.50 (0.27–0.93)	—	—	—	—	—	—
Lung	1	0.78 (0.66–0.93)	—	—	—	—	1	0.67 (0.31–1.48)
Melanoma	1	1.09 (0.69–1.70)	—	—	—	—	—	—
Non-Hodgkin Lymphoma	—	—	1	0.85 (0.73–0.99)	1	0.56 (0.31–1.03)	1	0.63 (0.48–0.81)
Childhood cancers	—	—	—	—	1	0.74 (0.39–1.42)	1	0.79 (0.62–1.00)
Esophageal	—	—	—	—	1	0.31 (0.22–0.43)	—	0.79 (0.55–1.13)
Gastric	—	—	—	—	—	—	1	0.75 (0.61–0.93)
Malignant glioma	—	—	—	—	—	—	1	0.64 (0.46–0.91)

[a]All published articles on physical activity and cancer survival were identified to January 2018 and risk estimates for the highest vs lowest quantiles of physical activity and survival outcomes were extracted. A meta-analysis was conducted to provide overall summary risk estimates by cancer site.

Attività fisica pre-diagnosi:

- Riduzione della mortalità cancro-specifica: ***18% mammella; 23% colo-retto;***
- Riduzione della mortalità per tutte le cause: ***range tra 13% e 25%.***

Attività fisica post-diagnosi:

- Riduzione della mortalità cancro-specifica: ***range tra 26% e 69%;***
- Riduzione della mortalità per tutte le cause: ***range tra 21% e il 45%.***

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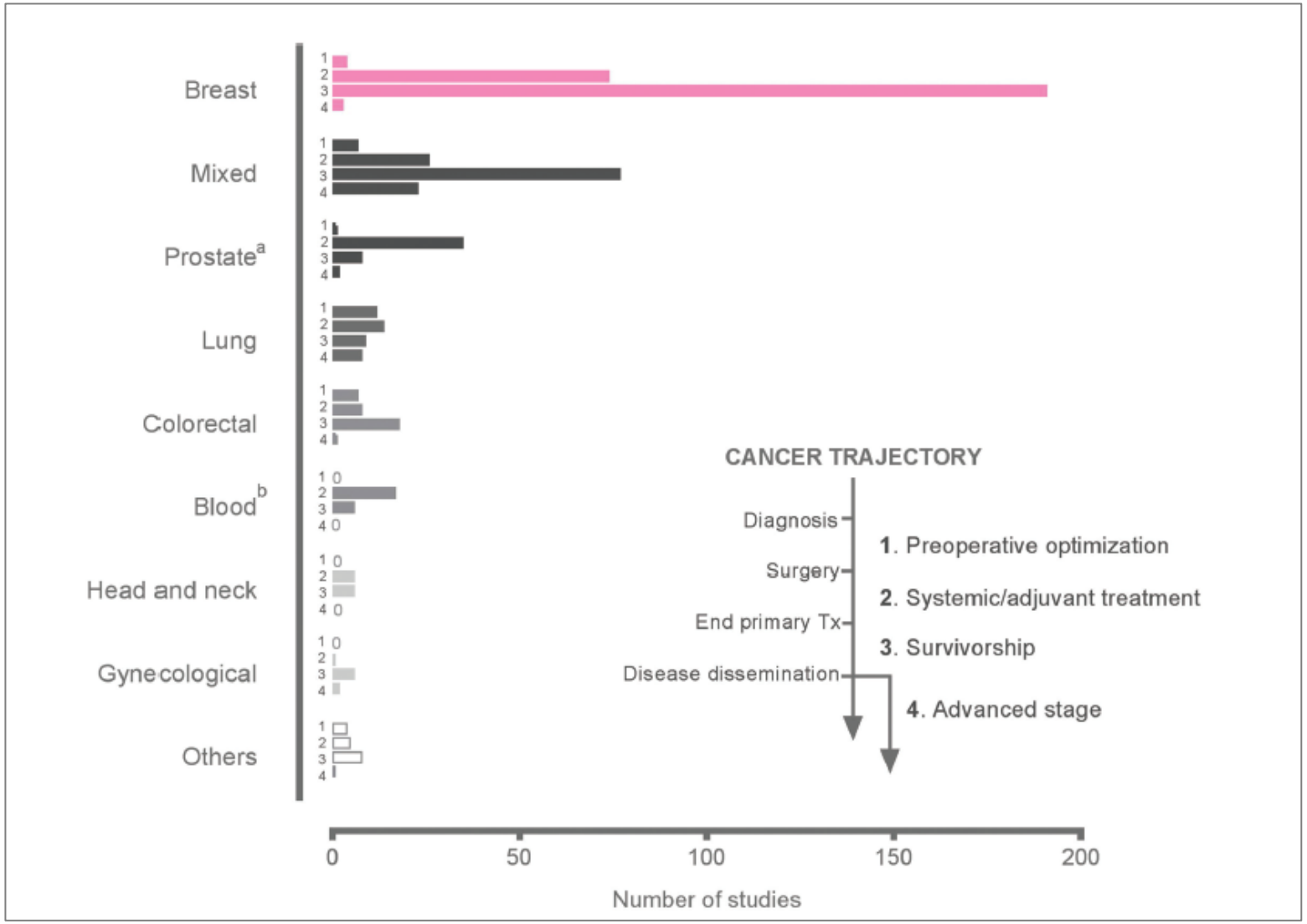
Outcome	Aerobic Only	Resistance Only	Combination (Aerobic + Resistance)
Strong Evidence	Dose	Dose	Dose
Cancer-related fatigue	**3x**/week for **30** min per session of moderate intensity	**2x**/week of **2** sets of **12-15** reps for major muscle groups at moderate intensity	**3x**/week for **30** min per session of moderate aerobic exercise, plus **2x**/week of resistance training **2** sets of **12-15** reps for major muscle groups at moderate intensity
Health-related quality of life	**2-3x**/week for **30-60** min per session of moderate to vigorous	**2x**/week of **2** sets of **8-15** reps for major muscle groups at a moderate to vigorous intensity	**2-3x**/week for **20-30** min per session of moderate aerobic exercise plus **2x**/week of resistance training **2** sets of **8-15** reps for major muscle groups at moderate to vigorous intensity
Physical Function	**3x**/week for **30-60** min per session of moderate to vigorous	**2-3x**/week of **2** sets of **8-12** reps for major muscle groups at moderate to vigorous intensity	**3x**/week for **20-40** min per session of moderate to vigorous aerobic exercise, plus **2-3x**/week of resistance training **2** sets of **8-12** reps for major muscle group at moderate to vigorous intensity
Anxiety	**3x**/week for **30-60** min per session of moderate to vigorous	Insufficient evidence	**2-3x**/week for **20-40** min of moderate to vigorous aerobic exercise plus **2x**/week of resistance training of **2** sets, **8-12** reps for major muscle groups at moderate to vigorous intensity
Depression	**3x**/week for **30-60** min per session of moderate to vigorous	Insufficient evidence	**2-3x**/week for **20-40** min of moderate to vigorous aerobic exercise plus **2x**/week of resistance training of **2** sets, **8-12** reps for major muscle groups at moderate to vigorous intensity
Lymphedema	Insufficient evidence	**2-3x**/week of progressive, supervised, program for major muscle groups does not exacerbate lymphedema	Insufficient evidence
Moderate Evidence			
Bone health	Insufficient evidence	**2-3x**/week of moderate to vigorous resistance training plus high impact training (sufficient to generate ground reaction force of **3-4** time body weight) for at least **12** months	Insufficient evidence
Sleep	**3-4x**/week for **30-40** min per session of moderate intensity	Insufficient evidence	Insufficient evidence

Tipologia	Aerobico	Forza
Frequenza	3 volte a settimana	2 volte a settimana
Durata	30' a sessione	2 serie / 8-15 ripetizioni
Intensità	60-80% FCmax	65-85% 1RM
Lunghezza intervento	12 settimane	12 settimane

Il programma deve essere flessibile, basato sulle condizioni iniziali del soggetto, sugli effetti collaterali, le preferenze e le necessità della persona.



Trasferibili ?

Ma è così semplice far praticare esercizio fisico ai pazienti?

The Oncologist®

Lung Cancer

Physical Activity and Exercise in Lung Cancer Care: Will Promises Be Fulfilled?

Alice Avancini,[a] Giulia Sartori,[b,c] Anastasios Gkountakos,[d] Miriam Casali,[b,c] Ilaria Trestini,[b,c] Daniela Tregnago,[b,c] Emilio Bria,[e,f] Lee W. Jones,[g,h] Michele Milella,[b,c] Massimo Lanza,[i,†] Sara Pilotto [b,c,†]

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Author	Sample	Design	Duration and type of intervention	Dropout	Results
Sommer et al.[1]	40 NSCLC (stage I-IIIa)	RCT (preoperative + early intervention after surgery; preoperative + late intervention after surgery; early intervention after surgery; late intervention after surgery)	2 weeks of home based preoperative exercise intervention; 12 weeks of postoperative multidisciplinary intervention (aerobic, strength and nature activity + dietary guidance+ social counselling + patient education + other options);	27.50%	↑ QoL (some domains); ↓ anxiety, depression and distress levels; no significant difference for behavior habits.
Messaggi-Sartor et al.[2]	37 NSCLC (stage I-II)	RCT	8 weeks of aerobic exercise plus high intensity respiratory muscle training vs usual care	31.25% (EX), 38% (UC)	↑ VO2peak; ↑ respiratory muscle strength; ↑ IGFBP-3 serum level; no changes for other outcomes;
Park et al.[3]	12 NSCLC (stage IIIb-IV) and SCLC (ED)	Single arm	8 weeks of aerobic plus strength training	25%	feasible
Dhillon et al.[5]	112 NSCLC (stage III-IV) and SCLC	RCT	2 months of supervised and unsupervised physical activity program + 4 months follow-up + 6 months follow-up vs education materials only	38% (EX) 50%(UC)	↑ physical activity levels in EX group at 4 and 6 months No change for other outcomes at the three assessment times
Arbane et al.[20]	131 NSCLC (stage I-IV)	RCT	4 weeks of aerobic and strength (5 days inpatients) and walking program vs usual care	40.50%	↑ QoL in airflow obstruction patients; No change for other outcomes;
Temel et al.[30]	25 NSCLC (stage IIIb-IV)	Single arm	12 weeks of aerobic and strength program	56%	Only 44% complete the program; ↑ Elbow extension strength; ↓ cancer-related symptoms; No change for other outcomes;

Exercise Guidelines for Cancer Survivors: Consensus Statement from International Multidisciplinary Roundtable

KRISTIN L. CAMPBELL[1], KERRI M. WINTERS-STONE[2], JOACHIM WISKEMANN[3], ANNE M. MAY[4], ANNA L. SCHWARTZ[5], KERRY S. COURNEYA[6], DAVID S. ZUCKER[7], CHARLES E. MATTHEWS[8], JENNIFER A. LIGIBEL[9], LYNN H. GERBER[10,11], G. STEPHEN MORRIS[12], ALPA V. PATEL[13], TRISHA F. HUE[14], FRANK M. PERNA[15], and KATHRYN H. SCHMITZ[16]

REVIEW ARTICLE

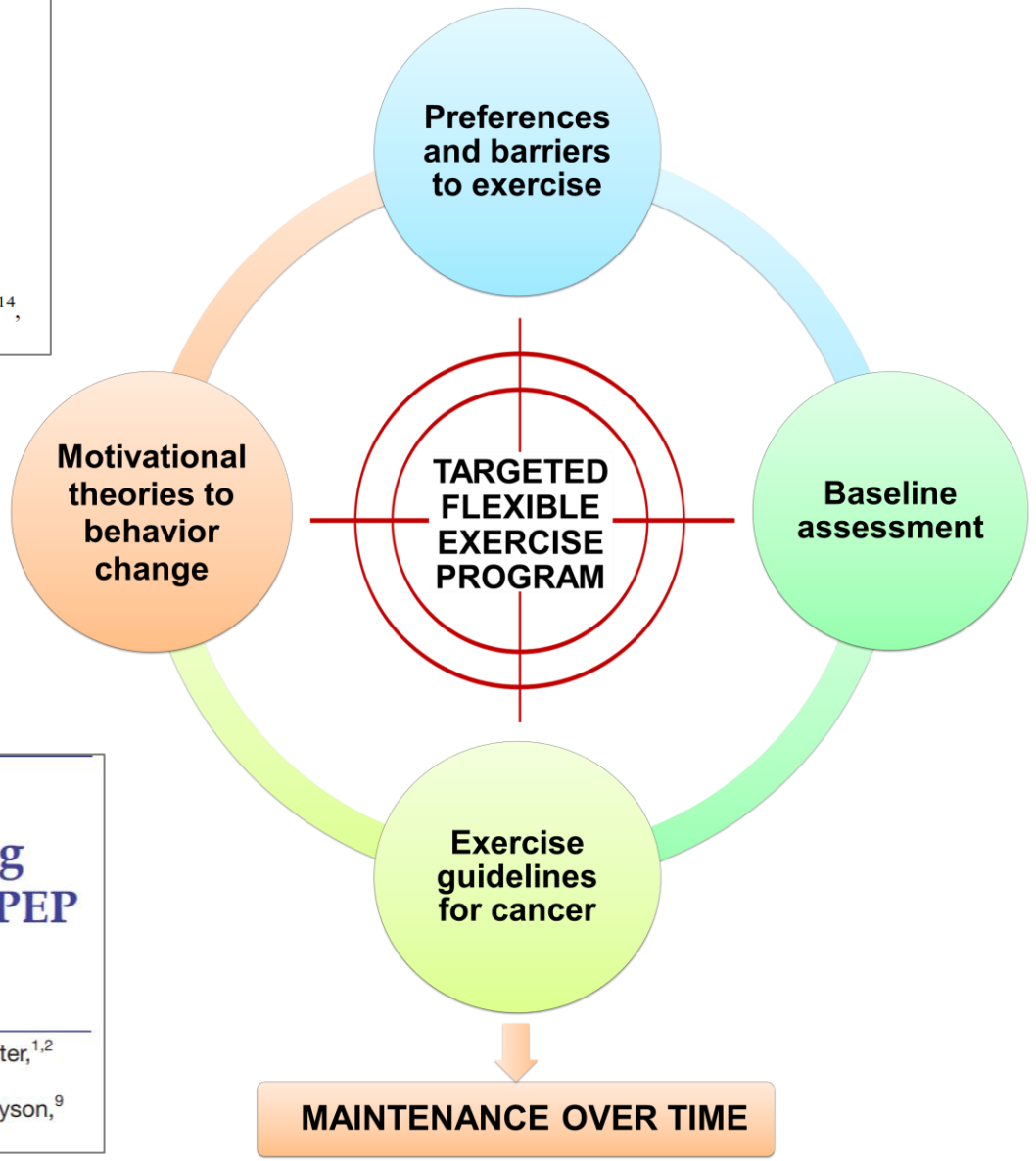
Understanding factors influencing physical activity and exercise in lung cancer: a systematic review

Catherine L. Granger[1,2,3] · Bronwen Connolly[4,5,6] · Linda Denehy[1,3] · Nicholas Hart[4,5,7] · Phillip Antippa[8] · Kuan-Yin Lin[1,2] · Selina M. Parry[1]

BMJ Open

Precision-Exercise-Prescription in patients with lung cancer undergoing surgery: rationale and design of the PEP study trial

Cornelia M Ulrich,[1,2] Caroline Himbert,[1,2] Kenneth Boucher,[1,3] David W Wetter,[1,2] Rachel Hess,[2,4] Jaewhan Kim,[1,5] Kelly Lundberg,[6] Jennifer A Ligibel,[7] Christopher A Barnes,[8] Bailee Rushton,[1] Robin Marcus,[8] Samuel R G Finlayson,[9] Paul C LaStayo,[8] Thomas K Varghese[9,10]



PROGETTI IN CORSO…

C.H.O.i.C.E. **(Choose Health: Oncological patients Centered Exercise)**

PI: Prof. Massimo Lanza and Dr. Sara Pilotto

S.P.R.I.N.T. **(Short Preoperative tRaining in luNg patienTs)**

PI: Prof. Massimo Lanza and Prof. Maurizio Valentino Infante

ED.u.C.A. **(Educational material Development for physical activity in CAncer)**

PI: Prof. Massimo Lanza and Dr. Sara Pilotto

E.C.H.O. **(Exercise in lung Cancer: the Healthcare providers Opinion)**

PI: Dr. Sara Pilotto

EORTC
The future of cancer therapy

P.E.P.SY. **(Preoperative Exercise assessment in Pancreatic Surgery)**

PI: Prof. Massimo Lanza and Prof. Claudi Bassi

M.OV.E-O.N **(Multidipliplinary OVertures: an Explorative study in ONcology)**

PI: Dr. Sara Pilotto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