CONI COMITATO REGIONALE MARCHE

La Scuola Regionale dello Sport delle Marche
organizza

CONI SCUOLA DELLO SPORT MARCHE

**Lo sport come prevenzione e recupero nelle patologie oncologiche del seno**

**Ancona, 24 ottobre 2015 ore 9.00**

**Sala Riunioni Comitato Regionale CONI Marche**

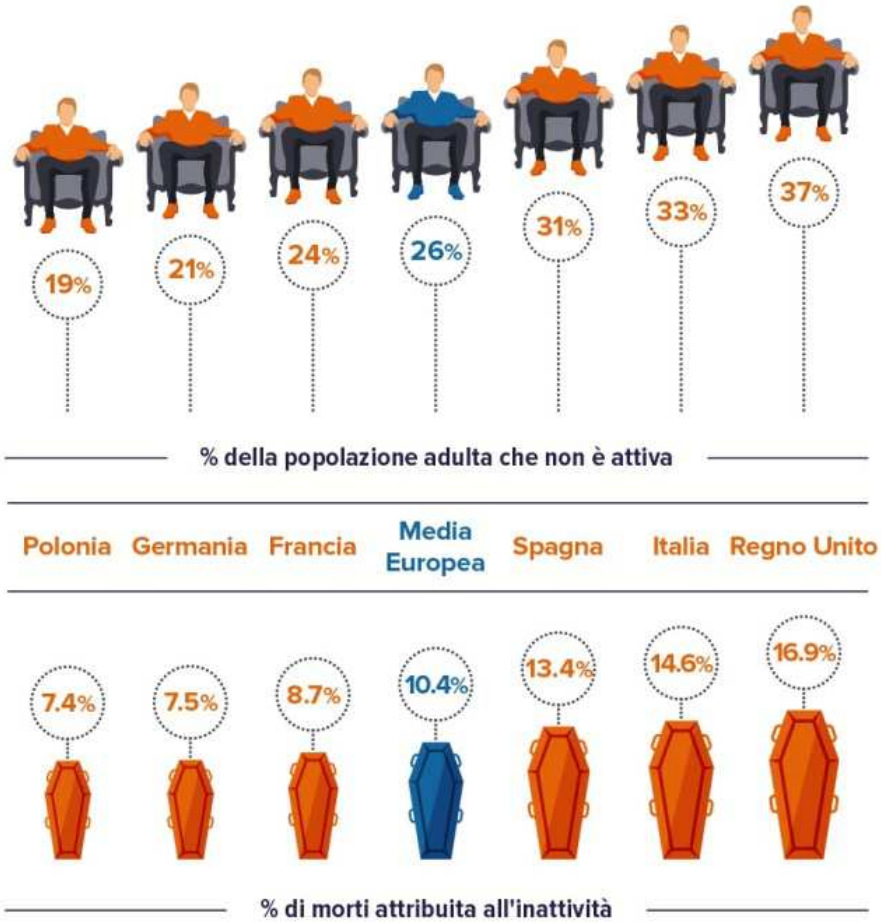
# Attività fisica come prevenzione primaria: per non ammalarsi

Dr. Danilo Gambarara

# Il problema:
## L'Europa non si muove

**1 in 4** adulti — & — **4 in 5** adolescenti

in Europa non sono abbastanza attivi



# L'inattività uccide e noi siamo seduti su una bomba ad orologeria

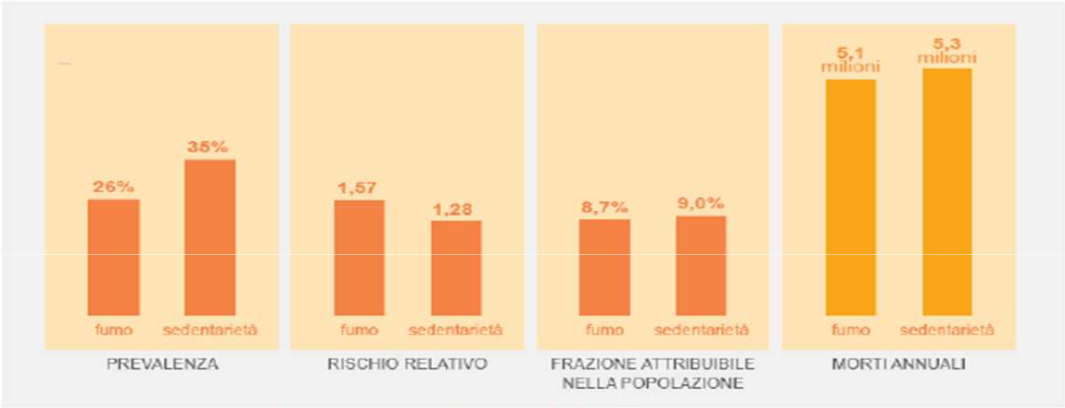
Morti provocate ogni anno in Europa dalla mancanza di esercizio fisico:


(più di 1 su 10 morti)

Se non interveniamo, la mancanza di esercizio potrebbe provocare presto **più morti del fumo**. Ma questo fardello non è condiviso in modo uniforme. Alcuni Paesi si muovono più degli altri.

## Analisi internazionali e nazionali concordano:

- La lotta alla sedentarietà è da considerarsi una priorità almeno al pari di quella contro il fumo




Fonte: Chi Pang Wen, Xifeng Wu, *Stressing harms of physical inactivity to promote exercise*, The Lancet, Volume 380, Issue 9838, Pages 192 - 193, 21 July 2012

# The economic cost of physical inactivity in Europe

An ISCA / Cebr report

June 2015



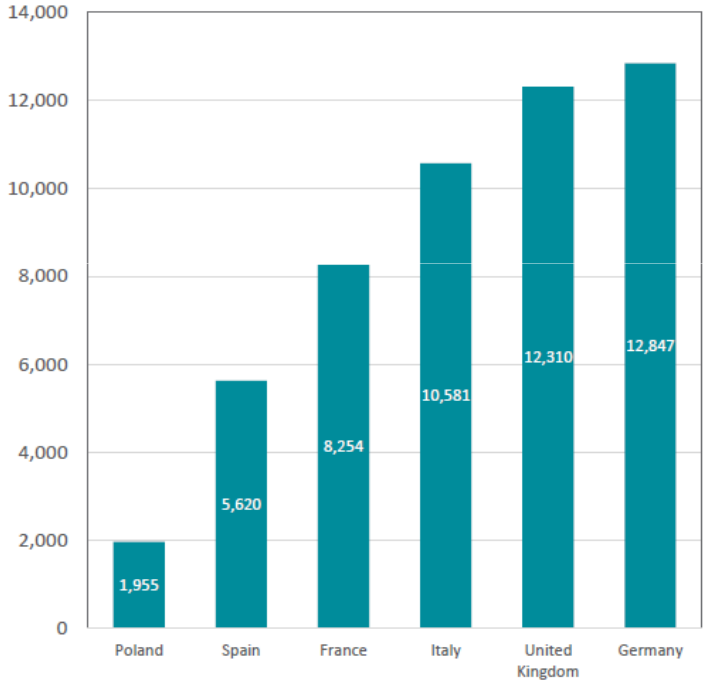
ISCA
INTERNATIONAL SPORT AND CULTURE ASSOCIATION

Cebr

# Inactivity's indirect costs amount to more than €70 billion

The indirect costs presented here estimate the value of human capital which is lost to morbidity and premature mortality resulting from physical inactivity. These are calculated using the disability-adjusted life years (DALYs) lost as a result of the considered inactivity-related disorders.

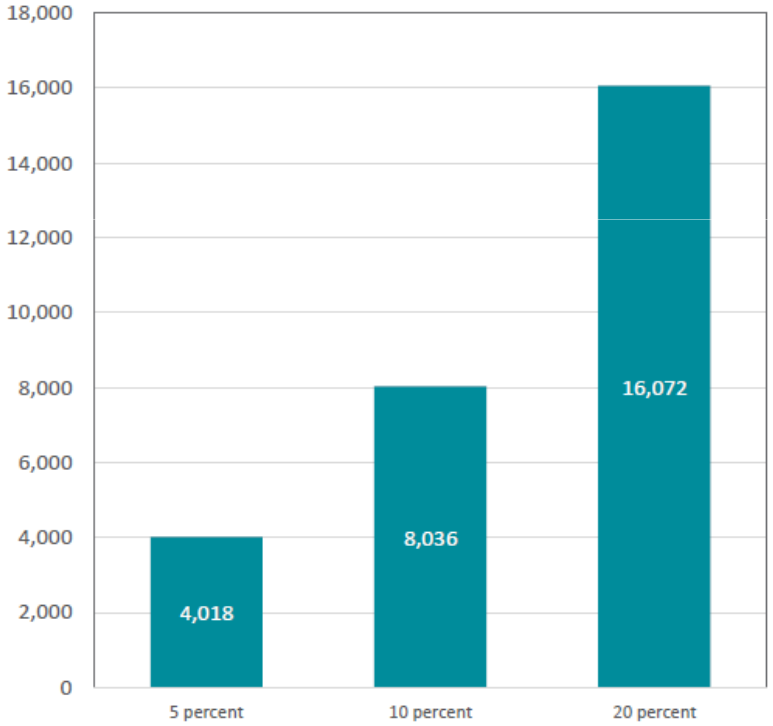
**Indirect costs of physical inactivity across six focus countries (millions of Euros), 2012**



# Cutting inactivity by a fifth would save Europe €16.1 billion

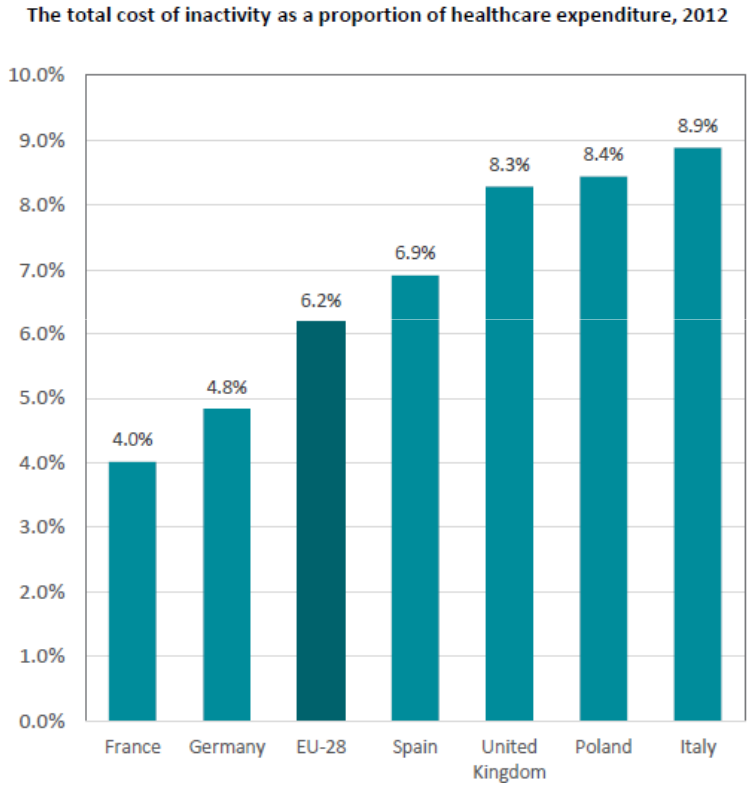
The preceding analysis has outlined the substantial costs of inactivity to Europe, and highlighted its importance both as a public health and economic concern. However, simple efforts to curtail sedentary lifestyles and encourage physical activity could in turn save many lives and produce enormous economic benefits. The chart opposite indicates the economic savings associated with reductions in the prevalence of physical inactivity.

**Estimated cost savings (direct and indirect) from reductions in the prevalence of physical inactivity in Europe, millions of Euros, 2012**



# The costs of inactivity are substantial in terms of healthcare spend

As a proportion of total healthcare expenditure, the costs of inactivity are highest in the Italy, representing 8.9% of health spending in 2012. Following closely behind is Poland and the UK, where the costs of inactivity are equivalent to around 8.4% and 8.3% of total health expenditure in 2012, respectively.



# Tumori più frequentemente diagnosticati

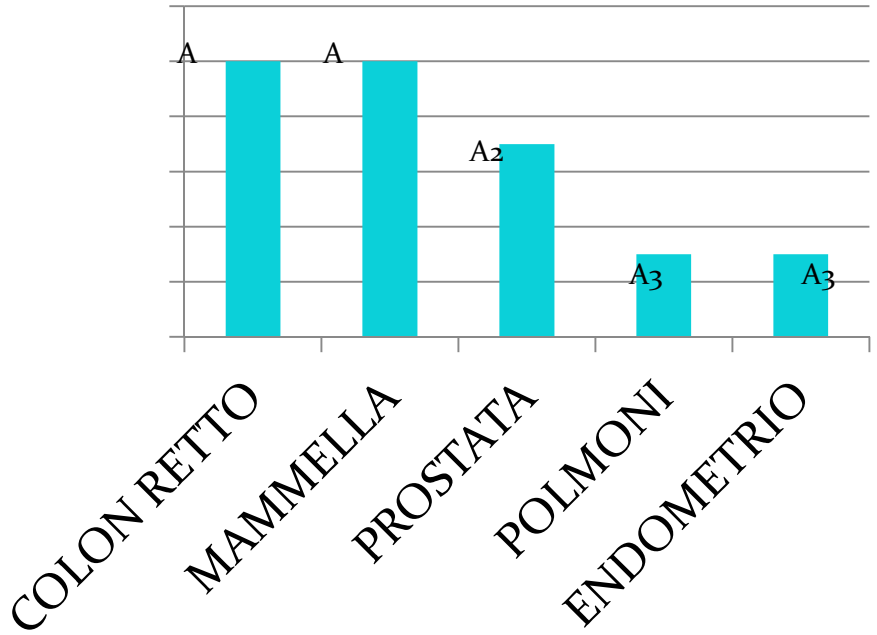
| Rango | Maschi | Femmine | Tutta la popolazione |
|---|---|---|---|
| 1° | Prostata (20%) | Mammella (29%) | Mammella (14%) |
| 2° | Polmone (15%) | Colon-retto (13%) | Colon retto (13%) |
| 3° | Colon-retto (14%) | Polmone (6%) | Prostata (11%) |
| 4° | Vescica* (11%) | Tiroide (5%) | Polmone (11%) |
| 5° | Stomaco (5%) | Utero corpo (5%) | Vescica (7%) |

# Numero nuovi casi di tumore per sede

| Sede | Maschi | Femmine | Totale |
|---|---|---|---|
| Colon-retto | 29.100 | 22.800 | 51.900 |
| Mammella | 300 | 47.900 | 48.200 |
| Polmone | 29.400 | 11.700 | 41.100 |
| Prostata | 35.200 | - | 35.200 |
| Vescica | 21.100 | 4.900 | 26.000 |
| Stomaco | 8.200 | 5.500 | 13.700 |
| Pancreas | 5.900 | 6.600 | 12.500 |
| Melanoma | 5.900 | 5.400 | 11.300 |

# Risultato per l'Italia

# Attività fisica e prevenzione del rischio oncologico: gradi di evidenza




**A**= evidenza convincente**, A2**= probabile beneficio, **A3**= possibile beneficio, **A4**= insufficiente evidenza**, C**= nessun beneficio, **D**= danni evidenti

*Eyre H.* Preventing cancer, cardiovascular disease, and diabetes: a common ageanda for the American Cancer Socety, the American Diabetes Association, and the America Heart Association. Circulation 2004

**Abstract title:** # Physical activity, hormone replacement therapy and breast cancer risk: A meta-analysis of prospective cohort studies

P. Autier[1], C. Pizot[2], M. Boniol[2], P. Mullie[1], A. Koechlin[2], M. Boniol-Rech[2], G. Bolli[3], J. Rosenstock[4], P. Boyle[5]

[1]International Prevention Research Institute, Research, Lyon, France
[2]International Prevention Research Institute, Statistics, Lyon, France
[3]University of Perugia, Research, Perugia, Italy
[4]Dallas Diabetes and Endocrine Center, Research, Dallas Texas, USA
[5]International Prevention Research Institute, President, Lyon, France

**Background:** Observational studies have found that physical activity (PA) could prevent breast cancer (BC) and use of hormone replacement therapy (HRT) increases the risk of BC. We quantified the impact of PA on BC, and whether HRT use influenced this impact.

**Material and Methods:** Prospective cohort studies were selected and meta-analysed using random-effect models with tests for statistical significance and heterogeneity. Because studies used different ways for assessing physical activity, BC risk in the highest category of physical activity was compared with the lowest.

**Results:** A systematic search identified 37 independent cohort studies published between 1987 and 2013, representing 4,287,368 women. More than 114,100 BC cases were included in the study, of which 4,300 were premenopausal, 31,500 were postmenopausal and 78,300 were of unknown menopausal status. Compared to the lowest level of PA, the highest level was associated with a summary relative risk (SRR) of BC of 0.88 (95% CI: 0.85–0.91). The protective effect was observed for recreational as well as for occupational PA, and irrespective of areas where studies were done (USA, Europe and others). The SRR of studies that started before 1989 was 0.82 (95% CI: 0.74–0.91) but obtained heterogeneous results ($I^2$=68%). The SRR of studies that started after 1989 was 0.89 (95% CI: 0.86–0.93) with no heterogeneity ($I^2$=0%). The BC risk associated with PA was 1.11 (95% CI: 0.82–1.51) among HRT users and 0.71 (95% CI: 0.52–0.98) among HRT never users. Results differed by oestrogen receptor (ER) status: the SRR associated with PA was 0.87 (95% CI: 0.80–0.94) for ER+ patients whereas it was 0.80 (95% CI: 0.67–0.95) for ER− patients. The reduction in BC risk related to increasing PA was greater among women with BMI <25 kg/m$^2$ compared to >25 kg/m$^2$, respectively, SRR=0.81 (95% CI: 0.73–0.90) and SRR=0.90 (95% CI: 0.81–1.00). The 11 studies reporting results in metabolic equivalent of tasks (MET) obtained a SRR of 0.88 (95% CI: 0.84–0.92) without heterogeneity ($I^2$=0%). The unit of reporting physical activity (MET-h/week vs hour/week) did not influence SRRs.

**Conclusion:** Compared with the least active women, a 12% reduction in BC risk exists in women with high levels of PA (e.g. >1 h/day of vigorous physical activity). Reductions are more pronounced for ER− cancers. HRT use seems to cancel out the preventive effects of PA.

9th European Breast Cancer Conference (EBCC9)

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*Br J Sports Med* doi:1

Review

The dose–r
prospective

Tingting Li[1], Shaozh
Author Affiliation
Correspondence to
Dr Li Liu, Department
Medical College, Hua

Accepted 1 Septemb
Published Online First 18 September 2015

## INTRODUCTION

Cancer is a leading disease burden in developed and developing countries with 8.2 million cancer deaths in 2012 as estimated by the WHO.[1] The World Cancer Research Fund (WCRF) recently reaffirmed that the risk of cancer is affected by our lifestyles and that an active lifestyle is protective against cancer mortality.[2] Specifically, an inverse association between physical activity and mortality has been discovered for breast,[3] colorectal[4] and prostate cancers.[5] The association was further vali-

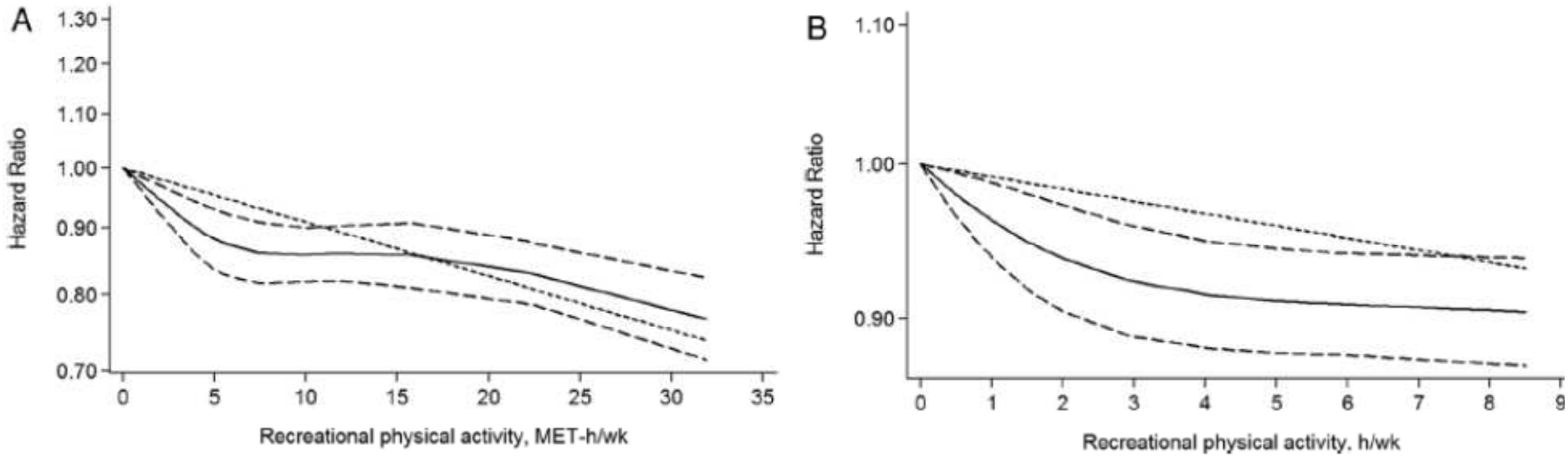



**Figure 2** Dose–response relation between cancer mortality and recreational physical activity in the form of metabolic equivalents of task (MET)-h/week (A) and h/week (B) in the general population. The solid line and the long dash line represent the estimated relative risk and its 95% CI. The short dash line represents the linear relationship.

insulin resistance may influence the risk of breast cancer recurrence and mortality,[35] and physical activity is known to lower insulin levels and improve insulin sensitivity.[36 37] Furthermore, exercise intervention studies have measured improvements in insulin-like growth factor 1 (IGF-I) and insulin-like growth factor binding protein 3 (IGFBP-3) and biomarkers related to cancer progression and recurrence among breast cancer survivors following high levels of exercise.[38 39]

Int J Clin Exp Med 2015;8(7):11549-11553
www.ijcem.com /ISSN:1940-5901/IJCEM0010473

*Original Article*

# Relationship between body mass index and incidence of breast cancer

Hai-Tao Li, Xing-Hua Han, Ying-Xin Liu, Kai-Ming Leng, Guo-Min Dong

*Department of General Surgery, The Affiliated Qingzhou Hospital to Weifang Medical College, Qingzhou 262500, Shandong, China*

Received May 21, 2015; Accepted July 11, 2015; Epub July 15, 2015; Published July 30, 2015

Abstract: Objective: To investigate the relationship between body mass index (BMI) and the breast cancer incidence, so as to making contribution to breast cancer screening in high-risk groups, to adjustment from passive medical treatment to active treatment Methods: BMI status of 206 breast cancer patients and that of 210 healthy subjects at different ages were compared and analyzed. Results: The mean BMI was significantly higher in breast cancer patients than in healthy subjects 24.45±3.50 vs. 23.80±3.10 kg/m², t=-2.189, P=0.001. When stratified by age, BMI were significantly higher in ≥60 age for breast cancer than that of control group (Z=-3.408, P=0.001) and no significant difference in <60 years old .Logistic regression analysis showed that BMI was a risk factor of breast cancer (OR=1.886, 95% CI: 1.122-3.009). Conclusion: BMI have a relationship with the occurrence of breast cancer, especially for ≥60 years old.

# Effetti dell'attività fisica

## Cancro al Colon-retto

- ↑motilità intestinale
- ↓contatto sost. Cancerogene (dieta)-mucosa intestinale
- ↓secrezione di acidi biliari
- modulazione prostaglandine (regolazione motilità intestinale e proliferazione cellule mucosa del colon)

Bonetti A. Medicina dello Sport2, 2013

## Cancro al Seno

- sovrappeso ↓
- obesità ↓

Bonetti A. Medicina dello sport, 2013

- (periodo pre-puberale) ritardo nel menarca → leptina(↓) →estrogeni liberi(↓) →1anno anticipo menarca/ +4% rischio

Kvale G. Cancer, 1988

# CITOCHINE

Attività Fisica

↙↓↓↘

Miochine

↓

- ↑ Ipertrofia Muscolare
- ↑ Ossidazione del Tessuto Adiposo
- ↑ Sensibilità all'Insulina
- ↑ Osteogenesi
- ↑ Anti-Infiammazione
- ↑ Difesa Antitumorale
- ↑ Funzioni Pancreatiche

↓

Diminuzione del Rischio di Malattie Croniche e Mortalità Prematura

**miostatina, interleuchina-6 (IL-6), interleuchina-7 (IL-7), irisina leukemia inhibitory factor (LIF), insulin-like growth factor-1 (IGF-1), fibroblast growth factor-2 (FGF-2), follistatin-like-1 (FSTL-1)**

# AF e cancro della mammella

*associazione dimostrata*

Riduzione del rischio del 14-30% con la pratica di attività fisica

Correlazione dose-risposta

Batty D, Thune I., British Medical Journal 2000; 321:1424
Mc Tiernan A et al., JAMA 2003; 290:1331
Rockhill B et al., Arch Intern Med 1999; 159: 2290-6
Holmes MD et al, JAMA 2005; 293: 2479-2486

*Perché:*

*-Riduzione del grasso corporeo (quindi di produzione di estrogeni a partire da androgeni)*

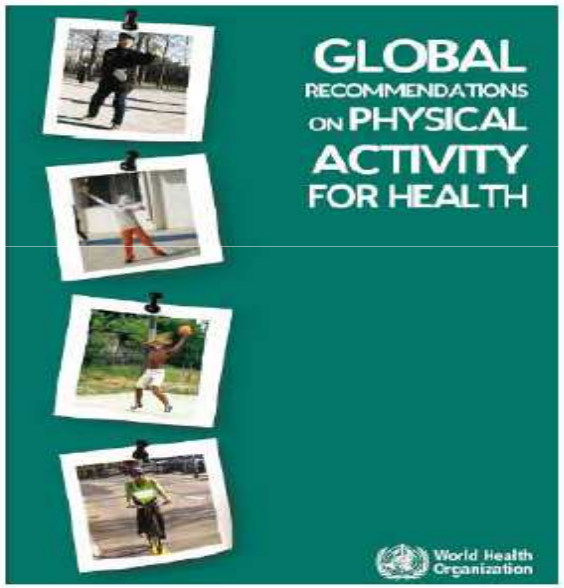
*-Riduzione dell'insulinemia*

*-Riduzione di proteine circolanti che influenzano disponibilità di estrogeni e insulina*

Mc Tiernan A et al., JAMA 2003; 290:1331
Fairey AS et al, Cancer epidemiology, biomarkers & prevention 2003; 12:721

# Di quanta attività fisica abbiamo bisogno? Nuove raccomandazioni globali OMS

- Obiettivo principale: fornire una guida sulla relazione dose-risposta tra frequenza, durata, tipo e quantità di attività fisica totale necessaria per la prevenzione delle malattie non trasmissibili
- Tre gruppi di età: 5-17; 18-64; e 65+
- Destinatari principali: decisori nazionali e locali



# Raccomandazioni per adulti 18-64 anni

- **Almeno 150 minuti** di attività fisica di intensità moderata nel corso della settimana

**OPPURE**

- **almeno 75 minuti** di attività fisica di intensità vigorosa nel corso della settimana

**OPPURE**

- una **combinazione equivalente** delle due

**Periodi di almeno 10 minuti**

# Raccomandazioni per adulti senior età >64 anni

Stesse raccomandazioni degli adulti

## Raccomandazioni specifiche:

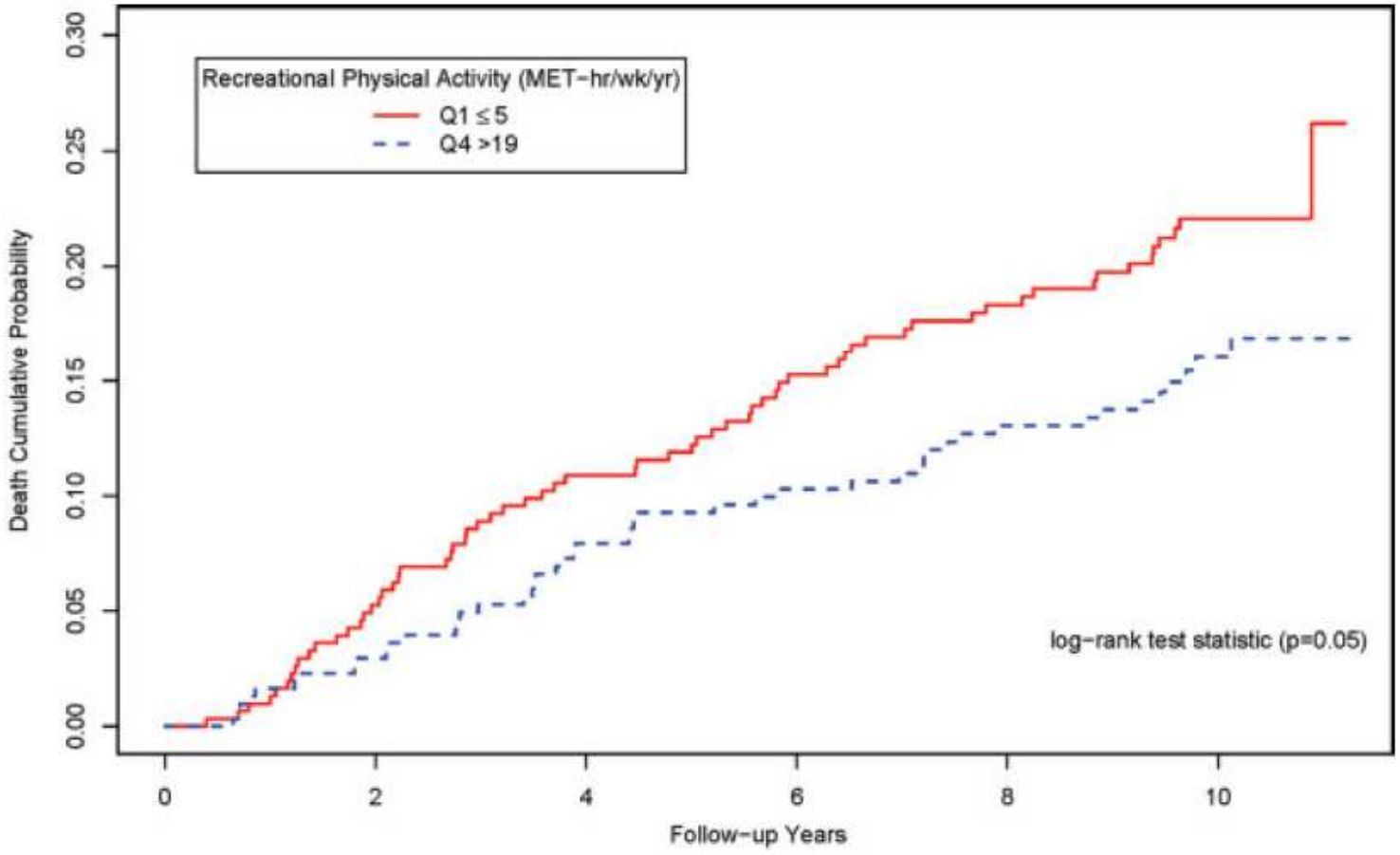
- Praticare attività fisica per migliorare l'equilibrio e prevenire le cadute 3 o più giorni a settimana;
- Fare attività per il rafforzamento muscolare 2 o più giorni a settimana;
- Essere fisicamente attivi in base alle proprie capacità e condizioni.

*Int. J. Cancer:* **124,** 1954–1962 (2009)


# Prospective cohort study of lifetime physical activity and breast cancer survival

**Christine M. Friedenreich[1]*, Jacqueline Gregory[1], Karen A. Kopciuk[1], John R. Mackey[2] and Kerry S. Courneya[3]**

[1]*Division of Population Health, Alberta Cancer Board, Calgary, AB, Canada T2N 4N2*
[2]*Cross Cancer Institute, Alberta Cancer Board, Edmonton, AB, Canada*
[3]*Faculty of Physical Education and Recreation, University of Alberta, Edmonton, AB, Canada*


Recreational Physical Activity (MET-hr/wk/yr)
Q1 ≤ 5
Q4 >19
log-rank test statistic (p=0.05)
Death Cumulative Probability
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0
2
4
6
8
10
Follow-up Years

Research Article
See perspective on p. 476

Cancer Prevention Research

# Physical Activity and Survival in Postmenopausal Women with Breast Cancer: Results from the Women's Health Initiative

Melinda L. Irwin[1], Anne McTiernan[2], JoAnn E. Manson[3], Cynthia A. Thomson[4], Barbara Stefeld[5], Marcia L. Stefanick[6], Jean Wactawski-Wende[7], Lynette Craft[8], Dorothy Lane[9], Lisa W. Martin[10], and Rowan Chlebowski[11]

## Abstract

Although studies have shown that physically active breast cancer survivors have lower all-cause mortality, the association between change in physical activity from before to after diagnosis and mortality is not clear. We examined associations among pre- and postdiagnosis physical activity, change in pre- to postdiagnosis physical activity, and all-cause and breast cancer–specific mortality in postmenopausal women. A longitudinal study of 4,643 women diagnosed with invasive breast cancer after entry into the Women's Health Initiative study of postmenopausal women. Physical activity from recreation and walking was determined at baseline (prediagnosis) and after diagnosis (assessed at the 3 or 6 years post-baseline visit). Women participating in 9 MET-h/wk or more (~3 h/wk of fast walking) of physical activity before diagnosis had a lower all-cause mortality (HR = 0.61; 95% CI, 0.44–0.87; $P = 0.01$) compared with inactive women in multivariable adjusted analyses. Women participating in ≥9 or more MET-h/wk of physical activity after diagnosis had lower breast cancer mortality (HR = 0.61; 95% CI, 0.35–0.99; $P = 0.049$) and lower all-cause mortality (HR = 0.54; 95% CI, 0.38–0.79; $P < 0.01$). Women who increased or maintained physical activity of 9 or more MET-h/wk after diagnosis had lower all-cause mortality (HR = 0.67; 95% CI, 0.46–0.96) even if they were inactive before diagnosis. High levels of physical activity may improve survival in postmenopausal women with breast cancer, even among those reporting low physical activity prior to diagnosis. Women diagnosed with breast cancer should be encouraged to initiate and maintain a program of physical activity. *Cancer Prev Res; 4(4); 522–9. ©2011 AACR.*

*Acta Oncologica*, 2015; Early Online: 1–20

informa
healthcare

REVIEW

# Physical activity, risk of death and recurrence in breast cancer survivors: A systematic review and meta-analysis of epidemiological studies

IAN MATTHEW LAHART[1], GEORGE S. METSIOS[1], ALAN MICHAEL NEVILL[1] & AMTUL RAZZAQ CARMICHAEL[2]

[1]*Faculty of Education, Health and Wellbeing, University of Wolverhampton, Walsall Campus, Gorway Road, Walsall, UK and* [2]*Department of Surgery, Russells Hall Hospital, Dudley, UK*

## Conclusion

There were significant associations between lifetime and recent pre-diagnosis recreational physical activity and risk of all-cause death; recent pre-diagnosis recreational physical activity was also found to be associated with the risk of breast cancer-related death. Post-diagnosis physical activity was found to significantly reduce the risk of both all-cause death and breast cancer-related death. However, effect esti-

## FITT RECOMMENDATIONS FOR INDIVIDUALS WITH CANCER

FITT

### Aerobic, Resistance, and Flexibility Exercise

The appropriate FITT recommendations will vary across the cancer experience and requires individualization of the Ex $R_x$.

**Frequency:** For those who have completed treatment, the goal for aerobic exercise should be to increase gradually from the current physical activity level to 3–5 d · $wk^{-1}$ with resistance training 2–3 d · $wk^{-1}$. Flexibility activities can occur daily, even during treatment. Evidence indicates even those currently undergoing systemic cancer treatments can increase daily physical activity sessions over the course of 1 mo (221).

**Intensity:** Exercise tolerance may be highly variable during active treatment. Survivors who have completed treatment may increase intensity slowly for all physical activities. Heart rate (HR) may be less reliable for monitoring intensity for cancer survivors currently undergoing treatment. Therefore, educating survivors to use perceived exertion to monitor intensity may be advisable (see *Chapter 7*). If tolerated without adverse effects of symptoms or side effects, exercise intensity need not differ from healthy populations. Aerobic exercise should be moderate (*i.e.*, 40%–<60% $VO_2R$ or HRR; rating of perceived exertion [RPE] of 12–13 on a scale of 6–20 [27]) to vigorous (60%–85% $VO_2R$ or HRR or RPE of 12–16 on a scale of 6–20 [27]) intensity. Moderate intensity resistance exercise should be 60%–70% 1-RM. Flexibility intensity should be mindful of ROM restrictions resultant to surgery and/or radiation therapy (151).

**Time:** Several short bouts per day rather than a single bout may be useful, particularly during active treatment. Survivors who have completed treatment can increase duration as tolerated for all activities. When tolerated without exacerbation of symptoms or side effects, exercise session duration should be no different than that for healthy populations. Aerobic exercise should be 75 min · $wk^{-1}$ of vigorous intensity or 150 min · $wk^{-1}$ of moderate intensity activity or an equivalent combination of the two. Resistance training should be at least 1 set of 8–12 repetitions.

**Type:** Aerobic exercise should be prolonged, rhythmic activities using large muscle groups (*e.g.*, walking, cycling, swimming). Resistance exercise should be weights, resistance machines, or weight-bearing functional tasks (*e.g.*, sit-to-stand) targeting all major muscle groups. Flexibility exercise should be stretching or ROM exercises of all major muscle groups also addressing specific areas of joint or muscle restriction that may have resulted from treatment with steroids, radiation, or surgery.

**Progression:** Slower progression may be needed among survivors of cancer compared to healthy adults. Awareness of the highly variable impact of exercise on symptoms in survivors of cancer undergoing treatment is needed (222). If exercise progression leads to an increase in fatigue or other common adverse symptoms as a result of prescribed exercise, the FITT principle of Ex $R_x$ should be reduced to a level that is better tolerated.

Memorial Sloan Kettering Cancer Center

# Exercise Therapy as Treatment for Cardiovascular Injury and Cancer Following a Cancer Diagnosis

Lee W. Jones, PhD

Department of Medicine
Memorial Sloan Kettering Cancer Center

## Personalized exercise prescription design & implementation

### Principles of Training

| Individualization | Specificity | Progressive Overload | Rest / Recovery |
|---|---|---|---|
| Prescription is individualized to the patient based on baseline cardiorespiratory fitness | Prescription is specifically designed to induce improvements in the primary outcome | Exercise sessions are progressively increased in intensity and duration - hence training volume is increased across each month of the intervention | Appropriate rest and recovery sessions / days are incorporated between training sessions to optimize physiological adaptation |

Pre-Exercise Training Evaluation
Training intensity based on peak $VO_2$ directly measured during a maximal CPET

### Exercise Prescription

| Frequency | Intensity | Modality | Duration | Length |
|---|---|---|---|---|
| 3x/wk | 55-80% $VO_{2peak}$ | Treadmill walking | 25-45 min/session | 12 wks |

Other Pertinent Factors
- Primary trial outcome
- Cancer stage
- Cancer setting (pre, during, or after therapy)
- Level of comorbid disease
- Current level of exercise behavior

### Targeted, Non-Linear Exercise Training Program

# La soluzione:
## Basta muoversi di più

Esercizio fisico e sport sono ideali per la salute ma la cosa più importante è semplicemente muoversi di più. Bastano poco più di 20 minuti di attività al giorno per far diminuire il rischio di soffrire di numerose patologie.

20 minuti di maggior movimento possono voler dire:

Questo farmaco è di per sé gratuito e disponibile per tutti'

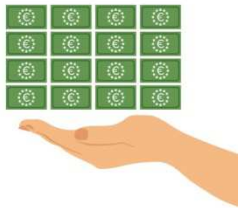
# Muoviamoci

**Se solo 1 persona su 5 persone inattive iniziasse a fare esercizio...**

Salveremmo
**VITE**

Oltre **100.000** morti evitate ogni anno. Si tratta di una vita salvata ogni 5 minuti.

Risparmieremmo
**SOLDI**



Risparmio annuale: **16,1 miliardi di euro**. Tre quarti di questo risparmio (11,8 miliardi) si realizzerebbero in soli sei Paesi: Regno Unito, Italia, Francia, Germania, Spagna e Polonia.

Salveremmo
**MENTI**

Ci sono molti vantaggi mentali nel muoversi di più, tra cui una migliore qualità del sonno, meno stress e una maggiore produttività.

# Grazie per l'attenzione …….