UNIVERSITÀ DEGLI STUDI DI VERONA

SIO Triveneto

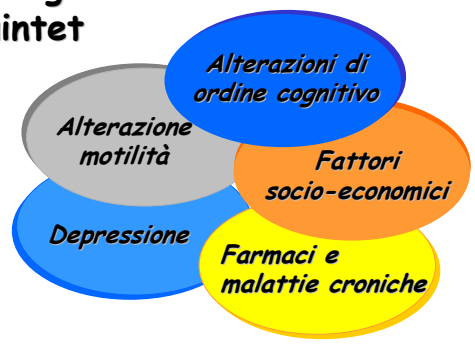
31 Marzo 2007 Trento

Attività Fisica e Composizione Corporea nell'anziano

Vincenzo Di Francesco

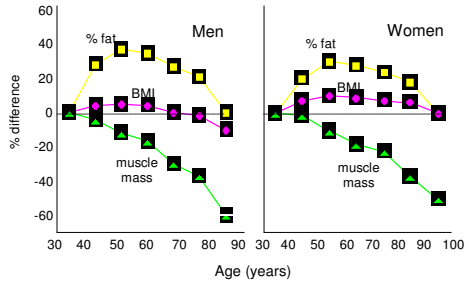
Clinica Geriatrica Università di Verona

The geriatric quintet



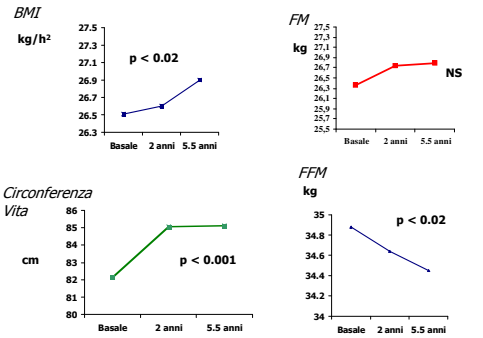
Harper et al, 1978

Modifications of BMI, percent of body fat and muscle mass with aging in men and women
(BLSA, cross sectional analysis)



Muller et al, 1994

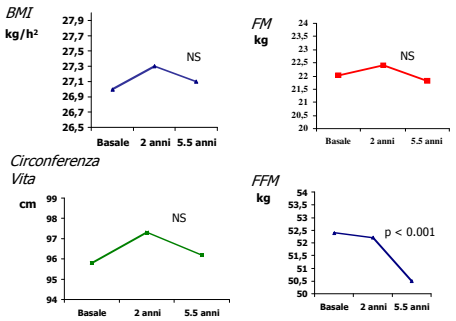
Modificazioni della composizione corporea nelle donne (n=97) f-up 5.5 anni



the Journals of gerontology BIOLOGICAL SCIENCES AND MEDICAL SCIENCES

F Fantin, 2007 in press

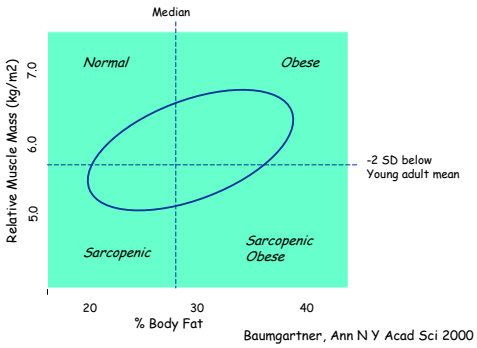
Modificazioni della composizione corporea negli uomini (n=62) f-up 5.5 anni



the Journals of gerontology BIOLOGICAL SCIENCES AND MEDICAL SCIENCES

da F Fantin, 2007 in press

Body composition in healthy aging: the New Mexico Elder Health Survey and the New Mexico Aging Process Study



Baumgartner, Ann N Y Acad Sci 2000

Relationships between leisure-time physical activity, obesity and disability in elderly men.

Table 3 - *Partial correlation between exercise, expressed as minutes per week, and body composition evaluated by DXA. Data adjusted by age and BMI.*

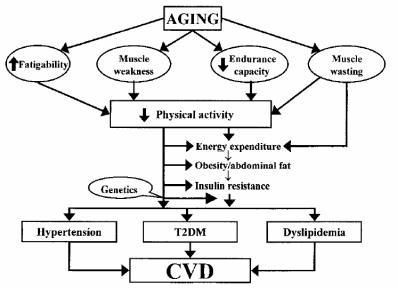
	Body fat (kg)	Percent body fat (%)	Fat-free mass (kg)	ASM (kg)
Total exercise	-0.238*	-0.276*	0.194	0.250*
Moderate intensity	-0.016	0.024	-0.01	-0.002
High intensity	-0.296**	-0.340**	0.185	0.238*
Walking	-0.082	0.050	0.146	0.156
Cycling	0.001	-0.040	0.095	0.142
Gardening	-0.324**	-0.338**	0.066	0.296**

*$p<0.05$, **$p<0.01$. ASM: Appendicular mass skeletal muscle; DXA: Dual Energy X-ray Absorptiometry.

V Di Francesco, Aging 2005

The American Journal of CLINICAL NUTRITION

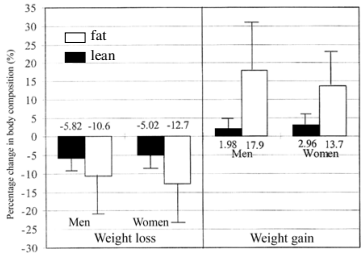
Aging Muscle



K.S. Nair, 2005

The American Journal of CLINICAL NUTRITION

Weight change and the conservation of lean mass in old age: The Health ABC Study (n= 2163, f-up 4 yrs)



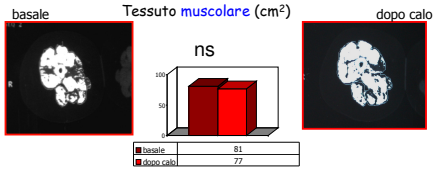
AB Newman, 2005

The American Journal of CLINICAL NUTRITION

basale

Tessuto muscolare (cm^2)

dopo calo

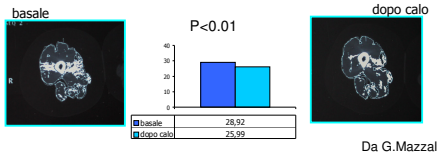


Tessuto muscolare a bassa densità metà coscia (cm^2)

basale

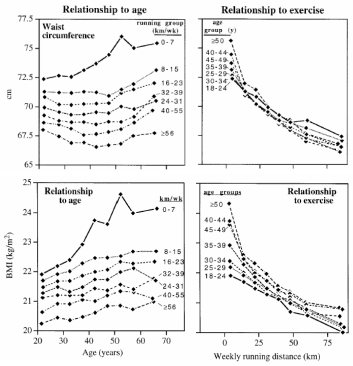
P<0.01

dopo calo



Da G.Mazzali 2006

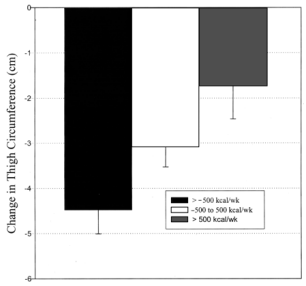
Relationships of Age and Weekly Running Distance to BMI and Circumferences in 41,582 Physically Active Women



PT Williams, Obes Res 2005

The American Journal of CLINICAL NUTRITION

Anthropometric assessment of 10-y changes in body composition in the elderly (n= 53men, 78women, f-up 9.4 yrs)



V A Hughes, 2004

Effect of Diet and Exercise Therapy on Body Weight and Body Composition

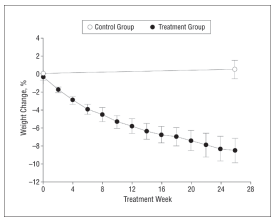


Table 2. Effect of Diet and Exercise Therapy on Body Weight and Body Composition*

Variable Control	Control Group	Treatment Group	*P* Value
Body weight, kg			
Baseline	103.2 ± 19.8	99.7 ± 13.6	
Final	103.9 ± 21.3	91.5 ± 15.4†	
Absolute change	0.7 ± 2.7	−8.2 ± 5.7	<.001
% Change	0.5 ± 2.8	−8.4 ± 5.6	
Fat mass, kg			
Baseline	47.5 ± 8.9	42.6 ± 7.9	
Final	49.1 ± 13.4	35.9 ± 10.1†	
Absolute change	1.7 ± 4.1	−6.6 ± 3.4	<.001
% Change	2.6 ± 6.9	−17.1 ± 11.3	
Fat-free mass, kg			
Baseline	55.7 ± 13.1	57.1 ± 10.9	
Final	54.7 ± 12.8	55.9 ± 10.9‡	
Absolute change	−1.0 ± 3.5	−1.2 ± 2.1	.75
% Change	−1.5 ± 5.3	−2.1 ± 3.7	

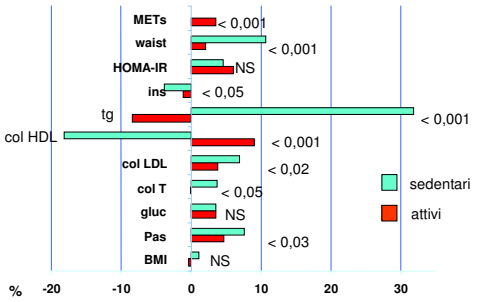
*Data are given as mean ± SD. Obese older adults in the control group received no lifestyle changes; those in the treatment group received 6 months of weekly behavioral therapy for weight loss in conjunction with exercise training 3 times per week.
†Final value significantly different from baseline, *P*<.001.
‡Final value significantly different from baseline, *P* = .04.

ARCHIVES OF INTERNAL MEDICINE

Villareal, D. T. et al- 2006

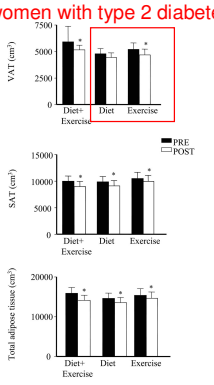
DiabetesCare

Effetti di 10 anni (da 68 a 78 anni) di regolare esercizio fisico in 161 soggetti confrontati con un gruppo di controllo di 136 soggetti



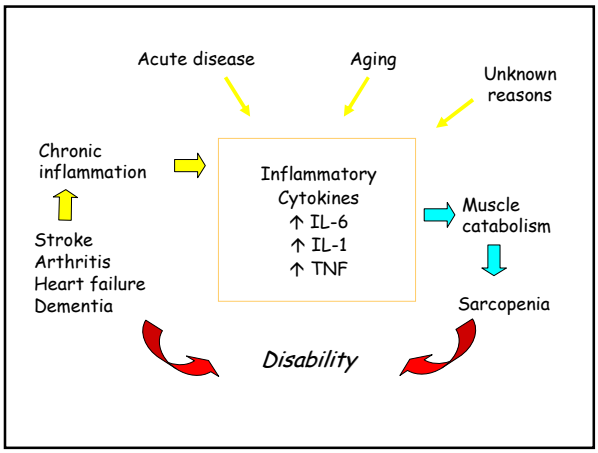
RJ Petrella, 2005

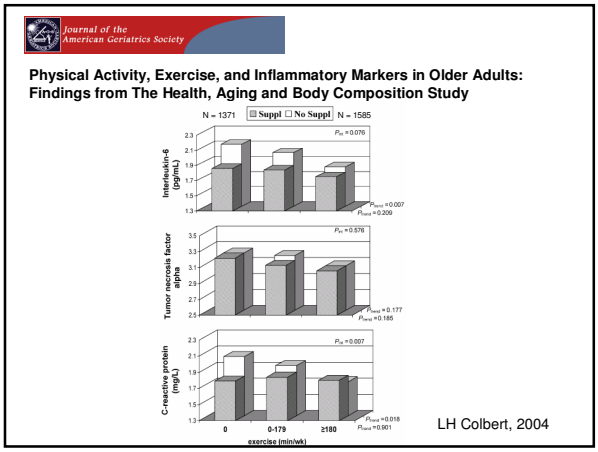
Exercise is required for visceral fat loss in postmenopausal women with type 2 diabetes

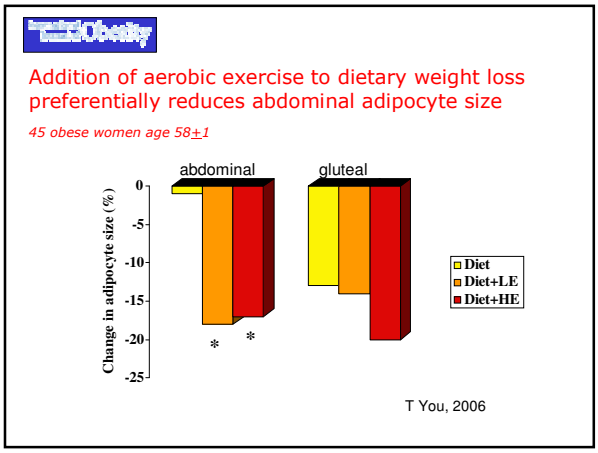


THE JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM

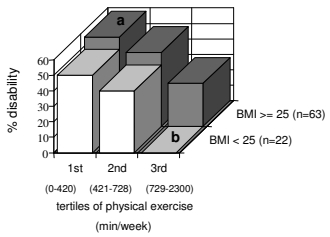
Giannopoulou, I. et al. 2005


Acute disease
Aging
Unknown reasons
Chronic inflammation
Inflammatory Cytokines
↑ IL-6
↑ IL-1
↑ TNF
Muscle catabolism
Stroke
Arthritis
Heart failure
Dementia
Sarcopenia
Disability


Journal of the American Geriatrics Society
Physical Activity, Exercise, and Inflammatory Markers in Older Adults: Findings from The Health, Aging and Body Composition Study
N = 1371
Suppl
No Suppl
N = 1585
Interleukin-6 (pg/mL)
Tumor necrosis factor alpha
C-reactive protein (mg/L)
0
0-179
≥180
exercise (min/wk)
LH Colbert, 2004


International Journal of Obesity
Addition of aerobic exercise to dietary weight loss preferentially reduces abdominal adipocyte size
45 obese women age 58±1
abdominal
gluteal
Change in adipocyte size (%)
0
-5
-10
-15
-20
-25
*
*
Diet
Diet+LE
Diet+HE
T You, 2006

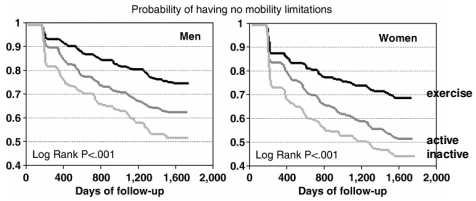
Relationships between leisure-time physical activity, obesity and disability in elderly men.



V Di Francesco, Aging 2005

Journal of the American Geriatrics Society

Type and Intensity of Activity and Risk of Mobility Limitation: The Mediating Role of Muscle Parameters



Association was still significant after adjustment for muscle parameters

M Visser, 2005

JAMA®

Osteoporosis Prevention, Diagnosis, and Therapy

NIH Consensus Development Panel
on Osteoporosis Prevention, Diagnosis, and Therapy, 2000

There is strong evidence that physical activity early in life contributes to higher peak bone mass.

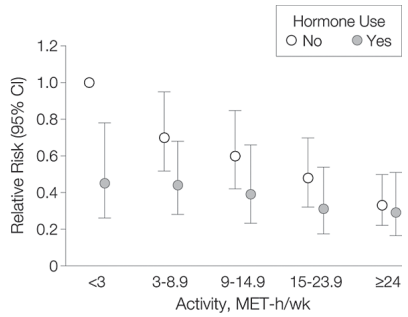
Some evidence indicates that resistance and high-impact exercise are likely the most beneficial.

Exercise during the middle years of life has numerous health benefits, but there are few studies of the effects of exercise on BMD.

Exercise during the later years, in the presence of adequate calcium and vitamin D intake, probably has a modest effect on slowing the decline in BMD

JAMA®

Hip Fracture Among Postmenopausal Women in the Nurses' Health Study, 1986-1998, by Hormone Use



Feskanich, D. et al. JAMA 2002;288:2300-2306.

JAMA®

Hip Fracture Among Postmenopausal Women in the Nurses' Health Study, 1986-1998, by Hormone Use

Table 4. Relative Risks (RRs) of Hip Fracture by Hours per Week of Walking and by Walking Pace*

	Walking, h/wk†					Walking Pace‡		
	<1	1	2-3	≥4	*P* for Trend	Easy	Average	Brisk/Very Brisk
Cases	115	41	36	22		65	99	30
Person-years (1986-1998)	130 807	55 575	45 044	36 215		47 887	142 912	68 683
RR (95% CI)								
Age-adjusted	1.00	0.75 (0.53-1.08)	0.75 (0.51-1.09)	0.57 (0.36-0.90)	.009	1.00	0.56 (0.41-0.77)	0.39 (0.25-0.61)
Multivariate§	1.00	0.79 (0.55-1.14)	0.78 (0.53-1.14)	0.59 (0.37-0.94)	.02	1.00	0.51 (0.37-0.71)	0.35 (0.22-0.55)

*Women were excluded when they reported engaging in an exercise or leisure-time activity other than walking for 20 min/wk or more. This analysis included 34 592 women and 214 hip fractures. CI indicates confidence interval.
†Assessed in 1986, 1988, 1992, 1994, and 1996 and values were cumulatively averaged.
‡Assessed in 1986, 1988, 1990, 1992, and 1996 and status was updated in analysis.
§Adjusted for age, body mass index, smoking, postmenopausal hormone use, and intakes of calcium, vitamin D, retinol, protein, vitamin K, alcohol, and caffeine.

Feskanich, D. et al. JAMA 2002;288:2300-2306.

A Report of the Surgeon General

Physical Activity and Health

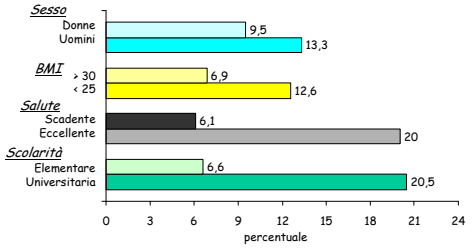
The Link Between Physical Activity and Morbidity and Mortality

How Physical Activity Impacts Health

Regular physical activity that is performed on most days of the week reduces the risk of developing or dying from some of the leading causes of illness and death in the United States. Regular physical activity improves health in the following ways:

- Reduces the risk of dying prematurely.
- Reduces the risk of dying prematurely from heart disease.
- Reduces the risk of developing diabetes.
- Reduces the risk of developing high blood pressure.
- Helps reduce blood pressure in people who already have high blood pressure.
- Reduces the risk of developing colon cancer.
- Reduces feelings of depression and anxiety.
- Helps control weight.
- Helps build and maintain healthy bones, muscles, and joints.
- Helps older adults become stronger and better able to move about without falling.
- Promotes psychological well-being.

Percentuale di soggetti ultra-sessantacinquenni che seguono le raccomandazioni dell' NHIS per l'attività fisica di potenza in relazione a diverse caratteristiche della popolazione (n=5537)



CDC, 2001

The geriatric quartet?