

Fitness as Preventive Medicine



Fitness as Preventive Medicine

Health Summit, Orlando 2007
 Prepared by Don Hall, DrPH, CHES
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1

Evidence Based Health Guidelines

Test everything
 that is said. Hold
 on to what is
 good.



I Thessalonians 5:21

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2

Evidence Based Health Guidelines

Only simpletons
 believe everything
 they are told. The
 prudent carefully
 consider their steps.



Proverbs 14: 15

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3



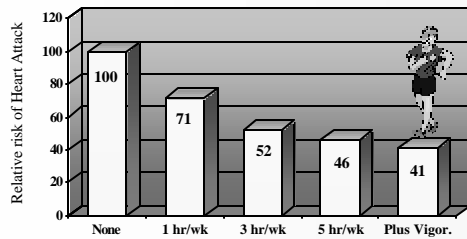
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Exercise and Cardiovascular Health

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Walking Time and Heart Health



n=72,000 women

Hours of Walking per Week

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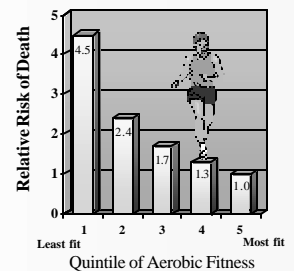
New England Jour. Medicine, Aug. 1999 5

Exercise Capacity Predicts Longevity

- Study includes 6,213 men tested on treadmill to determine aerobic capacity
- Overall mortality was determined after 6.2 yrs
- Adjusting for age, peak aerobic capacity was a strong predictor of mortality rates

NEJM, 346:793-801, Mar 14, 2002

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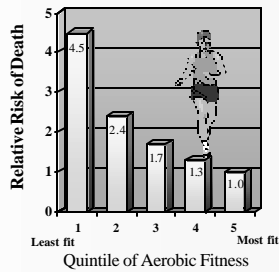
Exercise Capacity Predicts Longevity

In men, peak aerobic capacity was a better predictor of mortality than:

- High blood pressure
- Smoking
- Diabetes
- Cholesterol levels
- Abnormal ECGs
- History of heart disease

NEJM, 346:793-801, Mar 14, 2002

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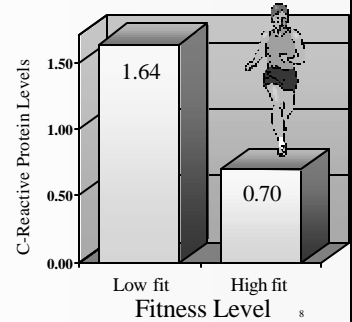
7 3

Fitness and C-Reactive Protein

- Cooper Institute study of 722 men
- Tested men's fitness levels and C-reactive protein
- Fit men had lower C-reactive protein levels (controlling for BMI & WC)

Arteriosclerosis, Thrombosis, & Vascular Biology, Nov 1, 2002

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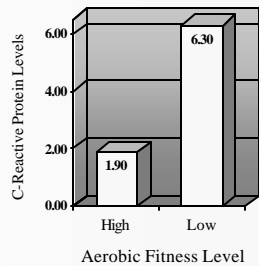
8

Fitness and C-Reactive Protein

- Study, women, mean age 57, with type 2 diabetes
- Tested on a treadmill and divided into two groups
 - Low fit
 - High fit
- Low fit women's C-reactive protein levels were 3.3 times higher than fit women

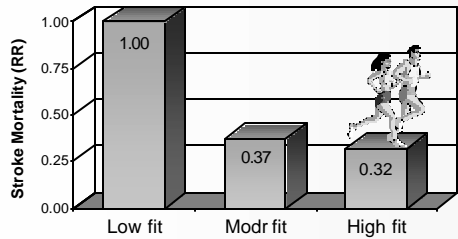
Diabetes Care, Feb. 2004

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Physical Activity & Stroke Risk



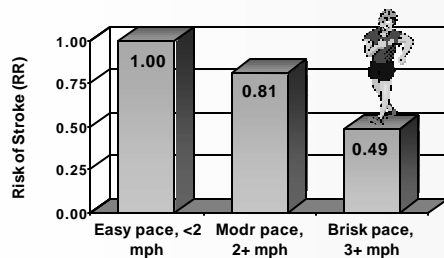
16,878 men, 10 yr follow-up

Med & Science in Sports & Exercise, 2002; 34:592-95

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Walking and Risk of Stroke



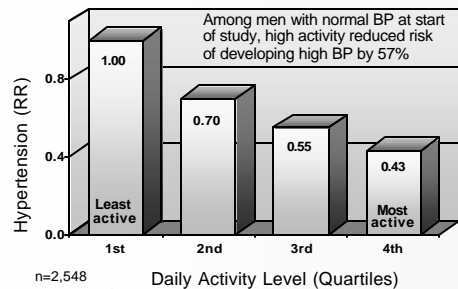
72,488 women, 8 yr follow-up

JAMA Jun 14, 2000; 283:2961-67

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Risk of Developing Hypertension



n=2,548
15 year study

Daily Activity Level (Quartiles)

Archives of Internal Medicine, Jan 24, 2005

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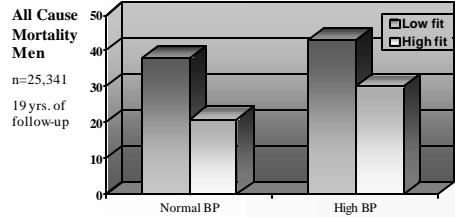
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Conditions Benefited by Physical Activity

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Physical Activity and Blood Pressure

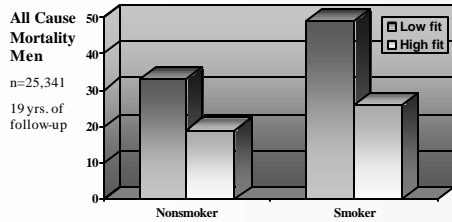


Ref. JAMA, Vol 276. No. 3, pp.205-210, 1996

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Physical Activity and Smoking Status

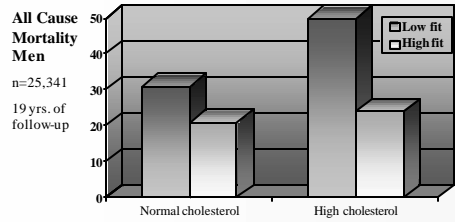


JAMA, Vol 276. No. 3, pp.205-210, 1996

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Cholesterol, Physical Activity, and Mortality

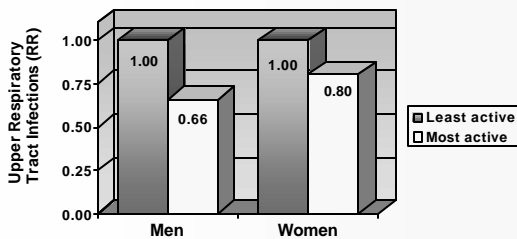


JAMA, Vol 276. No. 3, pp.205-210, 1996

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Physical Activity and Colds



547 subjects, 1 year tracking

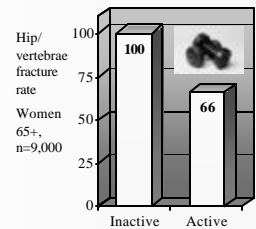
Med and Science in Sports and Exercise, 2002; 34:1242-48

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Physical Activity and Fractures

- Women who did aerobic exercise regularly:
 - played tennis 2 hr weekly
 - went walking regularly
 - did gardening
 - lifted weights
 - went social dancing
- Cut their risk of hip and vertebral fracture by one-third compared to inactive women.

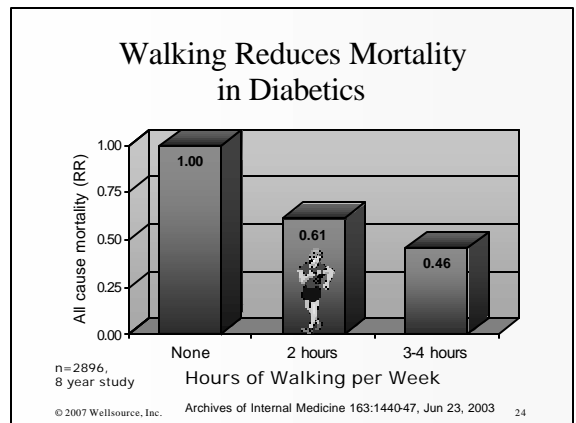
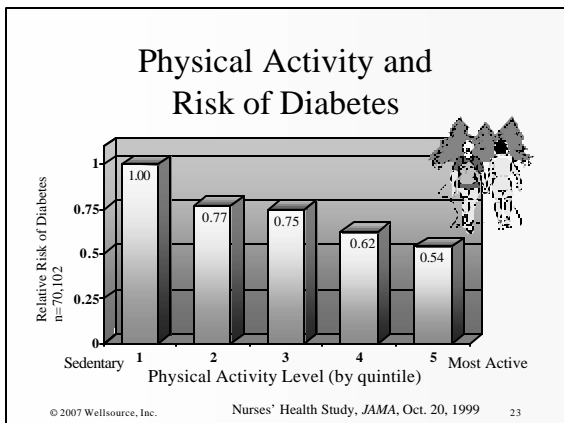
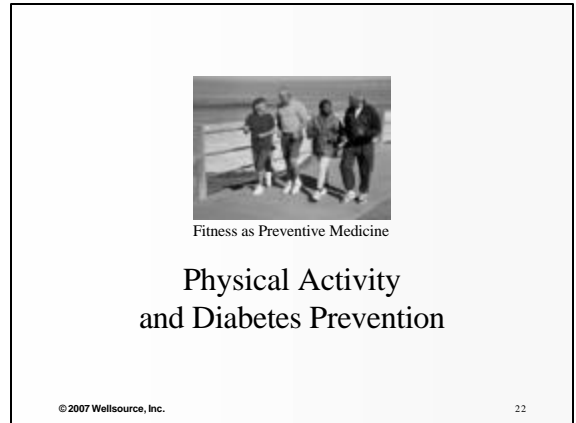
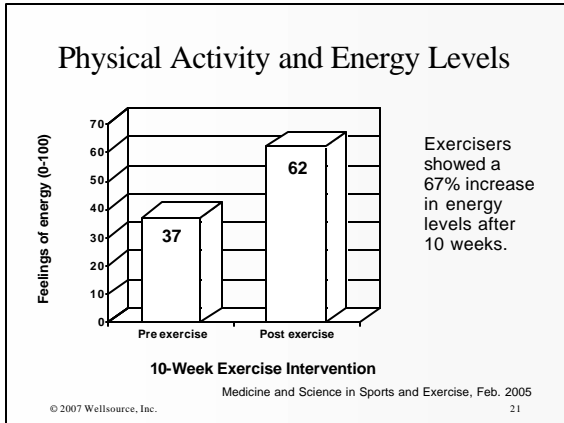
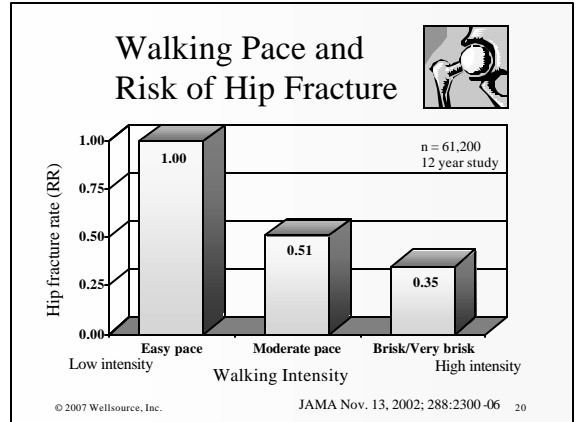
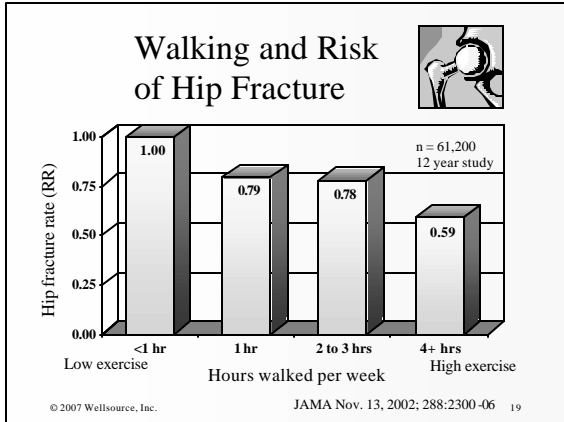


Annals of Internal Medicine, July 15, '98

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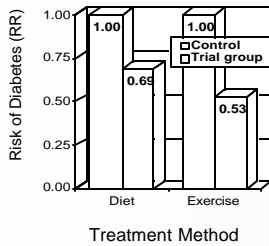
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Chinese Type 2 Diabetes Prevention Trial



Random Clinical Trial

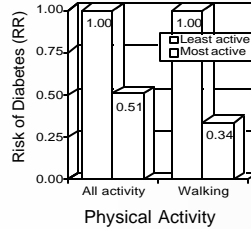
- Diet treatment group reduced risk of developing diabetes by 31%
- Exercise therapy group reduced risk of developing diabetes by 46%

Diabetes Care 20:537-544, 1997

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Physical Activity and Prevention of Diabetes – Finnish Study



Random Clinical Trial

- People improving activity level the most (top 1/3) reduced their risk of developing diabetes by 49%
- Persons walking the most (2.5 hrs/wk or more, top 1/3) reduced their risk of developing diabetes by 66%

Note: risks shown are after adjusting for diet and weight changes.

Diabetes 54:158-165, 2005

n = 487 people, 4.1 years of follow-up

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Researcher's Summary

A key message from a public health standpoint is:

- That at least 2.5 hours/week of brisk walking
- Decreases the risk of diabetes by 63-69%,
- Largely independent of dietary factors and BMI (or weight loss).



Diabetes 54:158-165, 2005

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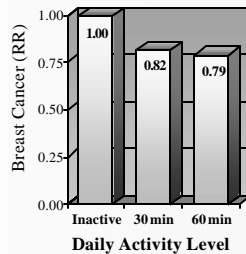
Physical Activity and Cancer Prevention

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Recreational Activity and Risk of Breast Cancer

- Women's Health Initiative study of 74,171 women followed for 4.7 years
- 30 minutes of brisk walking daily reduced cancer risk by 18%
- 1 hour of walking per day reduced risk by 21%



JAMA 290:1331-36, Sept 10, 2003

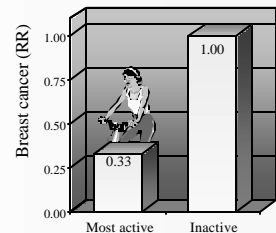
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Physical Activity and Breast Cancer

Breast Cancer Study

- 6,160 women free of breast cancer, followed for 10 years.
- Women age 50+ who consistently had high recreational activity compared to those who were inactive had 67% less breast cancer.



Cancer Epidemiol Biomarkers Prev. July 2001

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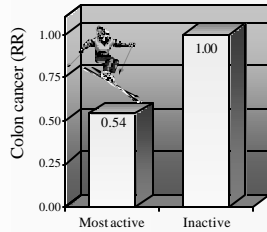
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Physical Activity and Colon Cancer

Colon Cancer Study

- Nurses Health Study
- Women who were most active had about half the risk of colon cancer compared to sedentary women (46% less cancer)
- Regular physical activity protects against cancer!



Jour National Cancer Institute, 89(13):948-55

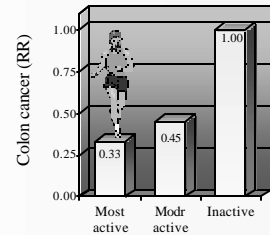
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Physical Activity and Colon Cancer

Colon Cancer Study in Men

- 29,133 men followed for 12 years
- Compared to sedentary workers, men in light activity had 40% less colon cancer
- Moderate to heavy activity men had 55% less colon cancer
- Most active men at work and recreation had 67% less colon cancer



Cancer Epidemiol Biomarkers Prev, Mar 2001

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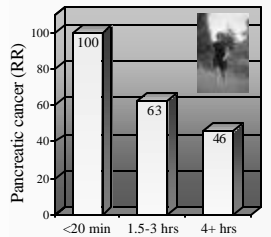
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Physical Activity and Cancer Prevention

Study Results

Four hours or more of walking or hiking weekly, reduced the risk of pancreatic cancer by 54%, even after adjusting for smoking, diabetes, and other risk factors

JAMA, Aug. 22/29, 2001



Hours of walking/hiking per week

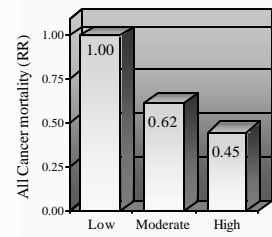
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Cardiorespiratory Fitness and Cancer

- **Study** 25,892 men age 30-87, followed for 10 years
- **Results** High fit persons had a 55% lower cancer mortality rate than low fit persons
- Controlled for smoking, age, BMI, alcohol, diabetes

Medicine & Science in Sports and Exercise, Fitness 34(5):735-739, May, 2002



Fitness Level

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Physical Activity and Mental Health

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Exercise is Good Mental Therapy

- Regular exercise can help relieve feelings of
 - Frustration
 - Tension
 - Sadness
- It also stimulates and invigorates the mind for optimum mental health



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Walking and Mental Well-Being



A high well-being score is desirable

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Reference: Medicine and Science in Sports and Exercise 38:173-78, Jan. 2006

Conclusion

As the number of miles walked or ran per week increase so did emotional well being scores.
Regular physical activity promotes mental-emotional health and happiness.

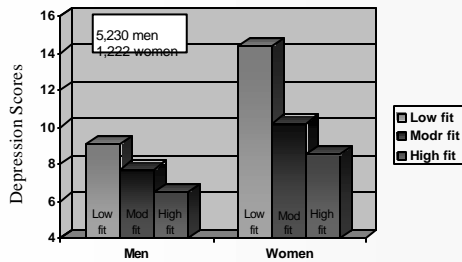


Medicine and Science in Sports and Exercise 38:173-78, Jan. 2006

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Fitness Level and Depression



Note: A high depression score indicates high risk

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Reference: Medicine and Science in Sports and Exercise 38:173-78, Jan. 2006

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Exercise and Depression

- Study of 156 sedentary, clinically depressed persons
- They were randomly divided into groups:
 - One group received medication therapy.
 - Another group ran at a moderate pace ½ hour daily but took no medication
- After 16 weeks their depression was reevaluated
 - Exercisers improved as much as those on medication
 - But, only exercisers showed improvement in mental abilities such as concentration, planning, and organization



Source: Duke University, 2001

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Walking Prevents Mental Decline

- A study of 5,925 people age 65 plus
- Tested mental acuity at start and end of study
- People who walked the least (less than ½ mile per day) had the most mental decline
- People who walked the most (18 miles per week) had the least mental decline
- The chance of mental decline decreased 13% for every extra mile walked
- Researcher's summary, "Exercise, such as walking, is one of the best ways to preserve your mental ability."



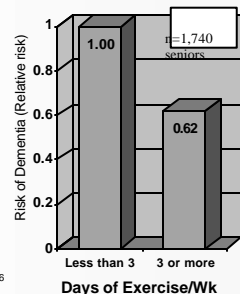
Study presented at American Academy of Neurology annual meeting, May 9, 2001

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Exercise and Risk of Dementia

Persons who exercised three or more times per week were a third less likely to develop dementia or Alzheimer's disease compared to those getting less exercise.



Source: Annals of Internal Medicine 144:73-81, Jan 2006

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Benefits of Exercise for Weight Control

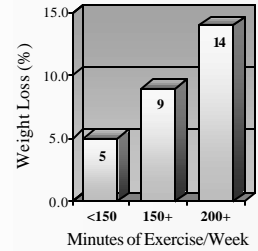


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Exercise and Weight Loss in Sedentary Women

- One year study of 184 sedentary, overweight women, ages 21-45
- Diet 1200-1500 cal/day
- Women exercising less than 150 min/week lost 5% of their body weight
- Women exercising 200+ min/week lost 14% of their body weight



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JAMA 290:1323-30, Sept 10, 2003 44

Burns Excess Calories



- Every minute of activity burns 3-12 times more calories than sitting.
- Notice the relative increase in calories burned for the various activities listed on the right

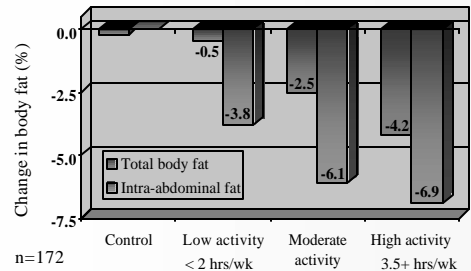
Activity	Increase
Sitting	1 X
Calisthenics	3-8 X
Climbing hills	5-10 X
Biking 10 mph	7 X
Aerobic dance	3-9 X
Walking, 4 mph	4.3 X
Skipping rope, 70/min	9 X
Running, 9 min/mile	11.2 X
Tennis	4-9 X
Swimming	4-8 X

Source: ACSM Resource Manual, 2001

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Exercise and Body Fat Changes

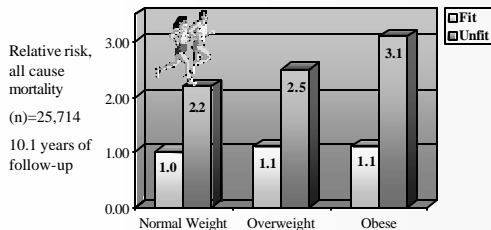


n=172

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JAMA Jan 15, 2003; 289:329 46

Body Weight, Fitness Level, and Risk of Mortality from All Causes



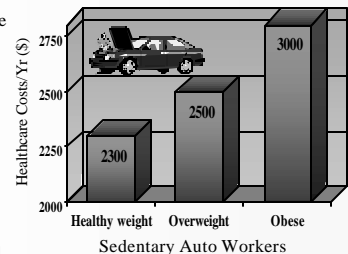
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JAMA, Oct. 27, 1999, pp. 1547-53

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Fitness and Healthcare Costs

- 4934 workers were sedentary (21%)
- Overweight and sedentary employees cost \$400-800 more per year than normal weight active employees



Journal of Occupational and Environmental Med., May 2004

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Economic Cost of Inactivity

The Centers for Disease Control and Prevention estimate that about 27% of all health care costs are linked to a sedentary lifestyle and excess body weight.

CDC, Preventing Chronic Disease, October, 2005

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Exercise's Bottom Line

- Regular physical activity helps you...
 - Prevent the most serious health problems
 - Live longer
 - Feel better, physically and mentally
 - Think more clearly
- Time spent in exercise is a good investment in both physical and mental health.

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Physical Activity is Good Medicine

“All who can possibly do so ought to walk in the open air every day, summer and winter. A walk, even in winter, would be more beneficial to the health than all the medicine the doctors may prescribe.”

E.G. White, *Counsels on Health*, 52



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Physical Activity Guidelines

Every U.S. adult should accumulate 30 minutes or more of moderate intensity physical activity on most, preferably all, days of the week.

The goal is to expend 200+ calories daily, or the equivalent of a 2-mile brisk walk*.

Source: Centers for Disease Control and Prevention and the American College of Sports Medicine, *JAMA*, Vol 273, No. 5.



The World Health Organization and the National Institute of Medicine recommend up to 60 minutes per day of moderate activity for optimum health and prevention of excess weight.

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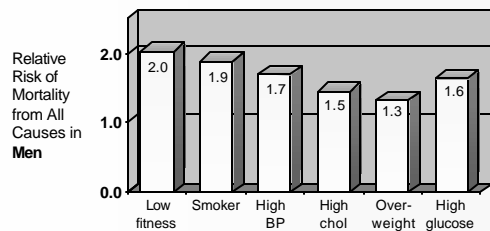
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Physical Activity and Longevity

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Best Predictors of Mortality for Men



n = 25,341
19 yr study

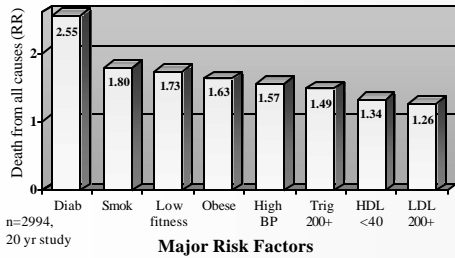
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Aerobics Center Longitudinal Study
JAMA, 1996, 276: 205 - 210

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Best Predictors of Mortality for Women



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Jour Amer Med Assoc Sept 24, 2003 55

Fitness and Longevity

- In the Good Health Practices study
 - 6,900 people followed for nearly 10 years
 - Level of activity was the best predictor of longevity
- Adventist Health Study
 - Over 30,000 people, physical activity was a top predictor of a long life

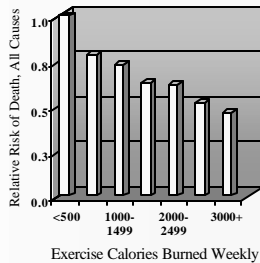
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Arch Intern Med 2001;161:1645-52 56

Harvard Alumni Study



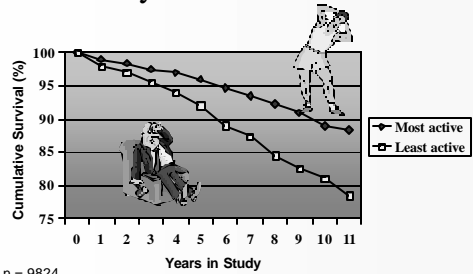
- The higher the energy expenditure in weekly activity, the lower the risk of death
- Dr. Paffenbarger found that for every one hour the Harvard alumni exercised, they lived an additional 2 hours in increased longevity



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Activity Level and Survival



n = 9824

Annals of Epidemiology, Nov. 2002

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Choose an Active Life!

And experience the good health everyone deserves to enjoy.

Jesus said, "I've come to give life in all it's fullness." *John 10:10*



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Those who wait on the Lord will find new strength. They will fly high on wings like eagles. They will run and not grow weary. They will walk and not faint. *Isaiah 40:31*

Fitness as Preventive Medicine



**Physical activity
is strong medicine!**

Making Healthy Choices Health Letter
LifeLongHealthus
Wellsource.com

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Presentation Slides

- This presentation is available in MS Power Point slides on a CD with:
 - Speaker notes
 - Fitness as Preventive Medicine Handout (printable)
 - Additional fitness resources
 - For use by church and community health outreach programs for \$55.00
- Contact LifeLong Health (503) 557-9545

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