

“Prevenzione cardiovascolare e cambiamento
degli stili di vita”

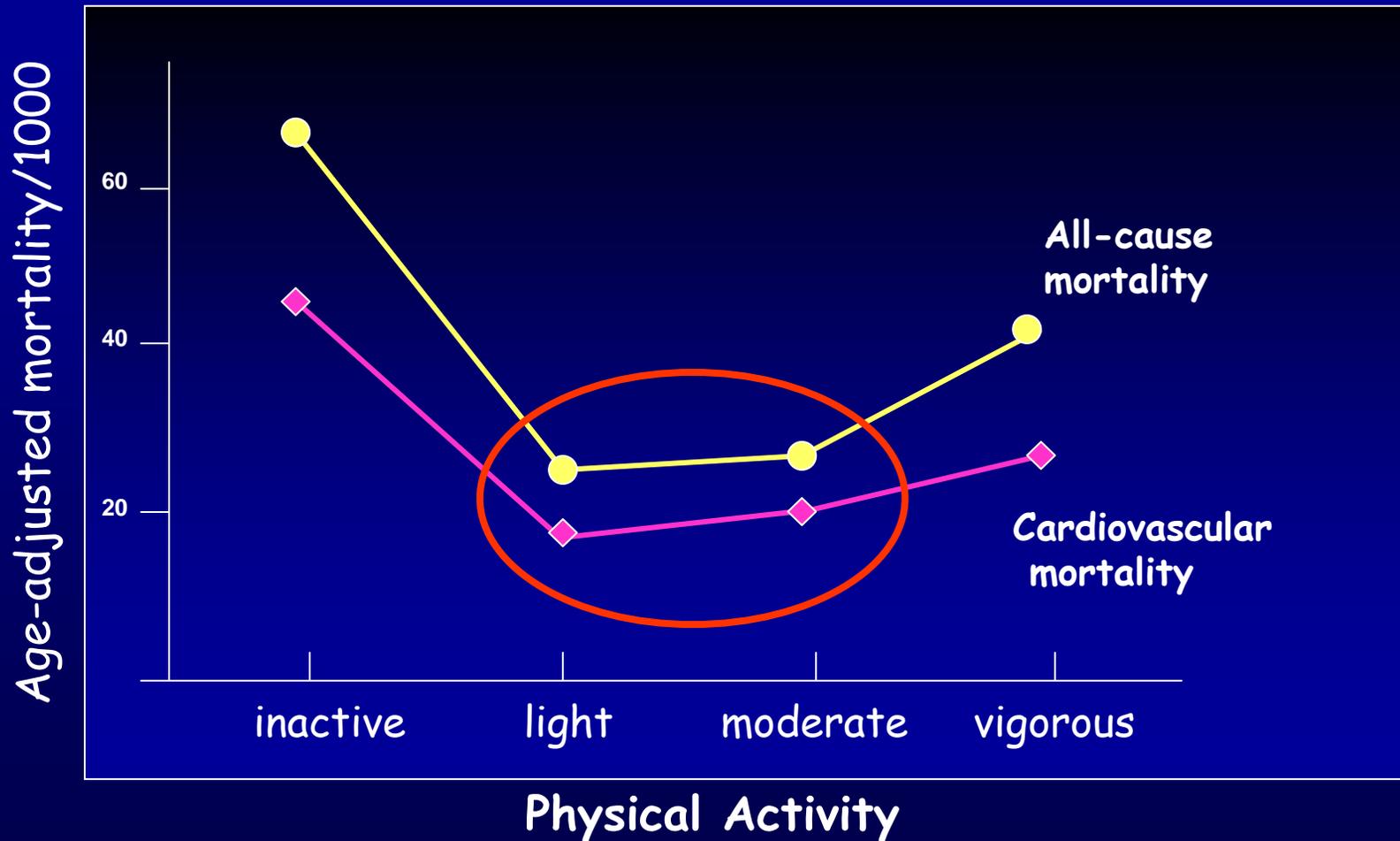
*Istituto di Medicina dello Sport di Firenze, 22
settembre 2007*

EFFETTI DELL'ESERCIZIO FISICO NEL CARDIOPATICO

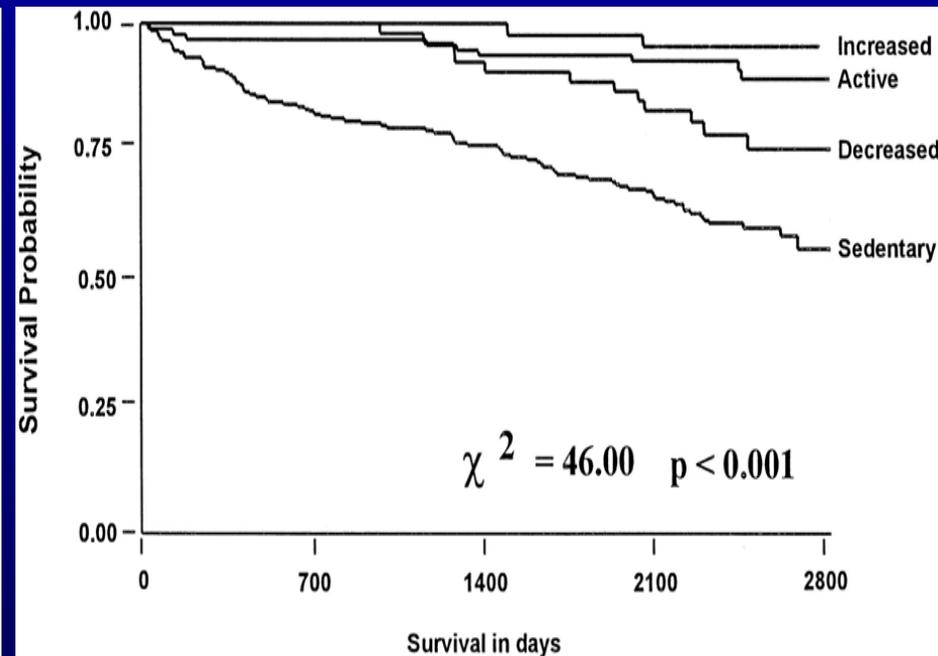
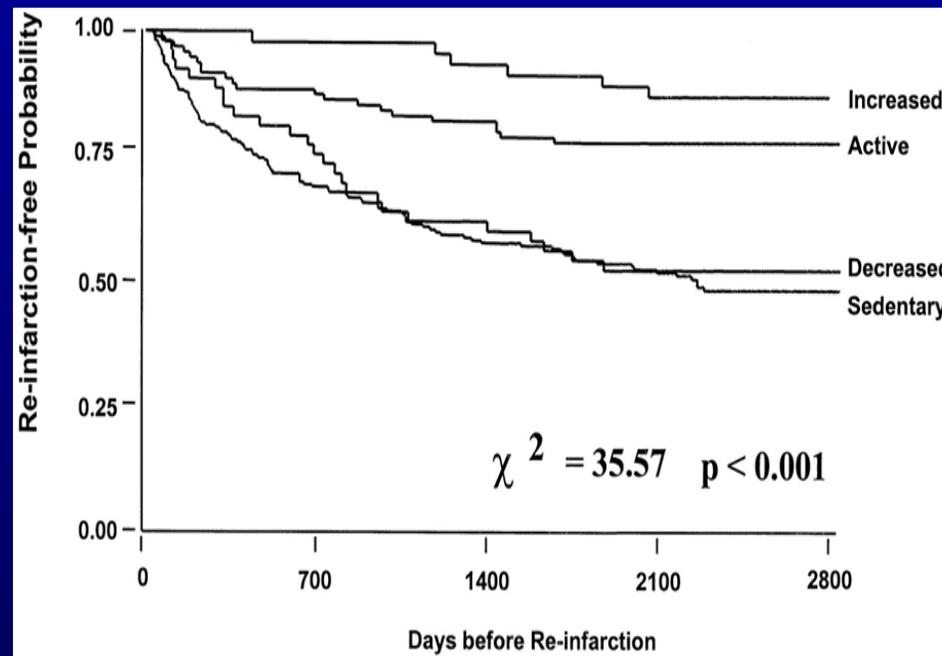
Tommaso Cellai

Esercizio fisico e cardiopatía ischemica

Age adjusted mortality rates/1000 person-yrs in 772 men (age >65 yrs; follow-up 5 yrs) with Coronary Heart Disease



Change in Level of Physical Activity and Risk off All-cause Mortality or Reinfarction

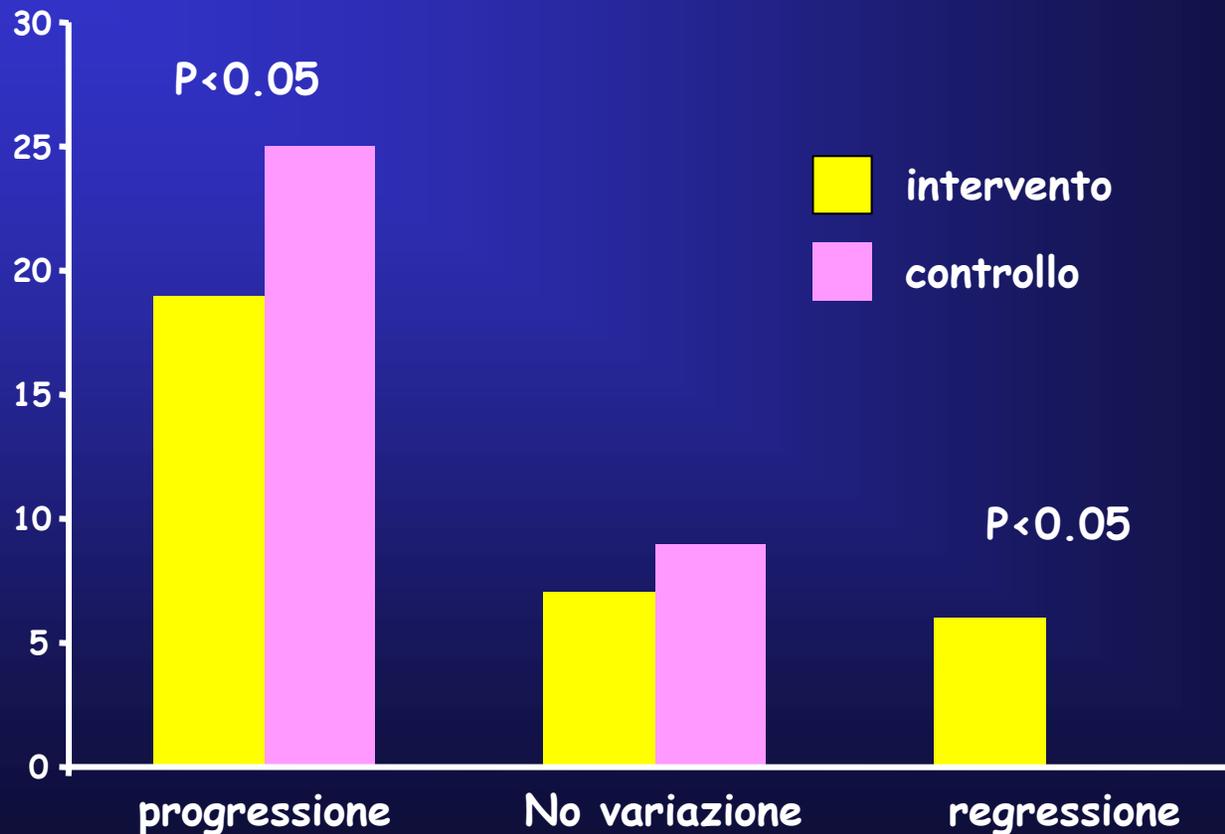


survival analysis of **reinfarction**
by change in level of PHYSICAL
ACTIVITY

survival analysis of **mortality** by
change in level of PHYSICAL
ACTIVITY

Effetti di un programma di esercizio fisico e di riduzione dei lipidi sulla progressione della malattia coronarica

Controllo coronarografico dopo 6 anni



SPECIAL ARTICLE

Exercise-Based Rehabilitation for Patients with Coronary Heart Disease: Systematic Review and Meta-analysis of Randomized Controlled Trials

Rod S. Taylor, MSc, PhD, Allan Brown, MBA, MA, Shah Ebrahim, DM, MSc, Judith Jolliffe, MSc, Hussein Noorani, MSc, Karen Rees, MSc, PhD, Becky Skidmore, MLS, James A. Stone, PhD, David R. Thompson, PhD, Neil Oldridge, PhD

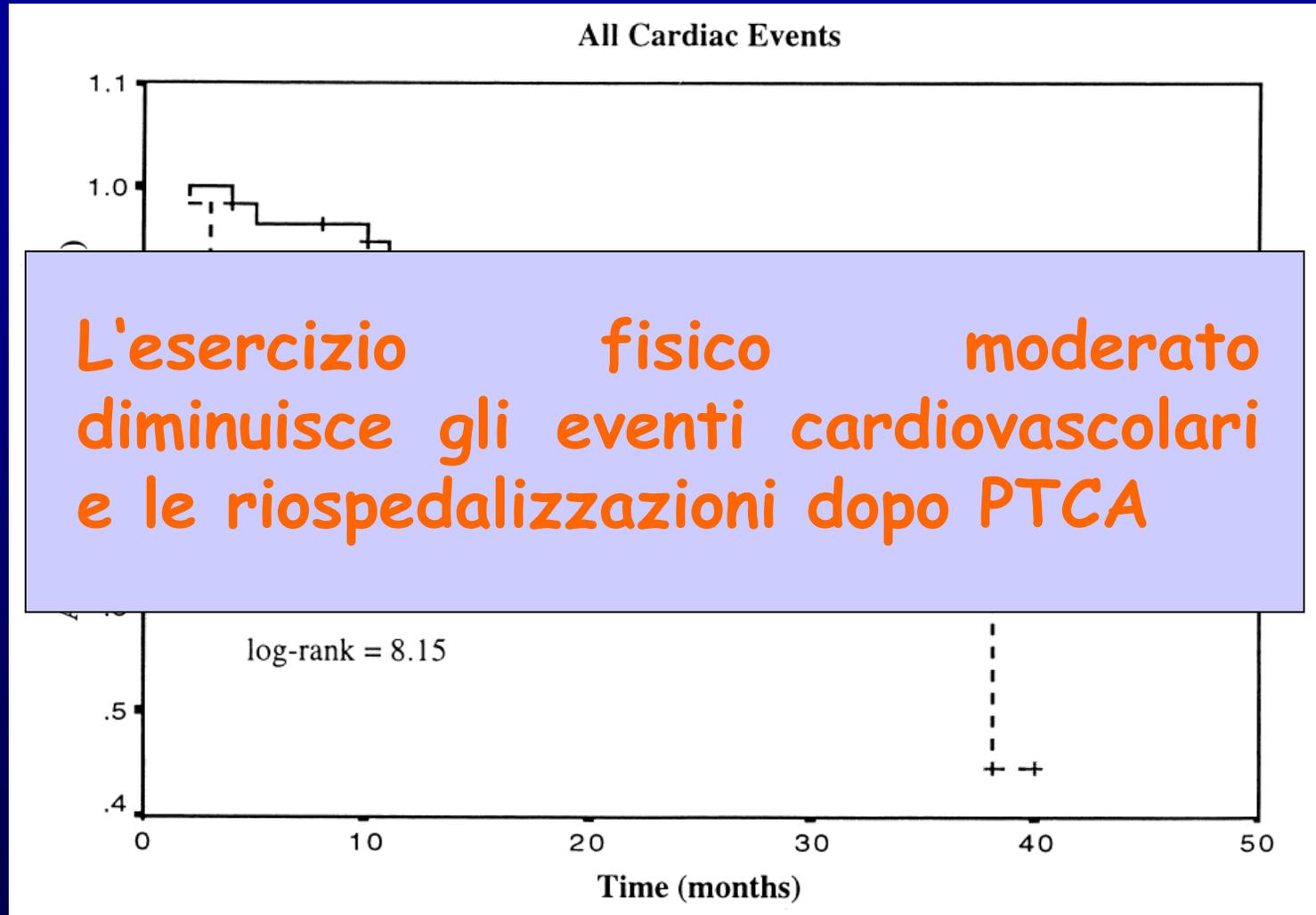
Metanalisi di 48 studi

Casistica: 8490 pazienti che partecipavano a programmi di RC basati su esercizio fisico

Risultati: ↓ 20% mortalità globale
 ↓ 26% mortalità cardiaca



Esercizio fisico dopo angioplastica coronarica ETICA trial



Esercizio fisico dopo cardiochirurgia

Care after Coronary-Artery Bypass Surgery

Mary E. Charlson, M.D., and O. Wayne Isom, M.D.

STRATEGIES AND EVIDENCE

Cardiac Rehabilitation

Cardiac rehabilitation programs, which focus on monitored aerobic exercise as well as the reduction of risk factors (smoking cessation, control of hypertension and hyperlipidemia, and psychosocial interventions),²⁴ are important for improving the quality of life after CABG.²⁵ Only one small study with matched controls has suggested that rehabilitation reduces the risk of cardiac events in patients who have undergone CABG.²⁶ However, exercise training improves exercise tolerance, reduces the severity of anginal symptoms, and improves both physical and psychological functioning.²⁷

Recommendations for the management of patients after heart valve surgery

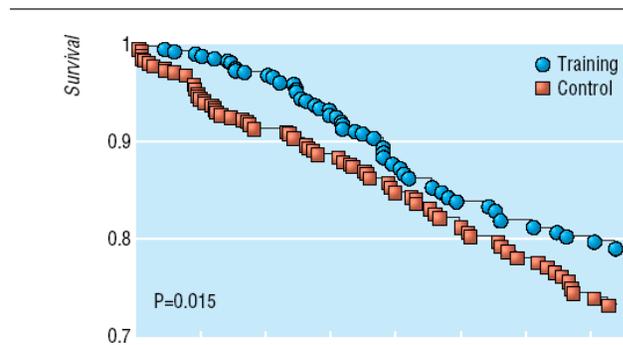
The early post-operative period and rehabilitation

Recommendations

- (i) The benefits of rehabilitation following coronary artery surgery have been well documented, and one study following valve surgery has demonstrated similar benefits from exercise training.³ A multidisciplinary rehabilitation programme should therefore be available for all patients undergoing valve surgery. This is particularly important for patients whose post-operative course has been complicated by heart failure.

Esercizio fisico e scompenso cardiaco

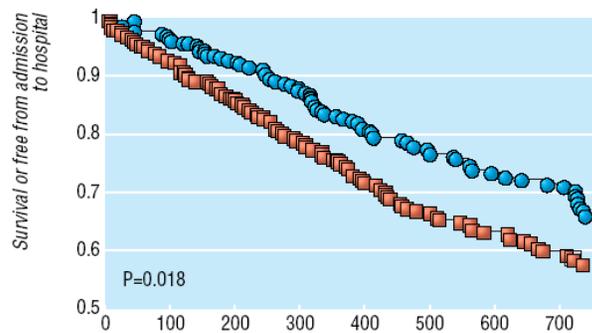
Exercise training meta-analysis of trials in patients with chronic heart failure (ExTraMATCH)



| No at risk | 0 | 100 | 200 | 300 | 400 | 500 | 600 | 700 |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Training | 395 | 382 | 302 | 267 | 186 | 173 | 159 | 148 |
| Control | 406 | 375 | 291 | 257 | 184 | 169 | 152 | 135 |



↑ sopravvivenza nel gruppo training



| No at risk | 0 | 100 | 200 | 300 | 400 | 500 | 600 | 700 |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Training | 354 | 333 | 250 | 218 | 148 | 135 | 122 | 111 |
| Control | 367 | 333 | 244 | 203 | 150 | 135 | 120 | 104 |



↓ ospedalizzazioni nel gruppo training

Fig 3 Kaplan-Meier cumulative two year survival (top) and Kaplan-Meier cumulative two year survival or free from admission to hospital (bottom)

ACC/AHA 2005 Guideline Update for the Diagnosis and Management of Chronic Heart Failure in the Adult

- Diuretics and salt restriction in patients with fluid retention (Ev. C)
- ACE-I (Ev. A)
- Beta-blockers with proven efficacy in CHF (metoprolol, carvedilol, bisoprolol) in stable patients (Ev. A)
- Avoid NSAID agents, most antiarrhythmics and calcium antagonists (Ev. B)
- **Exercise training (Ev. B)**
- ICD in patients with LVEF <30%, NYHA II/III 40 days after MI (Ev. A)
- Resynchronization therapy in patients with LVEF <35%, SR, NYHA III/IV, QRS >0.12 ms (Ev. A)
- Anti-aldosterone diuretic with creatinine < 2.5 mg/dL and potassium < 5.0 mEq/L (Ev. B)



Safety of exercise training for cardiac patients: results of the French registry of complications during cardiac rehabilitation.

Registro prospettico. 65 centri di riabilitazione cardiologica analizzati in un anno.

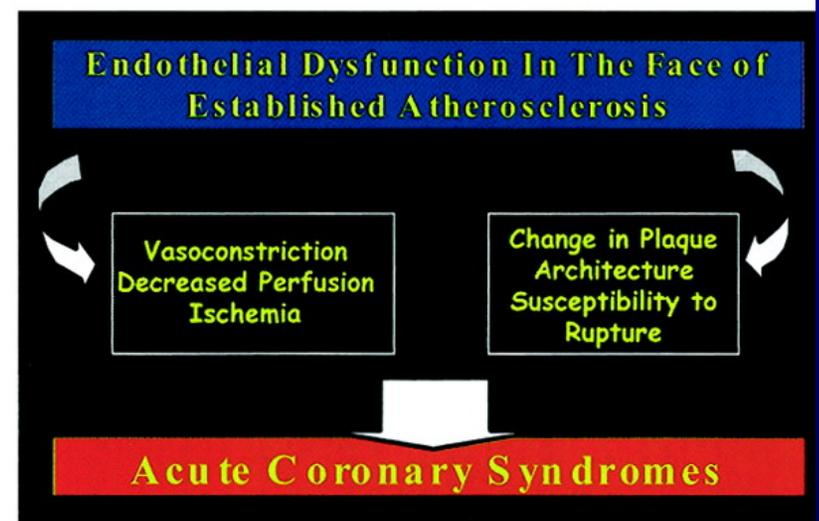
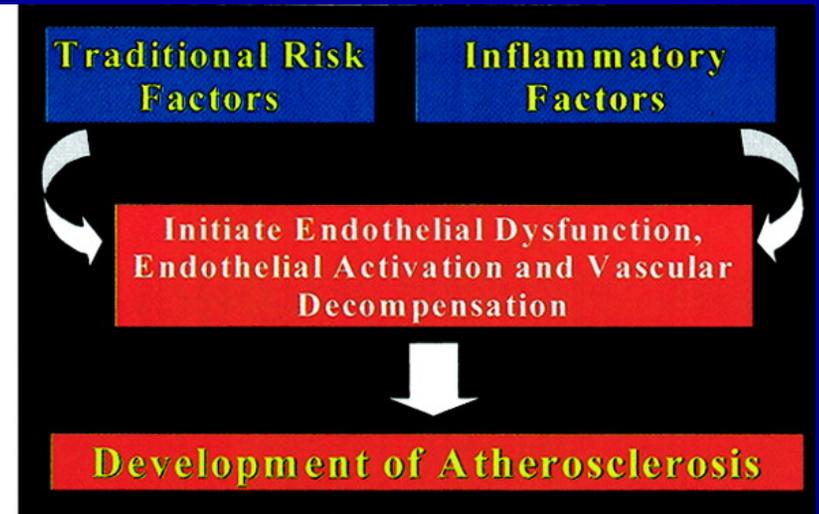
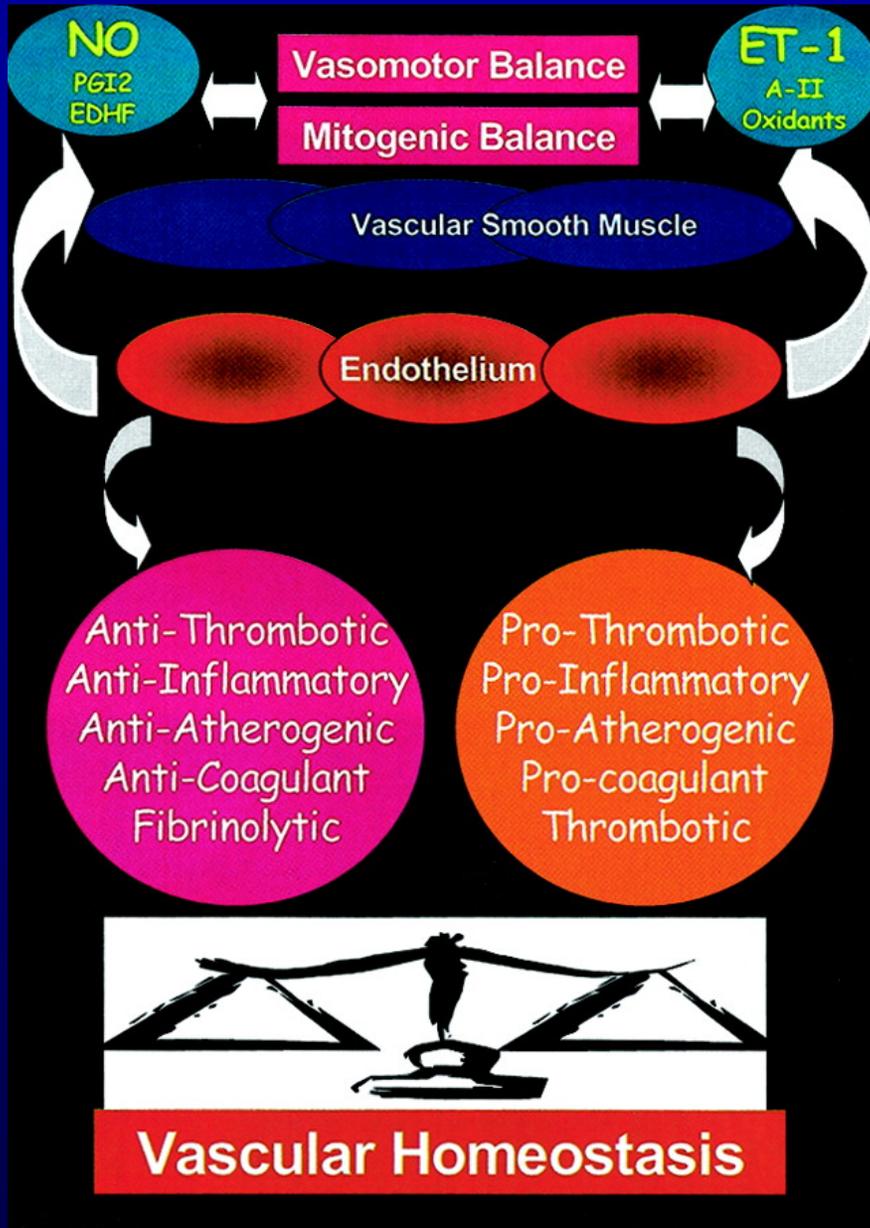
25.420 pazienti per 42.419 prove da sforzo e 743.471 ore di esercizio.

Rischio di eventi cardiovascolari:

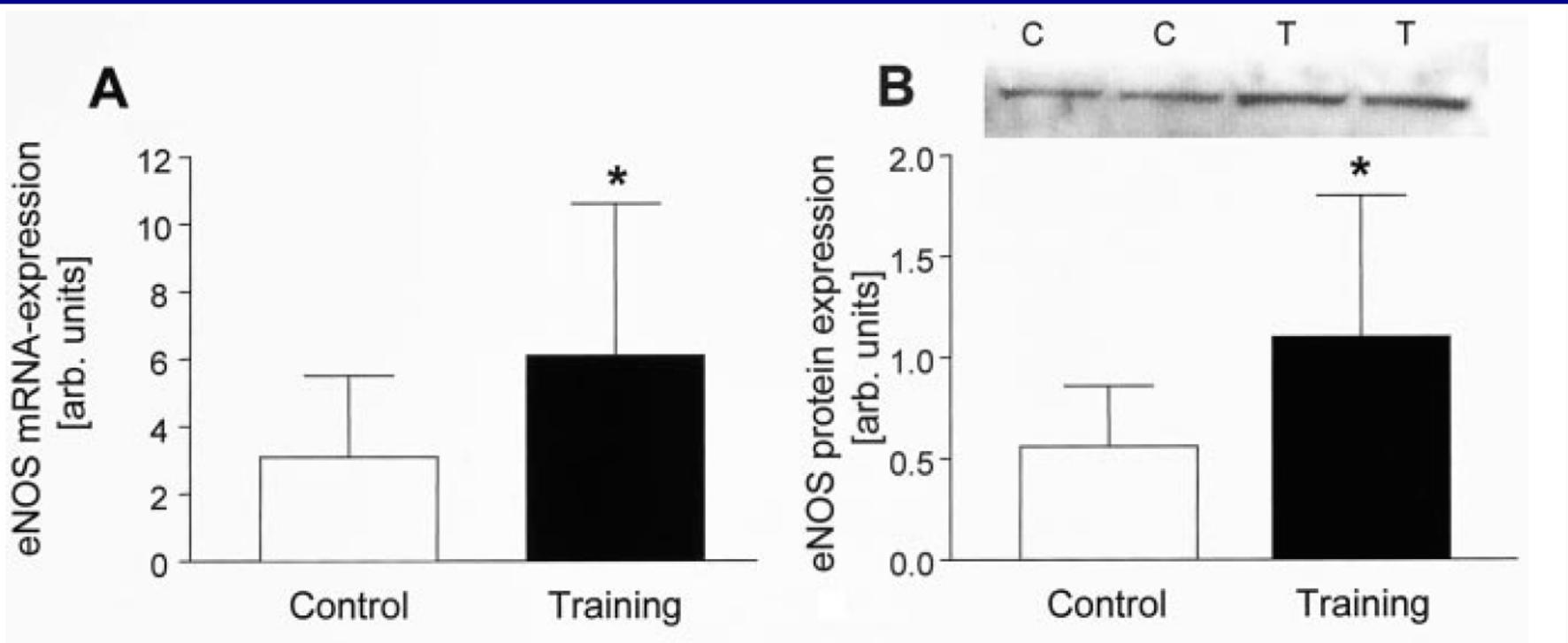
1 ogni 8484 prove da sforzo

1 ogni 49.565 ora di training

Effetti biologici dell'esercizio fisico

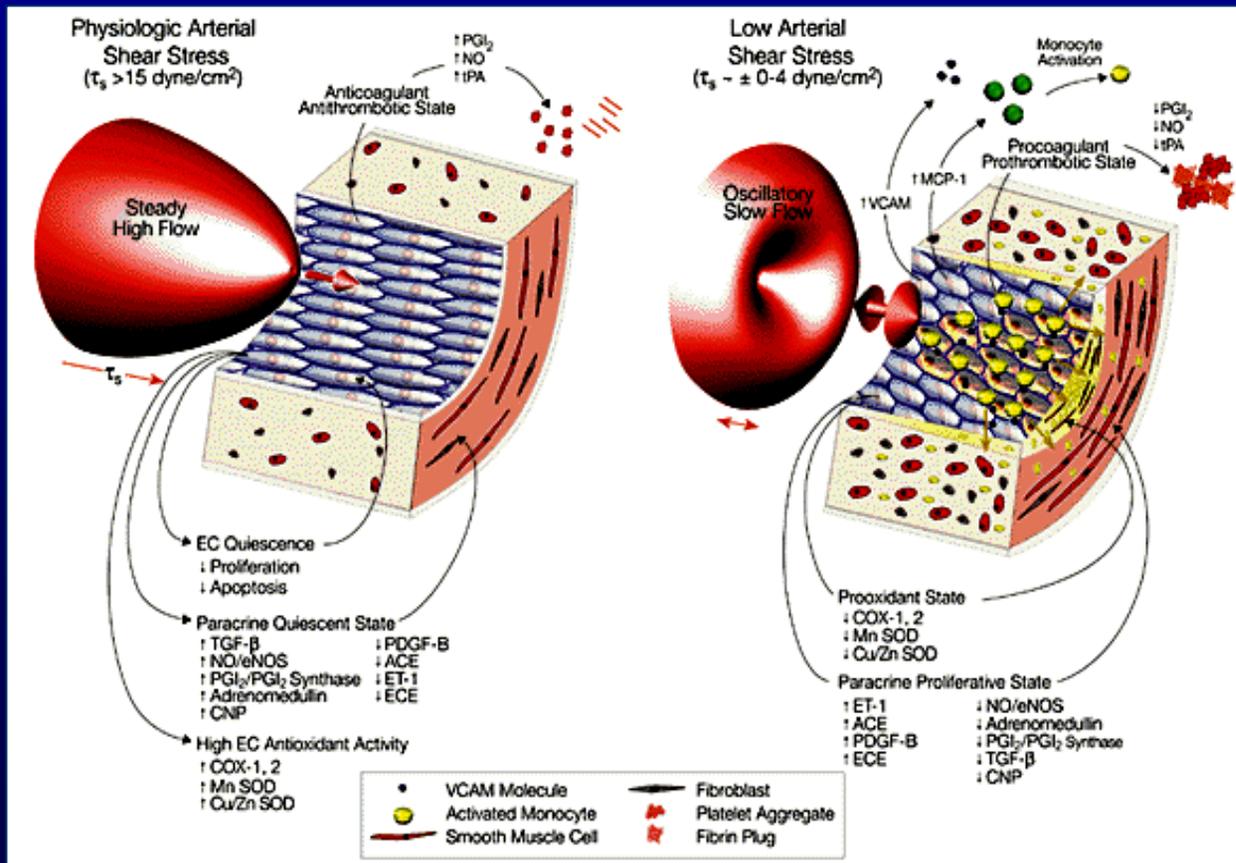


Regular Physical Activity Improves Endothelial Function in Patients With Coronary Artery Disease by Increasing Phosphorylation of Endothelial Nitric Oxide Synthase



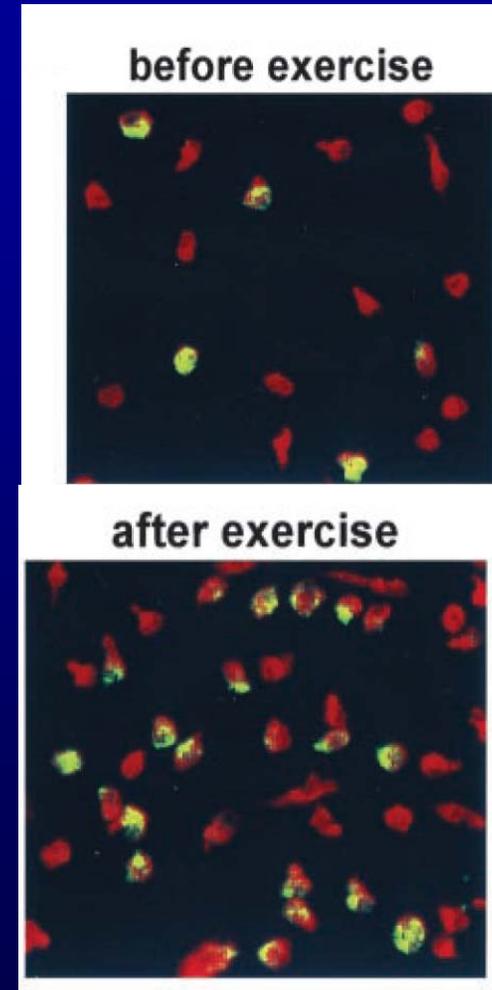
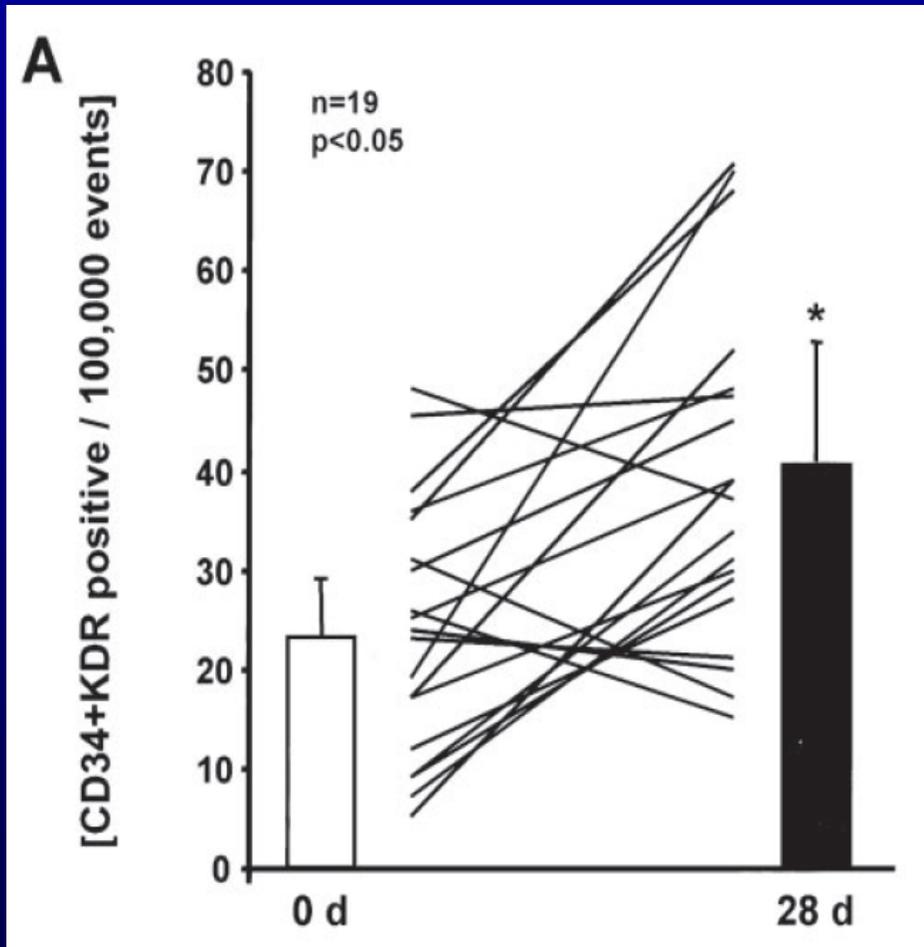
Meccanismo ateroprotettivo dell'esercizio fisico a livello endoteliale

La **funzione endoteliale** è stimolata da un elevato **Shear Stress**, forza prodotta dal flusso che esercita una trazione parallela all'asse lungo del vaso, con effetto sulla sintesi di Ossido Nitrico, modulazione di proliferazione cellulare ed effetto finale anti-aterogeno

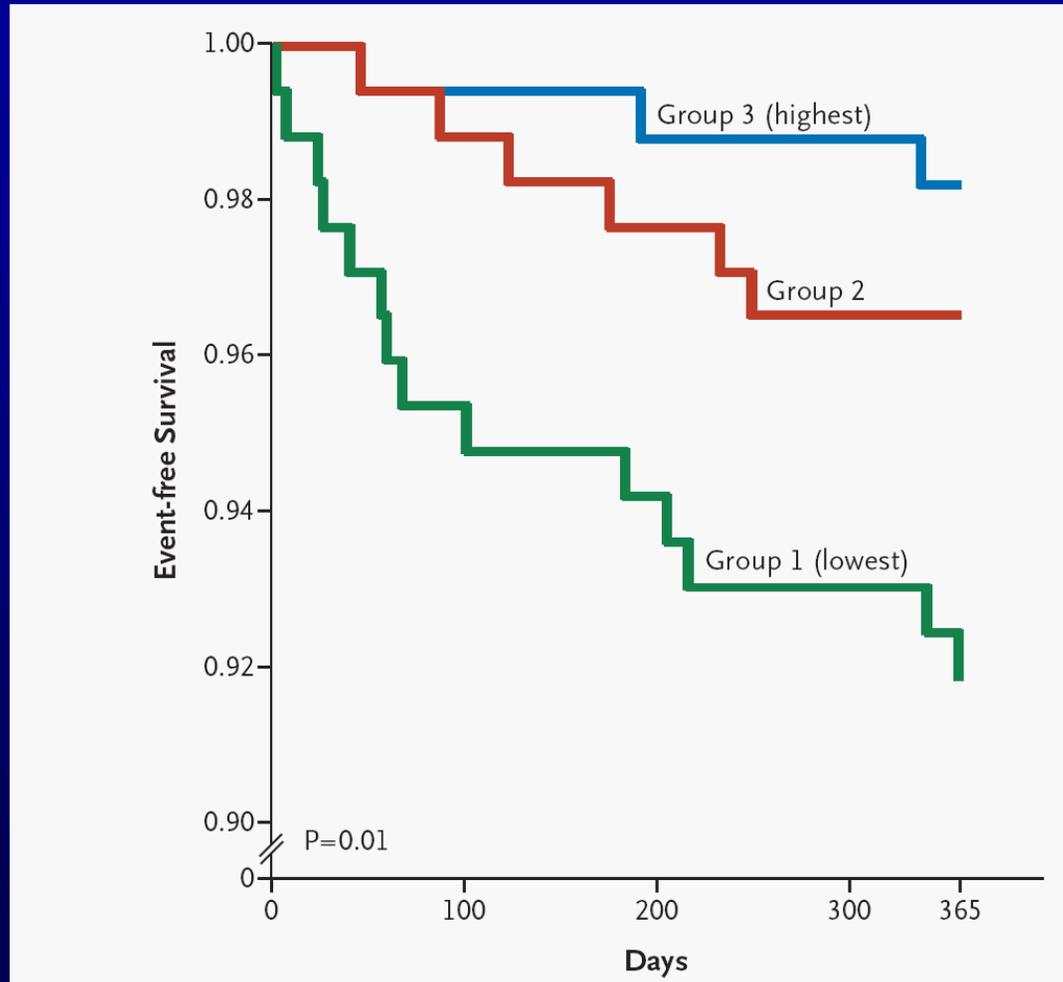


"... the systemic benefit of exercise... may induce local elevations of atheroprotective shear stress"

Physical Training Increases Endothelial Progenitor Cells, Inhibits Neointima Formation, and Enhances Angiogenesis

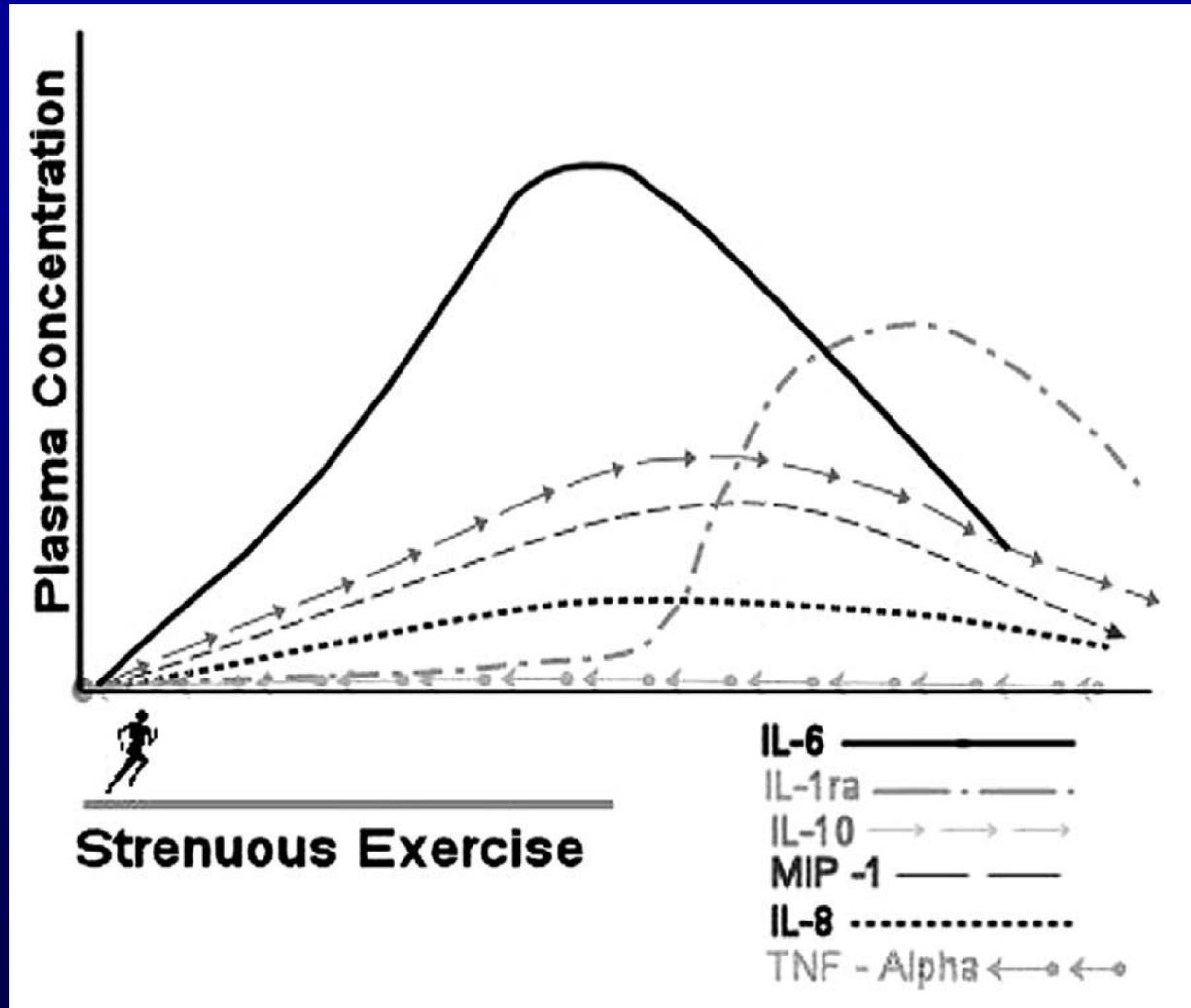


Circulating endothelial progenitor cells and cardiovascular outcomes

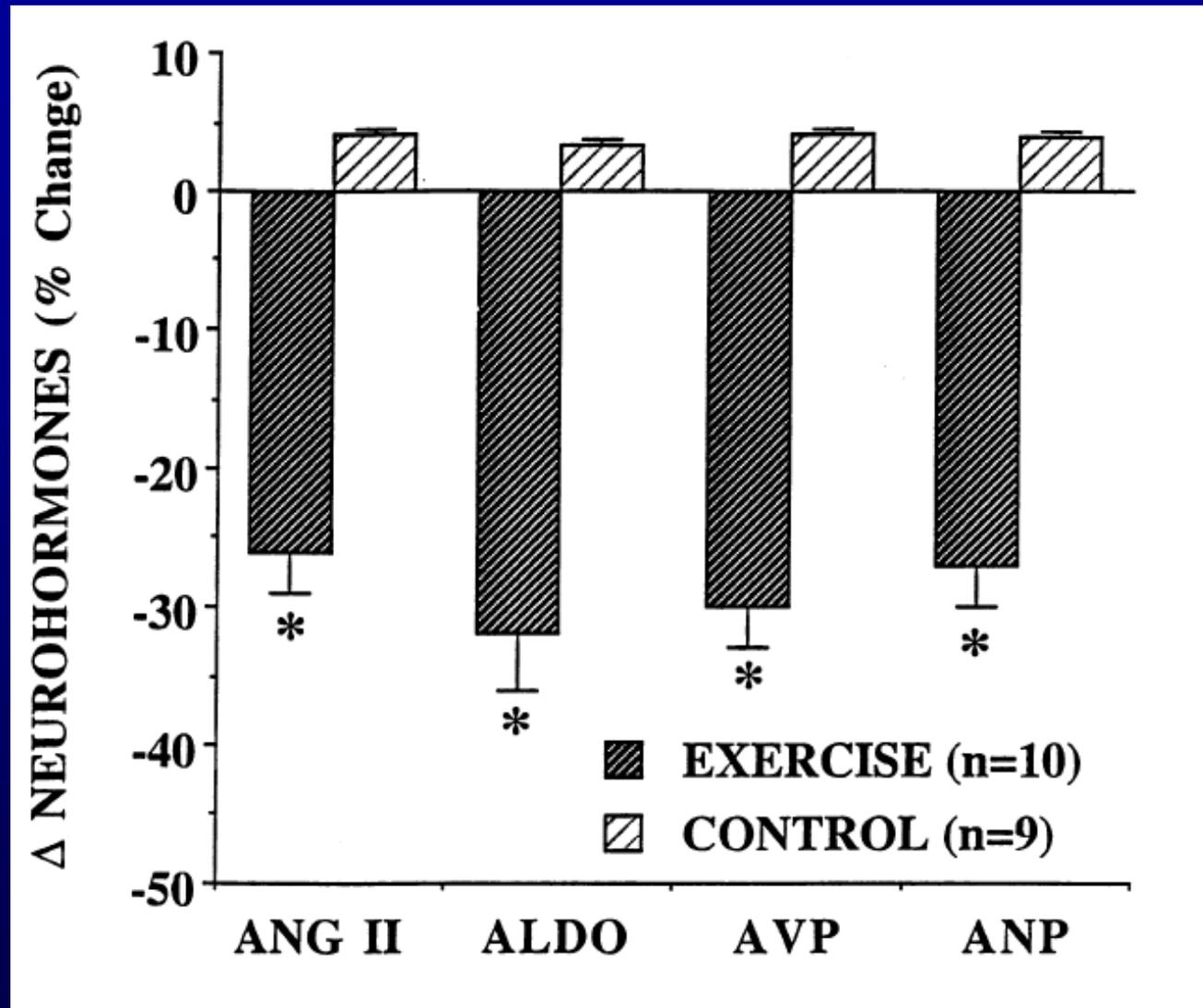


The effect of physical activity on serum C-reactive protein and inflammatory markers

A systematic review



Training fisico e inibizione neuroormonale nel CHF



Dalle linee guide alla realtà



Nei paesi europei la **sedentarietà è il secondo fattore di rischio cardiovascolare** dopo il fumo (il 30% della popolazione è completamente sedentario).

Nel 2000 in Italia i sedentari erano 21 milioni e 400.000 (38.4%).

Controllo fattori di rischio cardiovascolare

| | EUROASPIRE I 1995-1996 | EUROASPIRE II 1999-2000 |
|----------------|---------------------------|----------------------------|
| Smoking | 19 % | 21 % |
| Overweight | 78 % | 81 % |
| Frank Obesity | 25 % | 33 % |
| Hypertension | 55 % | 50 % |
| Hyperlipidemia | 67% | 59 % |



Euroaspire III

- No change in prevalence of smoking and continuing adverse trends in prevalence of obesity, central obesity and diabetes
- Continuing improvement in lipid control with increased use of statins
- Increased use of anti-platelets, beta-blockers, ACE/ARB's, statins and diuretics with a lower use of CCB's.
- Only 31% of coronary patients accessed cardiovascular prevention and rehabilitation

CONCLUSIONI 1

- ✓ Ampio consenso all'indicazione ad eseguire programmi di riabilitazione cardiologica basati sull'esercizio fisico in pazienti con cardiopatia post-acuta.
- ✓ L'esercizio fisico riduce il rischio di eventi cardiaci e mortalità in CAD e CHF. Nella chirurgia cardiaca dati incoraggianti ma non sufficienti.

CONCLUSIONI 2

- ✓ L'esercizio fisico migliora la funzione endoteliale, riduce i markers infiammatori e modula la funzione neuroautonomica.
- ✓ Nei pazienti cardiopatici l'esercizio fisico deve diventare parte integrante di un corretto stile di vita e deve essere eseguito per tutta la vita.