



UNIVERSITÀ DEGLI STUDI DI ROMA "FORO ITALICO"

TERAPIE INTEGRATE IN ONCOLOGIA

1° Incontro

Terapie Integrate e carcinoma mammario

SESSIONE:

Stili di vita: come migliorare la qualità di vita e ridurre il rischio di recidiva

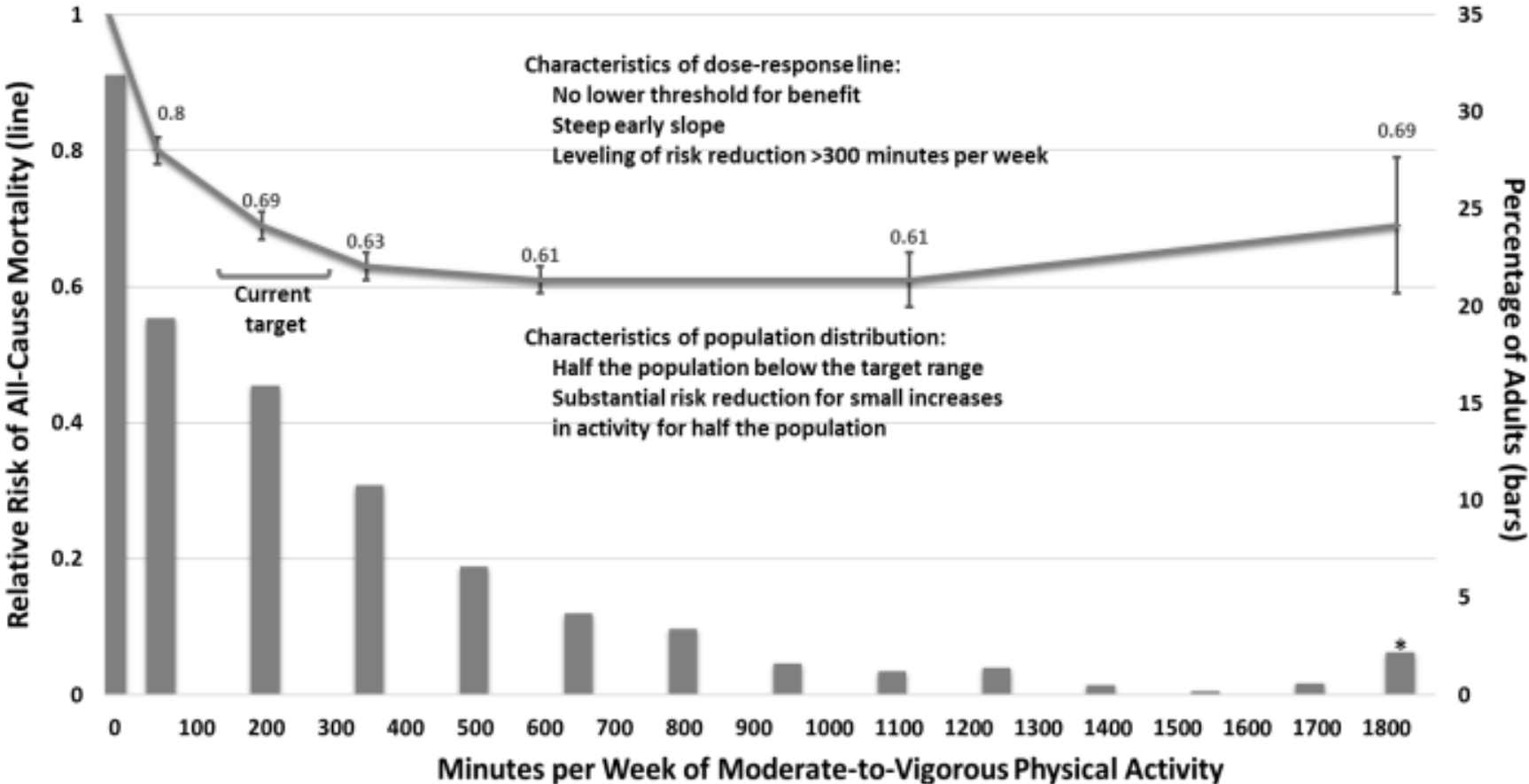
Attività Fisica

Prof. Attilio Parisi

Dipartimento di Scienze Motorie, Umane e della Salute - Università degli Studi di Roma «Foro Italico»

Roma 27 gennaio 2023

Figure D-1. Risk of All-Cause Mortality and Self-Reported Physical Activity, by Minutes of Moderate-to-Vigorous Physical Activity per Week



Note: *Includes all adults reporting greater than 1800 minutes per week of moderate-to-vigorous physical activity.
 Source: Adapted from data found in Arem et al., 2015² and National Center for Health Statistics, 2015.³

Association of Leisure-Time Physical Activity With Risk of 26 Types of Cancer in 1.44 Million Adults

Steven C. Moore, PhD, MPH; I-Min Lee, MBBS, ScD; Elisabete Weiderpass, PhD; Peter T. Campbell, PhD; Joshua N. Sampson, PhD; Cari M. Kitahara, PhD; Sarah K. Keadle, PhD, MPH; Hannah Arem, PhD; Amy Berrington de Gonzalez, DPhil; Patricia Hartge, ScD; Hans-Olov Adami, MD, PhD; Cindy K. Blair, PhD; Kristin B. Borch, PhD; Eric Boyd, BS; David P. Check, BS; Agnès Fournier, PhD; Neal D. Freedman, PhD; Marc Gunter, PhD; Mattias Johansson, PhD; Kay-Tee Khaw, MD, MSc, PhD; Martha S. Linet, MD; Nicola Orsini, PhD; Yikyung Park, ScD; Elio Riboli, MD; Kim Robien, PhD; Catherine Schairer, PhD; Howard Sesso, ScD, MPH; Michael Spriggs, BS; Roy Van Dusen, MS; Alicja Wolk, DMSc; Charles E. Matthews, PhD; Alpa V. Patel, PhD

- Esophageal adenocarcinoma (HR 0.58, 95% CI 0.37-0.89)
- Liver (HR 0.73, 95% CI 0.55-0.98)
- Lung (HR 0.74, 95% CI 0.71-0.77)
- Kidney (HR 0.77, 95% CI 0.70-0.85)
- Gastric cardia (HR 0.78, 95% CI 0.64-0.95)
- Endometrial (HR 0.79, 95% CI 0.68-0.92)
- Myeloid leukemia (HR 0.80, 95% CI 0.70-0.92)
- Myeloma (HR 0.83, 95% CI 0.72-0.95)
- Colon (HR 0.84, 95% CI 0.77-0.91)
- Head and neck (HR 0.85, 95% CI 0.78-0.93)
- Rectal (HR 0.87, 95% CI 0.80-0.95)
- Bladder (HR 0.87, 95% CI 0.82-0.92)
- Breast (HR 0.90, 95% CI 0.87-0.93)

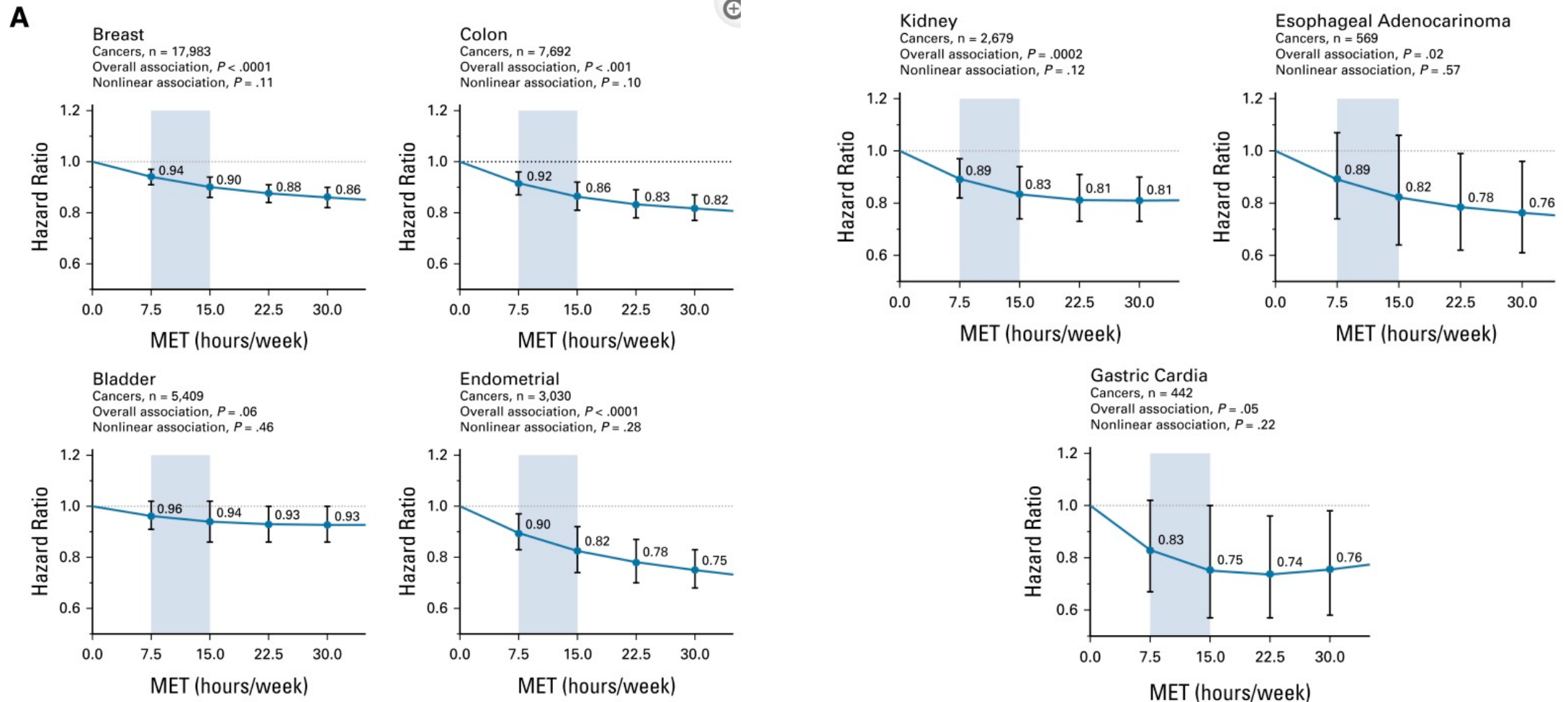
Key Points

Question What is the association of leisure-time physical activity with incidence of 26 types of cancer, and do the associations vary by body size and/or smoking?

Findings In this study of pooled data from 12 US and European cohorts, high vs low levels of leisure-time physical activity were associated with lower risks of 13 of 26 cancers. Most of these associations were evident regardless of body size or smoking history.

Meaning Promotion of physical activity may be important for population-wide cancer prevention and control efforts.

Leisure-time physical activity (metabolic equivalent task [MET]-hours/week) and risk of cancer sites with strong evidence of association.



**38,486 articoli scientifici
aggiornare**

1921 – 1992



1761 risultati

1993 – ad oggi



36,725 risultati (aggiornare)

170 dal 01.01.2023 ad oggi (aggiornare)

PREVENZIONE SECONDARIA E TERZIARIA

Molte sono le evidenze riguardanti il ruolo svolto dall'attività fisica nel ridurre il rischio di recidive e nel migliorare la qualità della vita dei pazienti attraverso meccanismi simili a quelli studiati per la prevenzione primaria del cancro.

I meccanismi più studiati sono: il miglioramento della composizione corporea attraverso la riduzione della massa grassa, la riduzione dell'infiammazione cronica e dello stress ossidativo che causa danni al DNA con conseguenti mutazioni geniche, e il miglioramento della compromissione della sorveglianza immunitaria.

2018 Physical Activity Guidelines Advisory Committee Evidence on Relationship Between Physical Activity and Mortality in Cancer Survivors

All-cause Mortality		
Cancer	Evidence Grade	Approximate % Relative Risk Reduction
Breast	Moderate	48%
Colorectal	Moderate	42%
Prostate	Limited	37-49%
Cancer-specific Mortality		
Breast	Moderate	38%
Colorectal	Moderate	38%
Prostate	Moderate	38%



2018 Physical Activity
Guidelines Advisory
Committee
Scientific Report

Friedenreich CM et Al. Physical Activity and Mortality in Cancer Survivors: A Systematic Review and Meta-Analysis. 2019

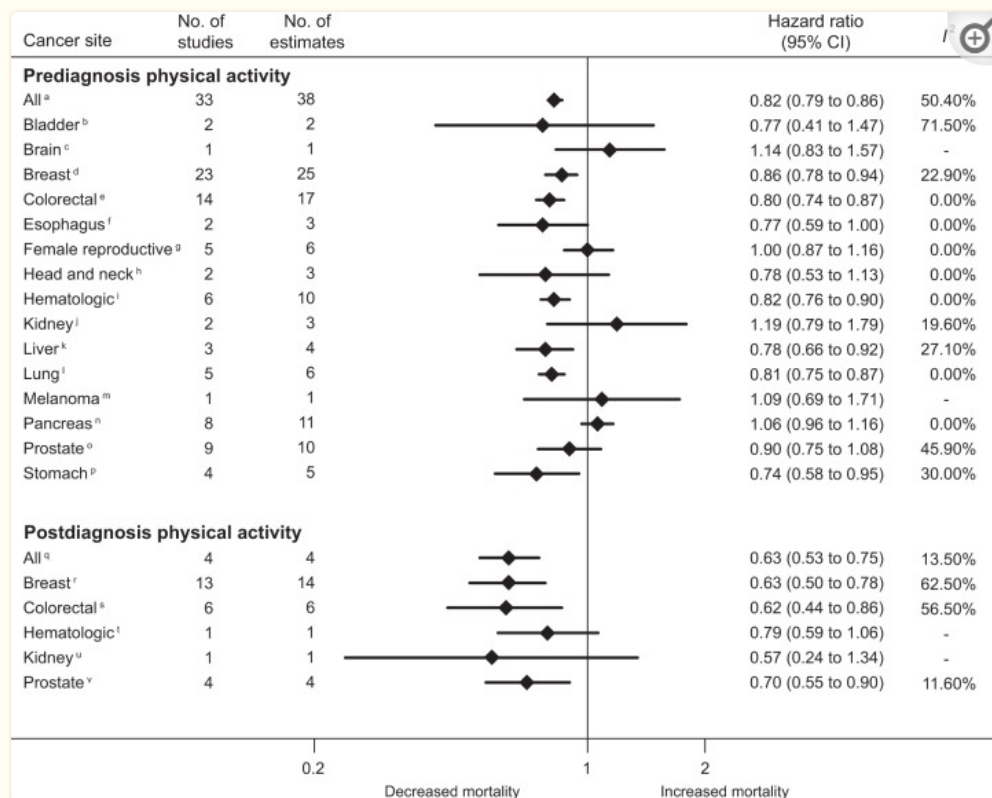


Figure 2.

Summary hazard ratios for the highest vs lowest levels of prediagnosis and postdiagnosis physical activity and cancer-specific mortality by cancer site (each estimate denotes a separate meta-analysis performed; if only one estimate is present, then no meta-analyses were conducted and the individual point estimate is reported). ^aRefs.

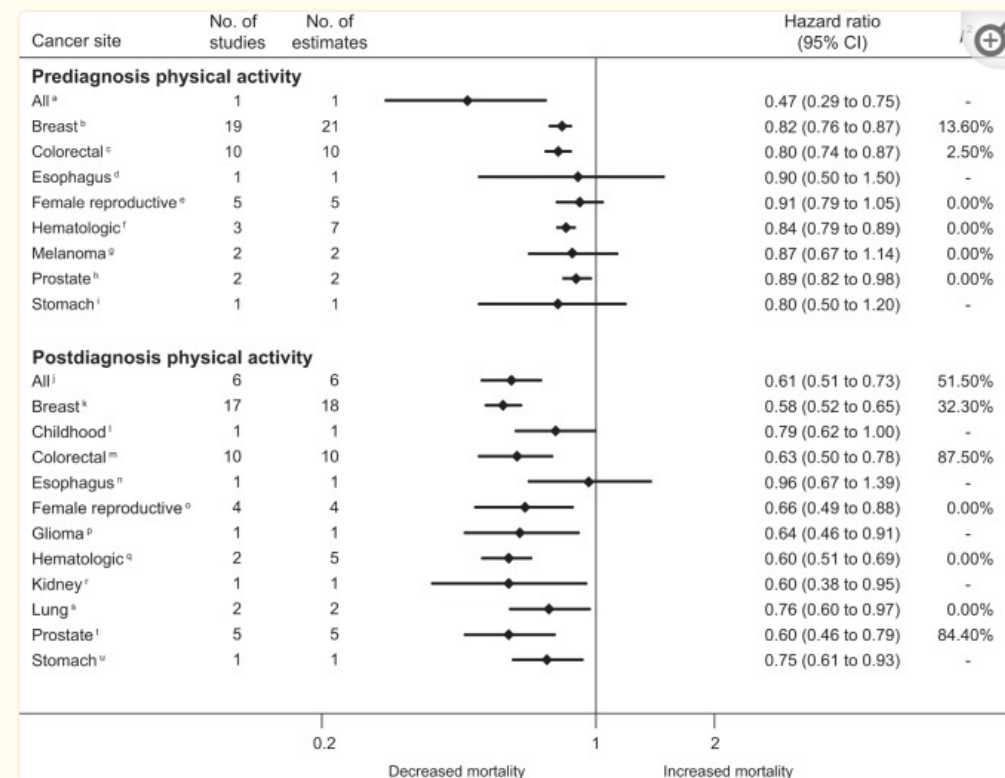


Figure 3.

Summary hazard ratios for the highest vs lowest levels of prediagnosis and postdiagnosis physical activity and all-cause mortality in cancer survivors by cancer site (each estimate denotes a separate meta-analysis performed; if only one estimate is present, then no meta-analyses were conducted and the individual point estimate is reported).

Morishita S et Al. Effect of Exercise on Mortality and Recurrence in Patients With Cancer: A Systematic Review and Meta-Analysis. Integr Cancer Ther. 2020



This systematic review and meta-analysis demonstrated that physical exercise has a positive effect on mortality and recurrence rates in patients with cancer.

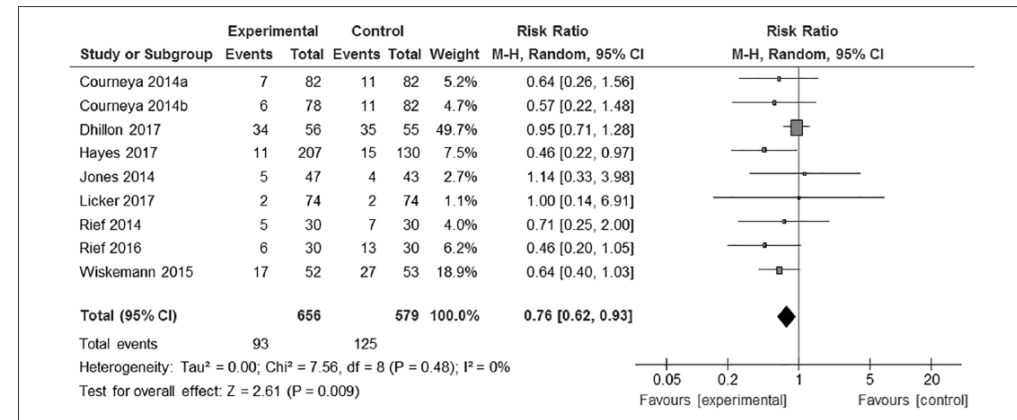


Figure 4. Risk ratio for the effect of exercise on mortality in cancer patients and survivors.

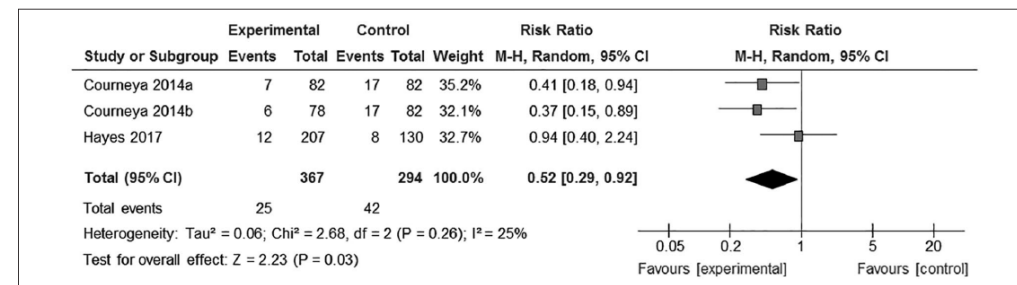


Figure 5. Risk ratio for the effect of exercise on recurrence in cancer survivors.

Post-diagnosis physical activity and mortality



- In questa review sono stati considerati 23 studi che hanno valutato la relazione tra attività fisica post-diagnosi e mortalità in pazienti oncologici (n=12 cancro al seno, 7 cancro colon retto e 4 cancro della prostata).
- I risultati evidenziano un rischio più basso di mortalità (che va dal 26-69%) in quei pazienti che hanno svolto un livello di attività fisica post-diagnosi più alto .

Patel AV et Al, 2019

Dose-response and changes in physical activity

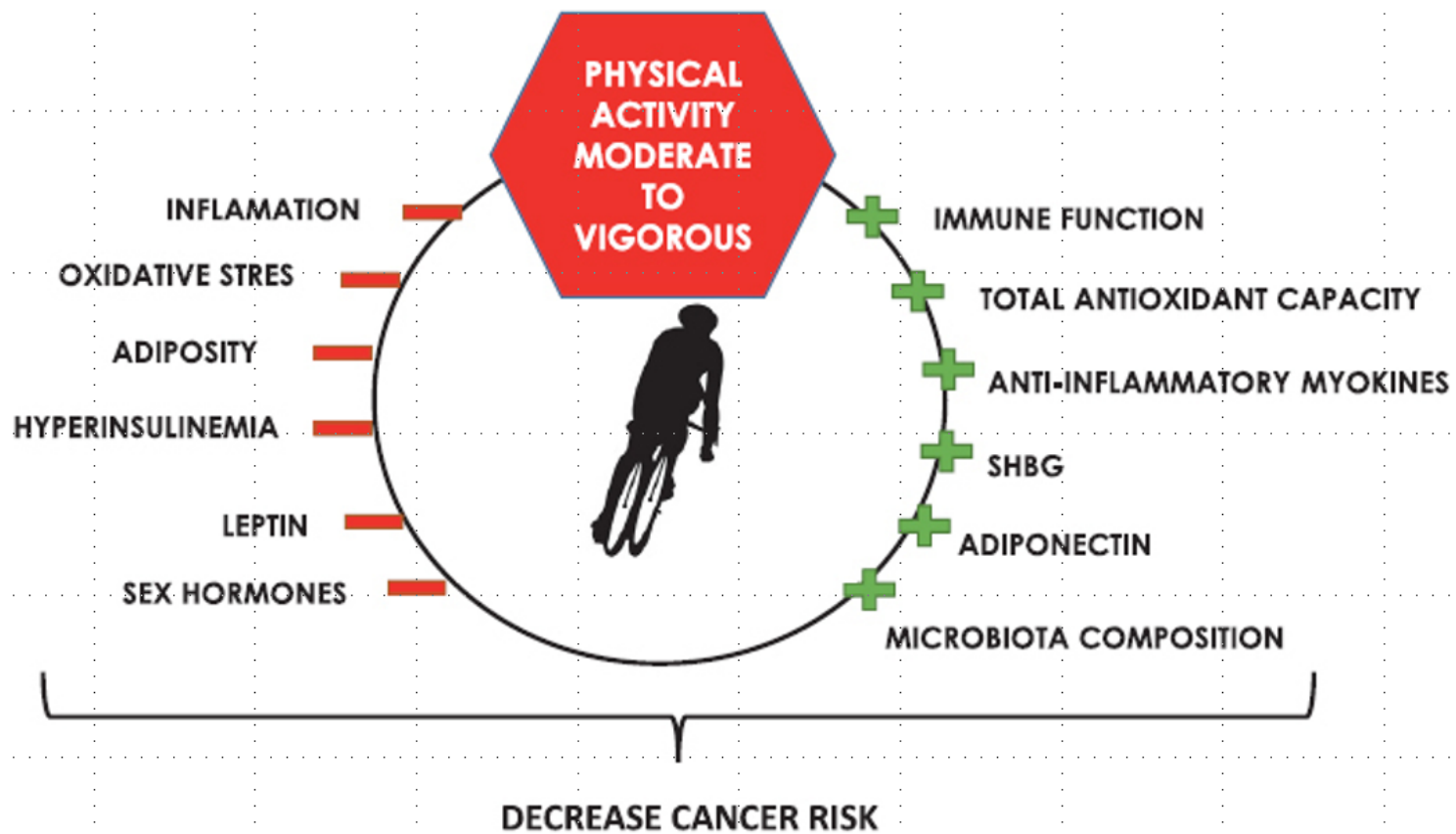


.... Il 15% degli studi che hanno valutato i livelli di attività fisica pre-diagnosi e il 71% degli studi che li hanno valutati post-diagnosi hanno trovato prove di una relazione lineare tra i livelli di attività fisica e la mortalità in questi pazienti. L'esatta dose di attività fisica necessaria per indurre la riduzione della mortalità non è ancora nota, poiché il numero di studi è ancora insufficiente. Molti studi riportano come il semplice aumento dell'attività fisica ricreativa è associato a un rischio di mortalità inferiore del 36%.

Patel AV et Al, 2019

Sedentary time and cancer survival

- Recenti meta-analisi hanno riportato un modesto (12-13%) ma significativo aumento del rischio di mortalità per cancro in relazione al tempo trascorso seduti. Questi dati potrebbero riflettere l'influenza dello stare troppo tempo seduti sull'incidenza del cancro e sulla successiva sopravvivenza alla malattia.
- In una recente review (Lynch et.Al.), riguardante pazienti affetti da cancro del colon-retto, un maggiore quantità di tempo trascorso seduti sia prima che dopo la diagnosi di cancro al colon era associato a un maggiore rischio di mortalità specifica per il cancro al colon. I dati relativi ad altre popolazioni di sopravvissuti al cancro sono in gran parte assenti.



SHBG = sex hormone-binding globulin

Attività Fisica e Qualità di Vita

in vivo 33: 881-888 (2019)
doi:10.21873/invivo.11554

Effectiveness of a 12-month Exercise Intervention on Physical Activity and Quality of Life of Breast Cancer Survivors; Five-year Results of the BREX-study

HEIDI PENTTINEN¹, MERI UTRIAINEN¹, PIRKKO-LIISA KELLOKUMPU-LEHTINEN²,
JANI RAITANEN^{3,4}, HARRI SIEVÄNEN³, RIKU NIKANDER³,
CARL BLOMQVIST¹, RIIKKA HUOVINEN⁵, LEENA VEHMANEN¹ and TIINA SAARTO¹

Conclusion: Improvement in PA or physical performance yields a positive change in QoL of breast cancer patients.

> Support Care Cancer. 2019 Jan;27(1):9-21. doi: 10.1007/s00520-018-4363-2. Epub 2018 Jul 21.

Effects of exercise on the quality of life in breast cancer patients: a systematic review of randomized controlled trials

Xinyan Zhang¹, Yuxiang Li¹, Dongling Liu²

Conclusions: Exercise is a safe and effective method of improving the quality of life in patients with breast cancer. In particular, combined training was associated with a significant improvement in quality of life. In future research, more high-quality, multicenter trials evaluating the effect of exercise in breast cancer patients are needed.

Research Article

Effects of Different Exercise Interventions on Quality of Life in Breast Cancer Patients: A Randomized Controlled Trial

Tetiana Odynets, PhD^{1,2}, Yuriy Briskin, PhD¹, and Valentina Todorova, PhD³

Integrative Cancer Therapies
Volume 18: 1-8
© The Author(s) 2019
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/1534735419880598
journals.sagepub.com/home/ict
SAGE

2.80 points ($P < .01$). **Conclusions:** It was found that using water exercise intervention is more effective for improving emotional well-being and decreasing negative symptoms associated with breast cancer treatment compared with Pilates and yoga interventions, while yoga was more effective in improving social/family well-being. Further research on water interventions for different populations is warranted.



Review

Exercise Intervention Improves Clinical Outcomes, but the “Time of Session” is Crucial for Better Quality of Life in Breast Cancer Survivors: A Systematic Review and Meta-Analysis

Feng Hong¹, Weibing Ye¹, Chia-Hua Kuo², Yong Zhang¹, Yongdong Qian^{1,*}
and Mallikarjuna Korivi^{1,*}

shorter-time (≤ 45 min; $p = 0.15$) did not. To summarize, exercise interventions improved the QoL, SF, and PF of breast cancer survivors, where the “time of session” appeared to be crucial for an effective improvement in the QoL.

La nostra esperienza...

Obiettivo: quello di valutare, in pazienti affette da BC post-chirurgico in trattamento, l'efficacia di un allenamento combinato supervisionato online di 16 settimane (EG, n=10) o del protocollo di usual care (CG, n=10) sull'omeostasi redox e sullo stato di infiammazione sistemica.

Sono stati valutati anche i parametri fisiologici e psicologici (capacità funzionale, forza, composizione corporea, qualità della vita, fatica).

CRITERI DI INCLUSIONE

- età: 45-65 aa
- dopo l'intervento
- prima di aver iniziato altro trattamento
- autorizzazione a praticare attività fisica

CRITERI DI ESCLUSIONE

- Malattie cardiovascolari o altre complicanze che escludano la pratica dell'attività fisica
- Aver svolto più di 150 min/sett di attività fisica nei 3 mesi precedent l'intervento

**Combined Online Training:
4 mesi, 2 volte a sett. (32
sessioni), ogni sessione della
durata di 1 h**



Usual Care



- ✓ Tutti i pazienti hanno ricevuto il protocollo di cura stabilito dall'ospedale, che comprende chemioterapia e/o ormonoterapia e/o radioterapia.
- ✓ Il gruppo di controllo è stato incoraggiato a seguire le linee guida ACSM per l'esercizio fisico e il cancro → essere impegnati in almeno 150-300 min/settimana di esercizio aerobico moderato o 75-150 min/settimana di esercizio aerobico vigoroso

VALUTAZIONE MEDICA

Anamnesi, ECG e Analisi della Composizione Corporea

VALUAZIONE FUNZIONALE

6 Minutes Walking Test, Handgrip Test, 30'' Sit to Stand Test, Tandem Balance Test, Scratch Test, Sit and Reach Test

QUESTIONARI PSICOLOGICI

EORTC C-30, FA-12

QUADRO INFIAMMATORIO

Tumor Necrosis Factor α (TNF- α):

IL-6

IL-8

IL-10 (Anti-Inflammatory)

REDOX-STATUS PANEL

Catalase

Superoxide Dismutase (SOD)

Total Antioxidant Capacity (TAC)

Thiobarbituric acid reactive substance (TBARs)

total free thiol (tFTH)

Glutathione (GSH)

Patients' baseline assessment	EG n=10 (mean \pm SD)	CG n=10 (mean \pm SD)
Age	50.5 \pm 5.7	45.1 \pm 5.5
Weight	60.3 \pm 5.5	55.3 \pm 1
Height	161.7 \pm 8.6	157.5 \pm 3.5
BMI	23.1 \pm 2.5	21.3 \pm 0.5
Type of intervention		
<i>Quadrantectomy</i>	7	6
<i>Mastectomy</i>	3	4



Ogni lezione era così strutturata:

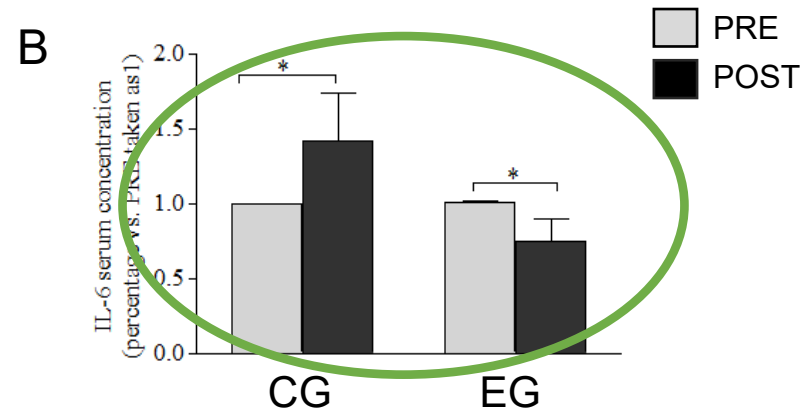
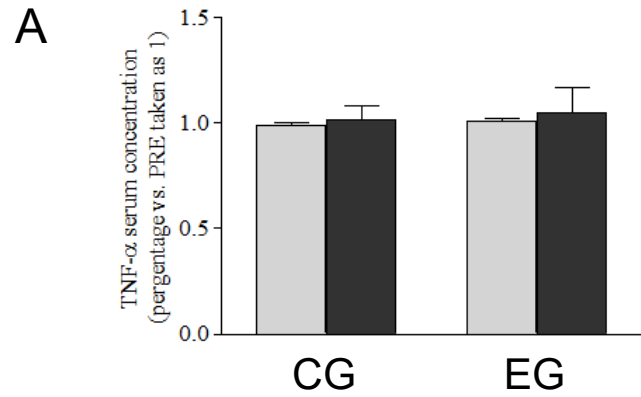
- 10 min of **warm-up** focalizzato sulla mobilizzazione di collo, spalle e tronco
- **Resistance** exercise: della durata di 20 minuti e che prevedeva l'intervento di diversi gruppi muscolari: arti superiori, core, schiena e arti inferiori
- **Aerobic** training: della durata di 20 minuti
- 10 min di **stretching and cool-down** focalizzato sulla flessibilità di spalle, braccia e tronco.

- L'intensità del lavoro era compresa tra il 50/70% della frequenza cardiaca massima (HRmax), valutata da un cardiofrequenzimetro fornito alle pazienti dallo staff di allenamento. Nel corso del tempo sono stati sviluppati tre diversi programmi di allenamento per aumentare progressivamente il carico e l'intensità.
- Inoltre, le pazienti dovevano indicare lo sforzo percepito (scala di Borg). In questo modo, il carico di lavoro e lo stato delle pazienti sono stati monitorati durante ogni sessione di allenamento.

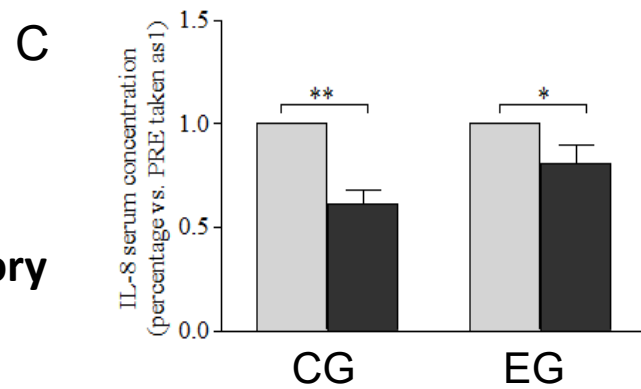


Risultati (1)

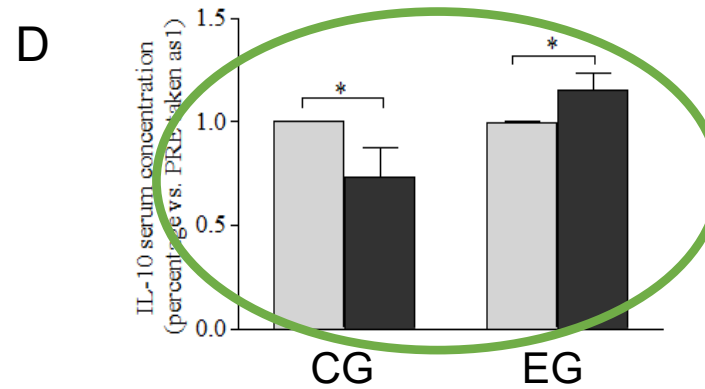
INFLAMMATORY PANEL



↓
Pro-Inflammatory



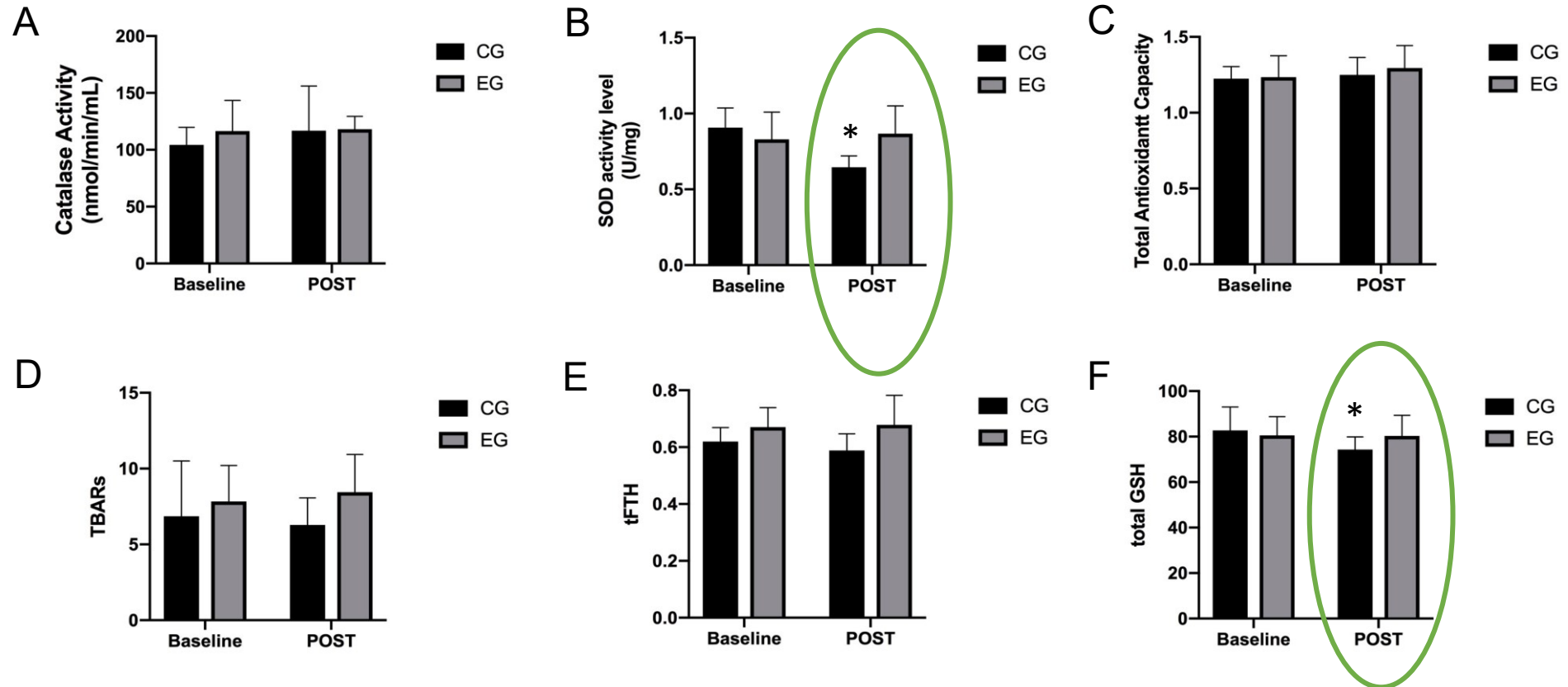
↓
Pro-Inflammatory



↑
Anti-Inflammatory

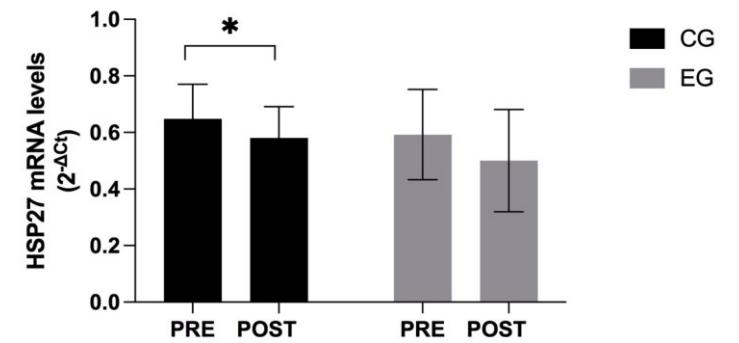
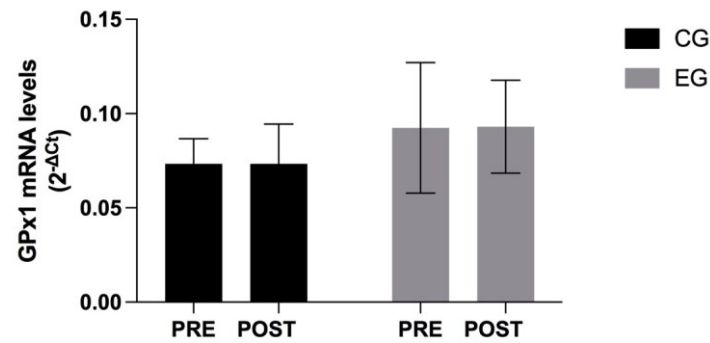
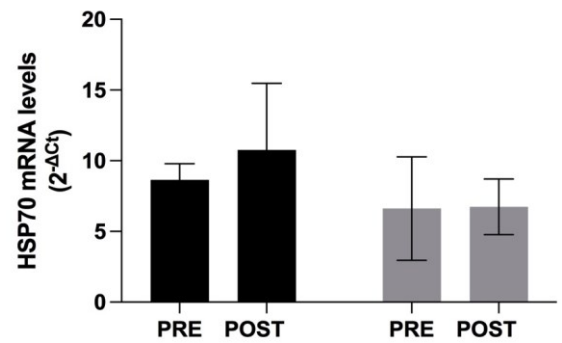
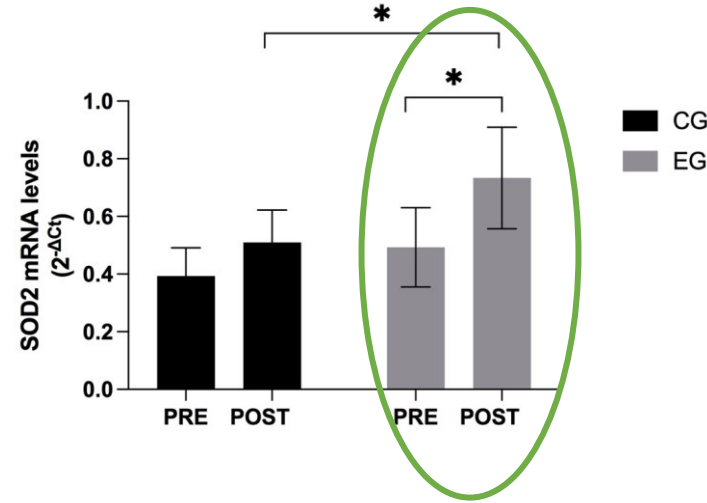
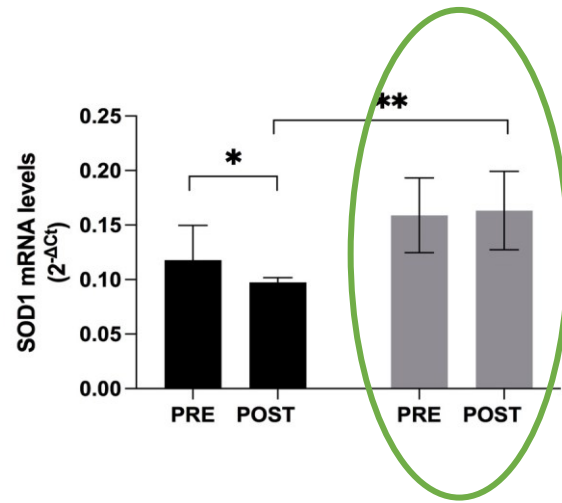
Risultati (2)

REDOX-STATUS PANEL



Risultati (3)

Gene expression analysis of antioxidants and stress response proteins



Despite the benefits related to physical exercise, large numbers of cancer patients are not sufficiently active

Most patients (93%) were insufficiently active



Avancini A, et Al, Int J Environ Res Public Health. 2020

Table 3. Exercise preferences in cancer patients †.

Preference as Expressed by Answers to Questions	%	No.
Are you interested in participating in an exercise program designed for cancer patients? (392)		
Yes	46	179
No	20	79
Maybe	34	134
Who would you prefer to receive exercise instructions from? (392) ‡		
Oncologist	57	224
Nurse	7	26
Kinesiologist	20	80
Nutritionist	20	80
Physiotherapist	30	118
Another cancer patient	3	11
No preference	20	79
Other	2	8
How would you prefer to receive exercise instructions? (376)		
Face to face	72	270
By telephone	3	13
Videotape	2	9
Television	1	3
Leaflet/pamphlet	5	20
Over the internet	3	13
No preference	12	46
Other	1	2

Avancini A, et Al, Int J Environ Res Public Health. 2020



International Journal of
*Environmental Research
and Public Health*

Where would you prefer to exercise? (378)

At home	21	78
At a community fitness center	12	44
At an adapted exercise fitness center	22	83
Outside	27	103
No preference	18	70
Other	1	2

What time of day would you prefer to exercise? (376)

Morning	48	179
Afternoon	31	118
Evening	9	32
No preference	13	48

In what part of the week would you prefer to exercise? (367)

Weekday	70	256
Weekend	9	32
No preference	22	79

How would you prefer to exercise? (363)		
Unsupervised	15	56
Supervised	62	224
No preference	23	83
What kind of exercise program would you prefer? (360)		
Individual with a program to follow at home	27	96
Individual with personal trainer	25	90
In a group with a kinesiologist/physiotherapist/exercise specialist	40	144
Other	8	30
Would you like session content to vary? (363)		
Same each time	29	105
Different each time	34	123
No preference	37	135
Who would you prefer to exercise with? (373)		
Nobody	16	61
Other cancer patients	27	104
Family members	8	29
Friends	8	30
A group	13	47
No preference	27	101
Other	1.3	5

Avancini A, et Al, Int J Environ Res Public Health. 2020



International Journal of
*Environmental Research
and Public Health*

Preference as Expressed by Answers to Questions	%	No.
Who would you want as "helper" during the program? (369)		
Nobody	13	48
Exercise specialist	22	83
Neighbor	1	5
Colleague	1	3
Friend	19	71
Son/daughter	13	47
Spouse	28	102
Other relative	3	10
How often would you prefer to exercise? (365)		
Never	1	5
Once a week	15	54
Twice a week	37	136
Three times a week	30	111
Four times a week	5	19
Five times a week	5	19
Six times a week	1	5
Seven times a week	4	16
What exercise intensity would you prefer? (376)		
Mild	48	175
Moderate	39	141
Strenuous	7	24
No preference	6	23

[†] Participants of STIP-ON study conducted in Verona, Italy, from July 2018 to April 2019 [‡] Replies add up to more than 694 as participants could choose more than one instructor.

Strategies to implement a physical activity program in the oncological clinical setting.

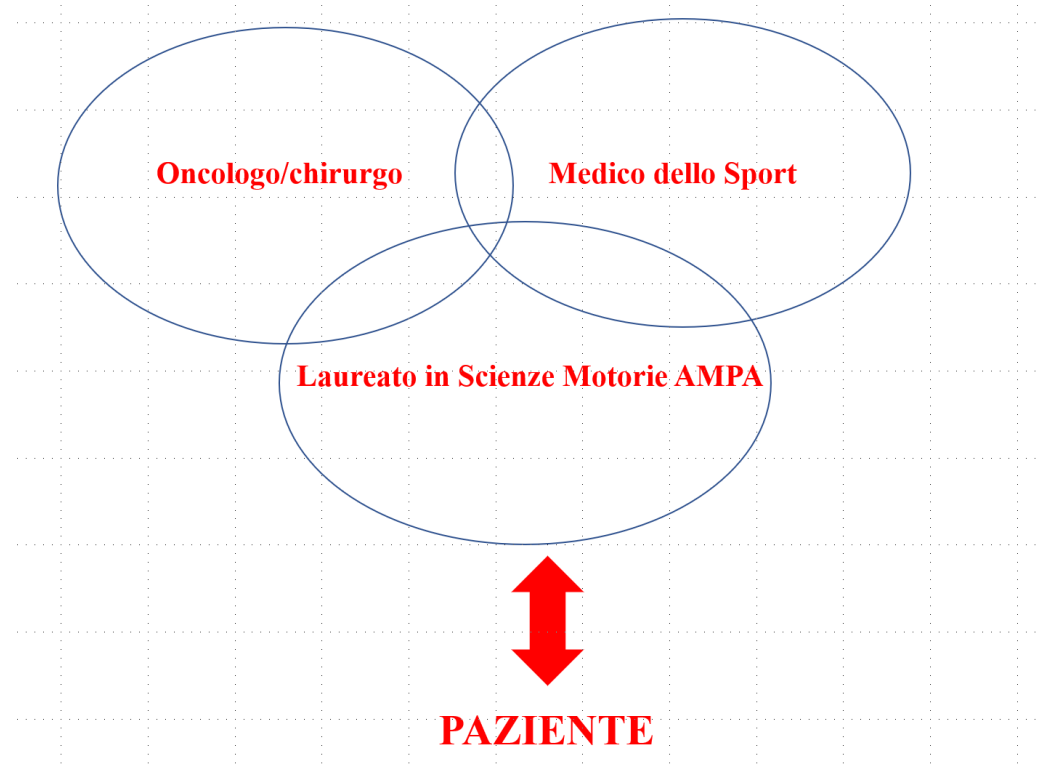
Avancini A, Integr Cancer Ther. 2020



“OPERATION PHALCO” —Adapted Physical Activity for Breast Cancer Survivors: Is It Time for a Multidisciplinary Approach?
Cancers, 2023



.....a multidisciplinary intervention (“PHALCO”—PHysicAL aCtivity for Oncology) that included oncologists, sport physicians, and kinesiologists on QoL and functional parameters in BC patients.....



Level 1	Level 2	Level 3
BC patients without severe comorbidities	BC patients with two or more of the following risk factors: Hysterectomy or postmenopausal Smoker (or who has quit smoking for less than 6 months) Blood pressure >140/90 mmHg Dyslipidaemia Overweight Positive family history for heart attack or intervention for a cardiovascular disease before age 55 (father or brother) or age 65 (mother or sister)	BC Patient with at least 1 of the following risk factors: Cardiovascular disease (ischemic heart disease, valve disease, etc.) Diabetes Asthma Osteoporosis Musculoskeletal disorders

Table 2. FITT (Frequencies, Intensity, Time, Type) prescription according to the risk levels. Abbreviation: 1RM = one Repetition Maximum; HRR = Heart Rate Reserve; min = minutes.

FITT Level 1	FITT Level 2	FITT Level 3
Warm-up: about 10 min Combined Training: Resistance training: 2 sets of 8 repetitions at 60–70% 1 RM—about 25 min Aerobic training: 65–70% of HRR—about 15 min Cool Down: Stretching exercises for large muscle groups—10 min	Warm-up: about 10 min Combined Training: Resistance training: 2 sets of 8 repetitions at 50–60% 1 RM—about 25 min Aerobic training: 60–65% of HRRM—about 15 min Cool Down: Stretching exercises for large muscle groups—10 min	Warm-up: about 10 min Combined Training: Resistance training: 2 sets of 8 repetitions at 10–20% 1 RM—about 25 min Aerobic training: 55–60% of HRRM—about 15 min Cool Down: Stretching exercises for large muscle groups—10 min

Table 3. Patients' characteristics. Abbreviation: APA = Adapted Physical Activity; UC = Usual Care
M = mean; SD = Standard Deviation; *n* = numbers; BMI = Body Mass Index; Chemo = Chemotherapy;
Hormo = Hormonal therapy; Radio = Radiotherapy; Immuno = Immunological therapy.

Patients' Characteristics	APA Group <i>n</i> = 24 (M ± SD)	UC <i>n</i> = 10 (M ± SD)
Age (years)	50.5 ± 5.7	45.1 ± 5.5
Weight (kg)	67.0 ± 14.0	55.3 ± 1
High (cm)	164.1 ± 5.8	157.5 ± 3.5
BMI (kg/m ²)	24.7 ± 4.1	21.3 ± 0.5
Type of intervention		
Quadrantectomy	10	6
Mastectomy	14	4
Treatments		
Chemo + Hormo + Radio	4	2
Hormo + Radio	10	5
Hormo	8	3
Chemo + Immuno	2	0



• <u>6min walking test</u>	➔	Valutazione della capacità funzionale
• <u>1RM leg press per gli arti superiori</u>	➔	Forza arti inferiori
• <u>Handgrip test</u>	➔	Forza arti superiori
• <u>30s sit to stand test</u>	➔	Forza negli arti inferiori e la tolleranza all'esercizio fisico
• <u>Sit and Reach</u>	➔	Flessibilità
• <u>Trunk rotation test</u>	➔	Flessibilità
• <u>Tandem test:</u>	➔	Equilibrio
• <u>EORTC QLQ-C30</u>	➔	Qualità della Vita
• <u>Revised Piper Fatigue Scale</u>	➔	Fatigue

RISULTATI

Table 4. Pre- and post-functional evaluation APA group. Abbreviation: M = Median; IQR = Interquartile Range Diff = Differences in percentage; *n* = numbers; BMI = Body Mass Index; 6MWT = Six min walking test; 1-RM = One Repetition Maximum; R = right; L = left; n.s. = no statistical significance.

APA Group <i>n</i> = 24	Pre-Training M (IQR)	Post-Training M (IQR)	Diff Post/Pre (%)	<i>p</i> -Value
Weight (kg)	63.0 (18.0)	61.9 (18.1)	-2.5	0.013
BMI (kg/m ²)	23.7 (5.9)	23.3 (3.9)	-2.5	0.010
6MWT (m)	531.9 (151)	588 (89)	+13.1	0.000
BORG (0-10)	2.5 (1.8)	2.0 (1.4)	-19.7	0.020
1-RM Leg Press (kg)	113.9 (43.3)	160.8 (58.3)	+22.9	0.040
Handgrip R (kg)	27.8 (3.8)	31.0 (4.8)	+8.6	n.s.
Handgrip L (kg)	26.5 (2.8)	28.7 (7.0)	+4.1	n.s.
30' Sit to Stand (<i>n</i>)	18.5 (12)	25.5 (8)	+40.4	0.000
Sit and Reach (cm)	8.2 (6.9)	11 (9.1)	+53.9	0.000
Trunk Rotation R(cm)	63 (17.1)	69.5 (33.3)	+14.2	0.010
Trunk Rotation L (cm)	58.5 (27.5)	67.0 (37.5)	+24.2	0.000

Table 5. Pre- and post-Functional evaluation UC group. Abbreviation: M = Median; IQR = Interquartile Range; Diff = Differences in percentage; *n* = numbers; BMI = Body Mass Index; 6MWT = Six min walking test; 1-RM = One Repetition Maximum; R = right; L = left; n.s. = no statistical significance.

UC Group <i>n</i> = 10	Pre M (IQR)	Post M (IQR)	Diff Post/Pre (%)	<i>p</i> -Value
Weight (kg)	56.5 (9.9)	54 (16.4)	+4.5	n.s.
BMI (kg/m ²)	22 (1.4)	22.9 (1)	+6.5	n.s.
6MWT (m)	525 (55)	505 (125)	-9.4	n.s.
BORG (0-10)	1.0 (1)	2 (2)	+42	n.s.
1-RM Leg Press (kg)	91.0 (33)	93.1 (39)	+1.5	n.s.
Handgrip R (kg)	29.4 (5.3)	29.4 (9.3)	-3.9	n.s.
Handgrip L (kg)	24.5 (2.8)	20.9 (0.8)	-13.5	n.s.
30' Sit to Stand (<i>n</i>)	20.0 (8.0)	20.0 (8.0)	-5.2	n.s.
Sit and Reach (cm)	5 (23)	4 (23)	+57.5	n.s.
Trunk Rotation R (cm)	42.0 (6)	35.0 (8)	-4.3	n.s.
Trunk Rotation L (cm)	33 (9)	43 (9)	-4.0	n.s.

RISULTATI

Table 6. Pre- and post-EORTC QLQ C-30 and EORTC QLQ FA-12 analysis—APA Group. Abbreviation: M = Median; IQR = Interquartile Range; Diff = Differences in percentage; *n* = numbers; WDL = with daily life; n.s. = no statistical significance.

EORTC QLQ C-30				
APA Group <i>n</i> = 24	Pre-Training M (IQR)	Post-Training M (IQR)	Diff Post/Pre (%)	<i>p</i> -Value
Physical Function	93.3 (6.6)	93.3 (11.6)	+3.3	0.050
Emotional Function	83.3 (31.2)	95.9 (16.6)	+8.1	n.s.
Cognitive Function	100 (16.6)	100 (12.5)	+0.8	n.s.
Social Function	100 (33.3)	100 (12.5)	+9.9	n.s.
Global Health	75.0 (33.3)	83.3 (14.5)	+12.8	0.050
EORTC QLQ FA-12				
Physical Fatigue	20.0 (23.3)	6.66 (13.3)	−32.6	n.s.
Emotional Fatigue	0.0 (22.2)	0.0 (0.0)	−68.0	0.041
Cognitive Fatigue	0.0 (12.7)	0.0 (0.0)	−66.7	n.s.
Interference WDL	33.3 (33.3)	0.0 (0.0)	−76.9	0.019

Table 7. Pre- and post-EORTC QLQ C-30 and EORTC QLQ FA-12 analysis—UC Group. Abbreviation: M = Median; IQR = Interquartile Range; Diff = Differences in percentage; *n* = numbers; WDL = with daily life; n.s. = no statistical significance.

EORTC QLQ C-30				
UC Group <i>n</i> = 10	Pre M (IQR)	Post M (IQR)	Diff Post/Pre (%)	<i>p</i> -Value
Physical Function	93.3 (6.6)	93.3 (6.6)	+1.1	n.s.
Emotional Function	91.6 (16.6)	91.6 (8.3)	−0.7	n.s.
Cognitive Function	100 (16.1)	83.3(16.6)	−2.7	n.s.
Social Function	100 (33.3)	83.3 (33.3)	−2.7	n.s.
Global Health	75.0 (41.7)	66.7 (33.3)	−10.7	n.s.
EORTC QLQ FA-12				
Physical Fatigue	13.3 (13.3)	13.3 (13.3)	+7.1	n.s.
Emotional Fatigue	0.0 (22.2)	0.0 (22.2)	+16.6	n.s.
Cognitive Fatigue	0.0 (0.0)	0.0 (22.2)	+40.0	n.s.
Interference WDL	33.3 (33.3)	33.3 (31.3)	+19.7	n.s.

GRAZIE PER L'ATTENZIONE

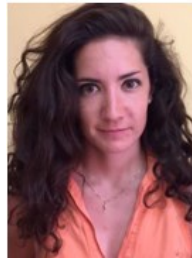


UNIVERSITÀ DEGLI STUDI DI ROMA "FORO ITALICO"

Laboratorio dell'Esercizio Fisico e dello Sport

UNIROMA4

attilio.parisi@uniroma4.it



Professor Attilio Parisi
Professor Carlo Minganti, PhD
Dott.ssa Claudia Cerulli, PhD
Dott.ssa Elisa Grazioli, PhD
Dott.ssa Eliana Tranchita, PhD
Dott.ssa Arianna Murri
Dott.ssa Elisa Moretti