

Why Be Physically Active?

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Key Messages

- Connection between physical activity and good health is as old as civilization
- Physical activity has a powerful effect in the treatment and prevention of chronic disease and obesity.
- Physical inactivity has an astonishing breadth of harmful health effects.
- The entire population continues to be inactive.
- Physical activity should be a part of everyday life.
- Increasing physical activity is the major public health challenge of our time.

What Should You Do

- Screen for physical activity as a “vital sign” in all patients of all ages.
- Motivate your patients to include physical activity as a part of everyday life.
- Advocate in your community for a “built environment” that supports physical activity, and encourage your patients and families to do the same.

Why You Should Do It

Physical Activity is...

Natural

Effective

Inexpensive

Today's Agenda

How Physical Activity...

- Prevents illness and disease
- Promotes longevity
- Improves quality of life
- Is a specific cost-effective intervention

There is Nothing New about the Connection Between Physical Activity and Health!

- Herodotus (ca. 480 BC)
 - Studied therapeutic gymnastics
- Hippocrates (ca. 480-377 BC)
 - Father of preventive medicine
 - “hygienic” uses of exercise and diet
- Galen (129-199 AD)
 - Discusses usefulness of exercise in his text “On Hygiene”

Hippocrates

“Eating alone will not make a man well; he must also take exercise. For food and exercise, while possessing opposite qualities, yet work together to produce health. For it is the nature of exercise to use up material, but of food and drink to make good deficiencies.”

Physical Inactivity and Disease

- Thomas Cogan: “The Haven of Health” (1584)
- Bernardino Ramazzini: “Diseases of Workers” (1713)
- Shadrach Ricketson: “Means of Preserving Health and Preventing Diseases” (1806)

The Revolution in the 50's and 60's

- Kraus and Hirschland: “Muscular Fitness and Health” (1953)
 - 56.6% children failed to achieve “minimum standard for health” compared to only 8.3% for European children
 - President's Council on Youth Fitness
 - President's Council on Physical Fitness

How Well Are We Doing?

By Kaiser Permanente Locations

	RECOMMENDED >= 30min/day >= 5 days/week	INSUFFICIENT >10 min/week	INACTIVE <10 min/week
WASHINGTON, DC	45.5	35.3	10.7
ATLANTA	40.6	39.3	14.7
CLEVELAND	47.5	34.6	9.9
DENVER	50.4	35.9	8.2
PORTLAND	51.9	32.7	8.4
SEATTLE	50.8	36.2	8.1
SAN FRANCISCO	52.9	30.6	11.5
LOS ANGELES	45.4	32.4	13.3
HONOLULU	49.5	35.2	11.8

How Are We Doing With Adolescents?

PEDIATRICS, DECEMBER 2006

TABLE 1 Adjusted Means, SE, and Tests of Longitudinal and Secular Trends in Adolescents' Weekly Hours of MVPA, Television/Video Viewing, and Leisure-Time Computer Use

	Younger Cohort ^a			Older Cohort ^a			Secular Trend	
	Early Adolescence, EAT-I 1999, Adjusted Mean (SE), h/wk ^b	Midadolescence, EAT-II 2004, Adjusted Mean (SE), h/wk ^b	P ^c	Midadolescence, EAT-I 1999, Adjusted Mean (SE), h/wk ^b	Late Adolescence, EAT-II 2004, Adjusted Mean (SE), h/wk ^b	P ^d	Midadolescence, 2004–1999, Adjusted Mean Change ^e	P ^e
Girls								
MVPA	5.9 (0.2)	4.9 (0.2)	<.001	5.1 (0.2)	3.5 (0.2)	<.001	–0.2	.483
Television/video viewing	20.0 (0.7)	17.8 (0.7)	.002	17.4 (0.6)	18.4 (0.6)	.069	0.3	.689
Leisure-time computer use	10.1 (0.6)	11.1 (0.6)	.152	8.8 (0.6)	12.5 (0.5)	<.001	2.3	.002
Boys								
MVPA	6.7 (0.3)	6.6 (0.3)	.687	6.5 (0.3)	5.1 (0.3)	<.001	0.1	.819
Television/video viewing	22.5 (0.8)	21.6 (0.9)	.247	21.7 (0.8)	21.7 (0.8)	.959	–0.1	.904
Leisure-time computer use	11.4 (0.8)	15.2 (0.9)	<.001	10.4 (0.8)	14.2 (0.8)	<.001	4.8	<.001

^a Sample sizes for regression models that simultaneously assessed longitudinal and secular trends are as follows: younger cohort: boys n = 339, girls n = 407; older cohort: boys n = 746, girls n = 921. Observations with missing values were excluded from models; therefore, incidental missingness for outcome measures reduced sample sizes slightly for some models.

^b Estimates from mixed-model regressions, adjusting for propensity weights, age, race/ethnicity, and SES.

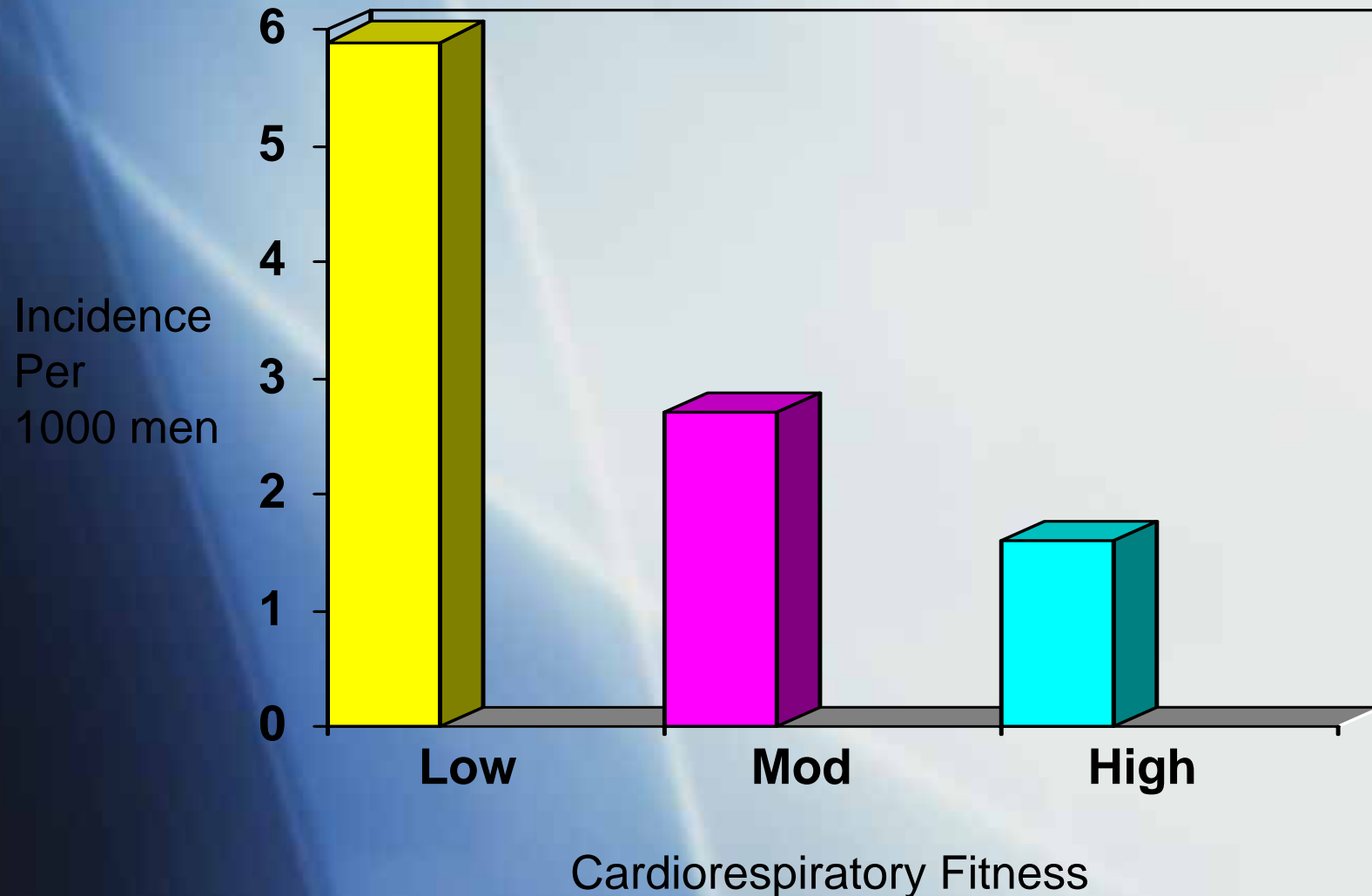
^c P values for longitudinal trend in younger cohort (testing differences between early and midadolescence).

^d P values for longitudinal trend in older cohort (testing differences between mid- and late adolescence).

^e P values for secular trend in midadolescence (testing differences between EAT-I midadolescents [ie, older cohort in 1999] and EAT-II midadolescents [ie, younger cohort in 2004]; for example, among midadolescent girls, computer use increased by 2.3 hours/week between 1999 and 2004, P = .002).

Physical Activity Prevents Illness and Disease

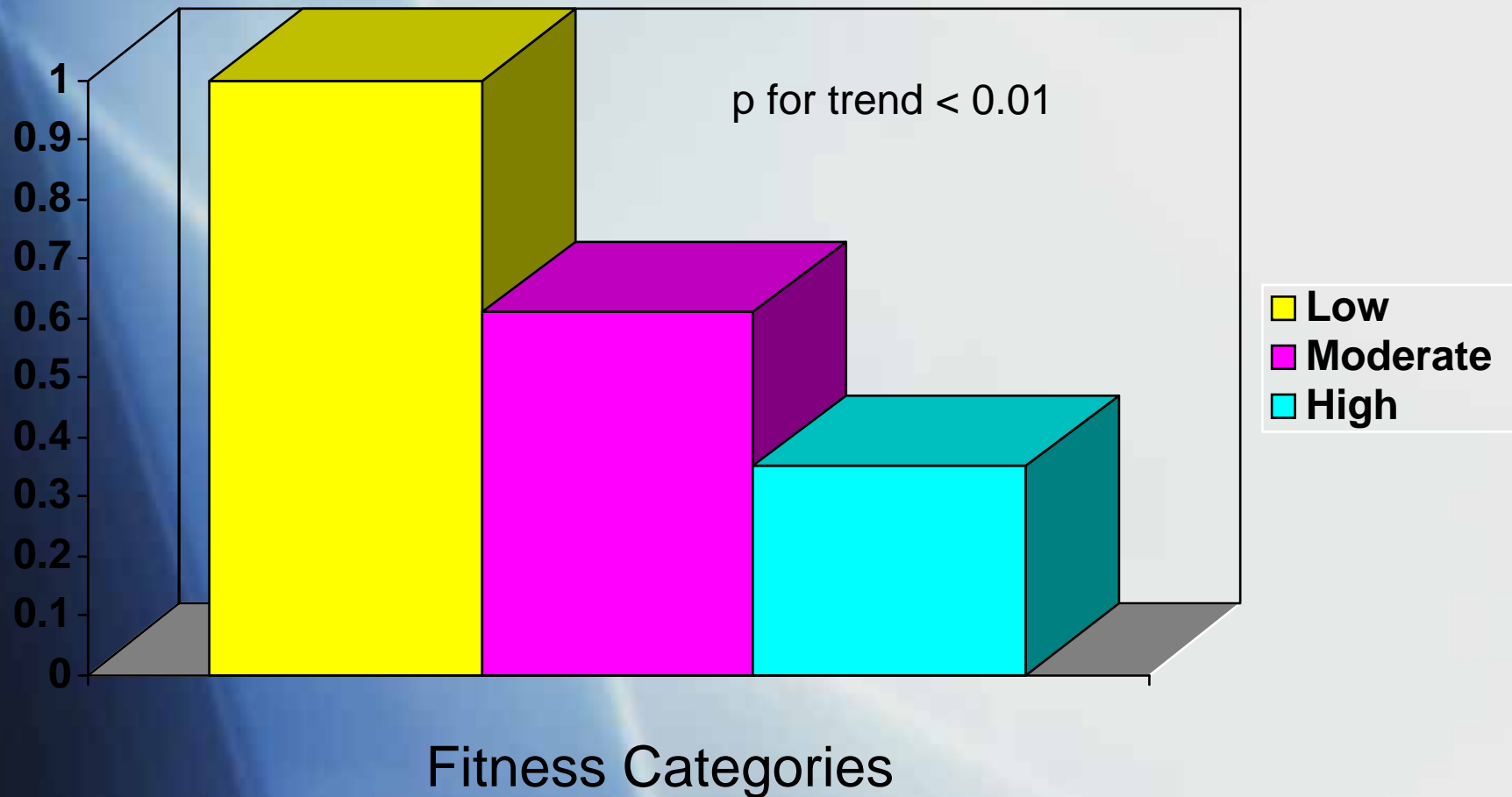
CRF and Incidence of Type 2 Diabetes in Healthy Men



Physical Activity Prevents Illness and Disease

CRF and Risk of Incident Hypertension in Healthy Women

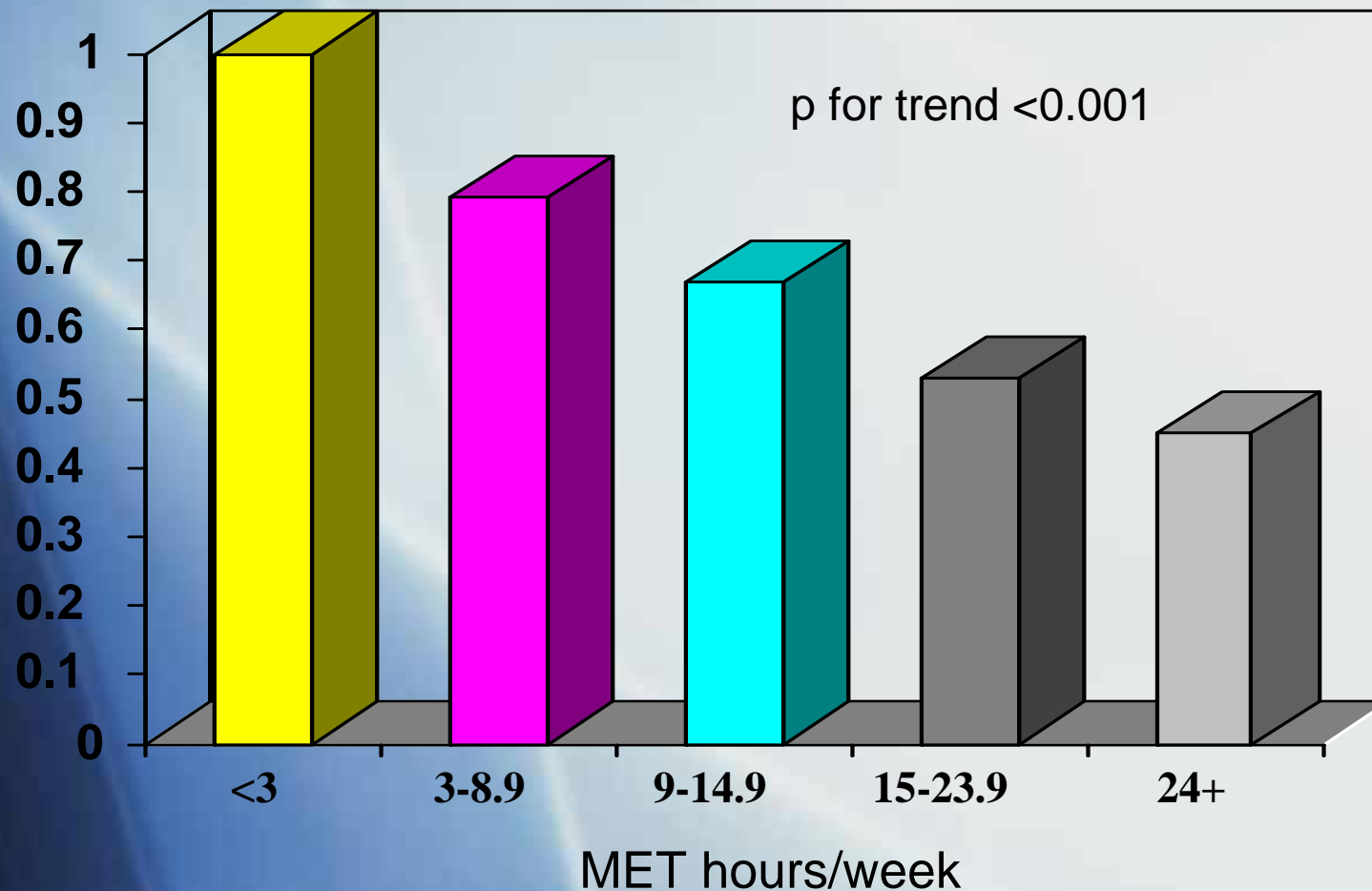
Multivariable relative risk
for hypertension



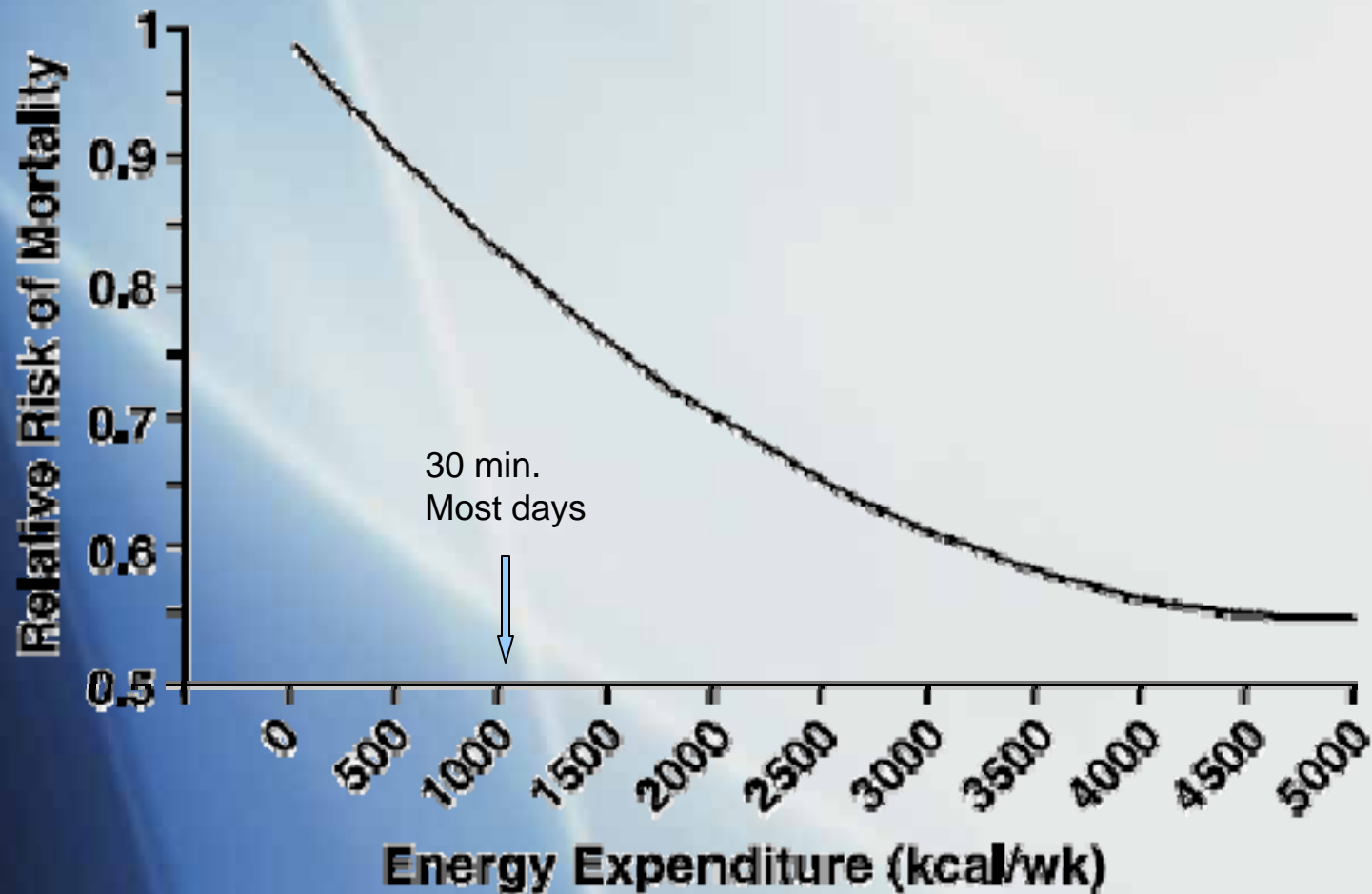
Physical Activity Prevents Illness and Disease

Physical Activity, and Hip Fracture Risk

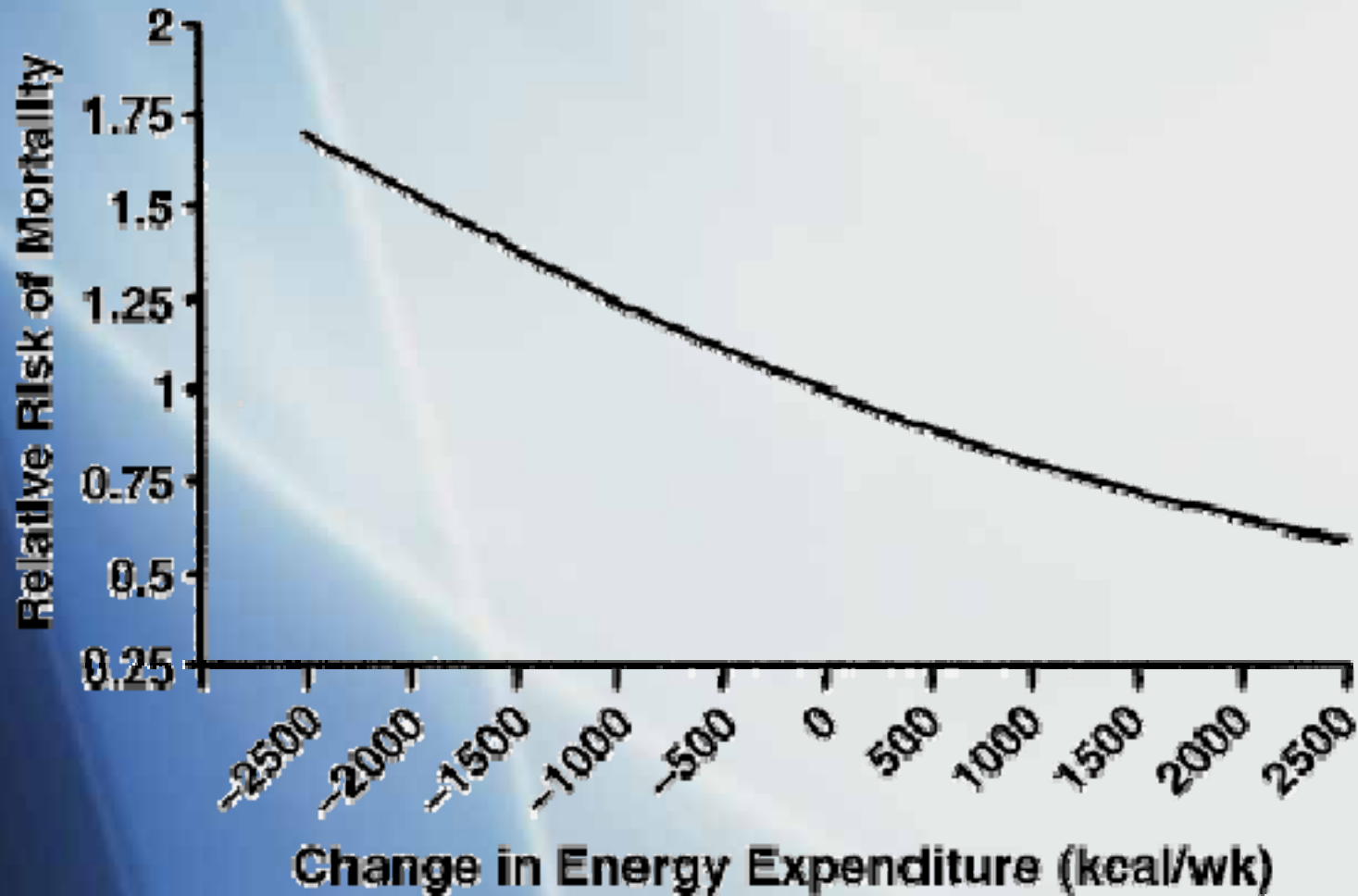
Adjusted relative risk for hip fracture



Physical Activity Prevents Illness and Disease Mortality in CAD-Dose Relationship



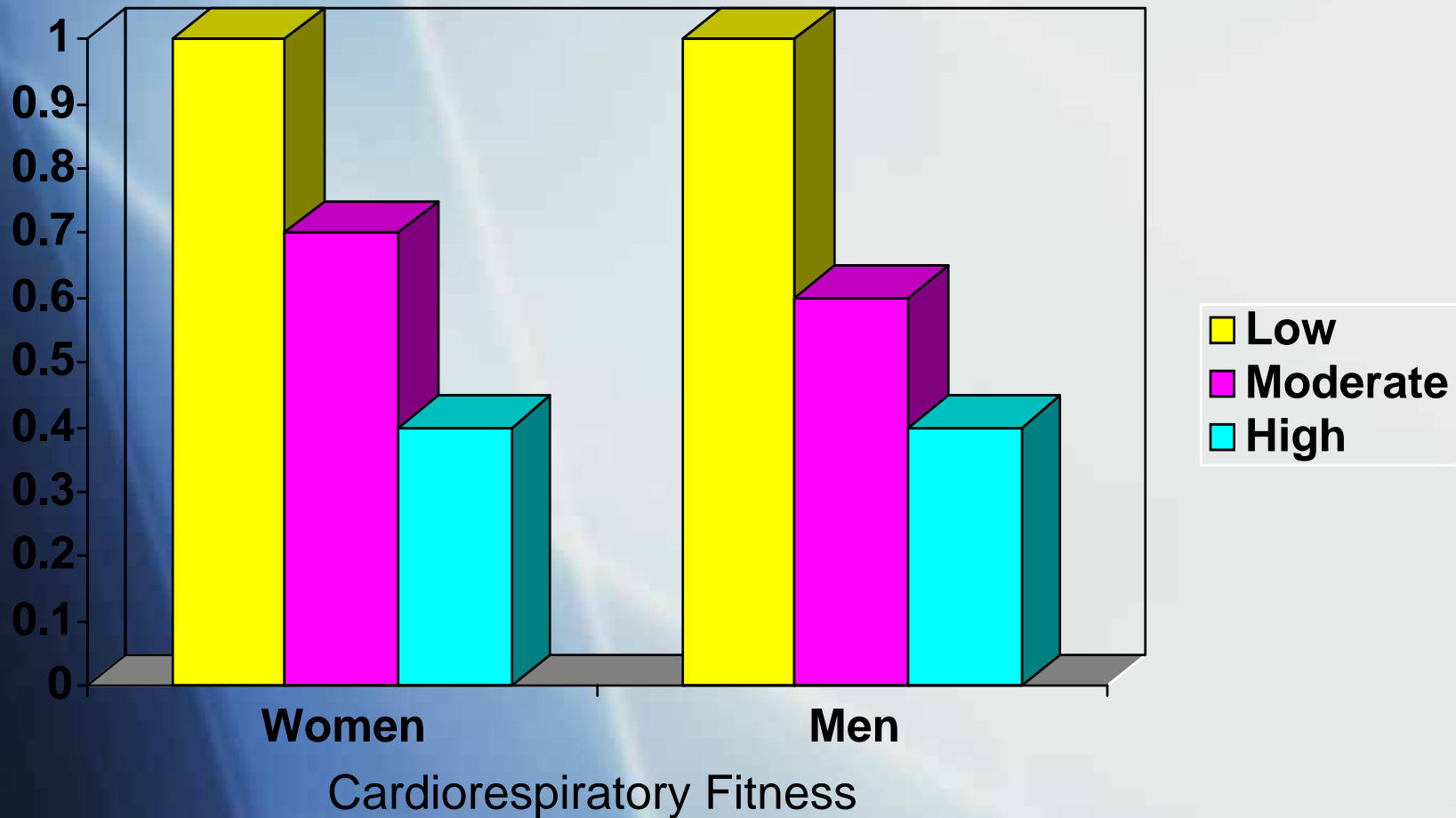
Physical Activity Prevents Illness and Disease Mortality in CAD-Dose Relationship



Physical Activity Promotes Longevity

Risk of Death by Fitness Groups in Women and Men 60 years+

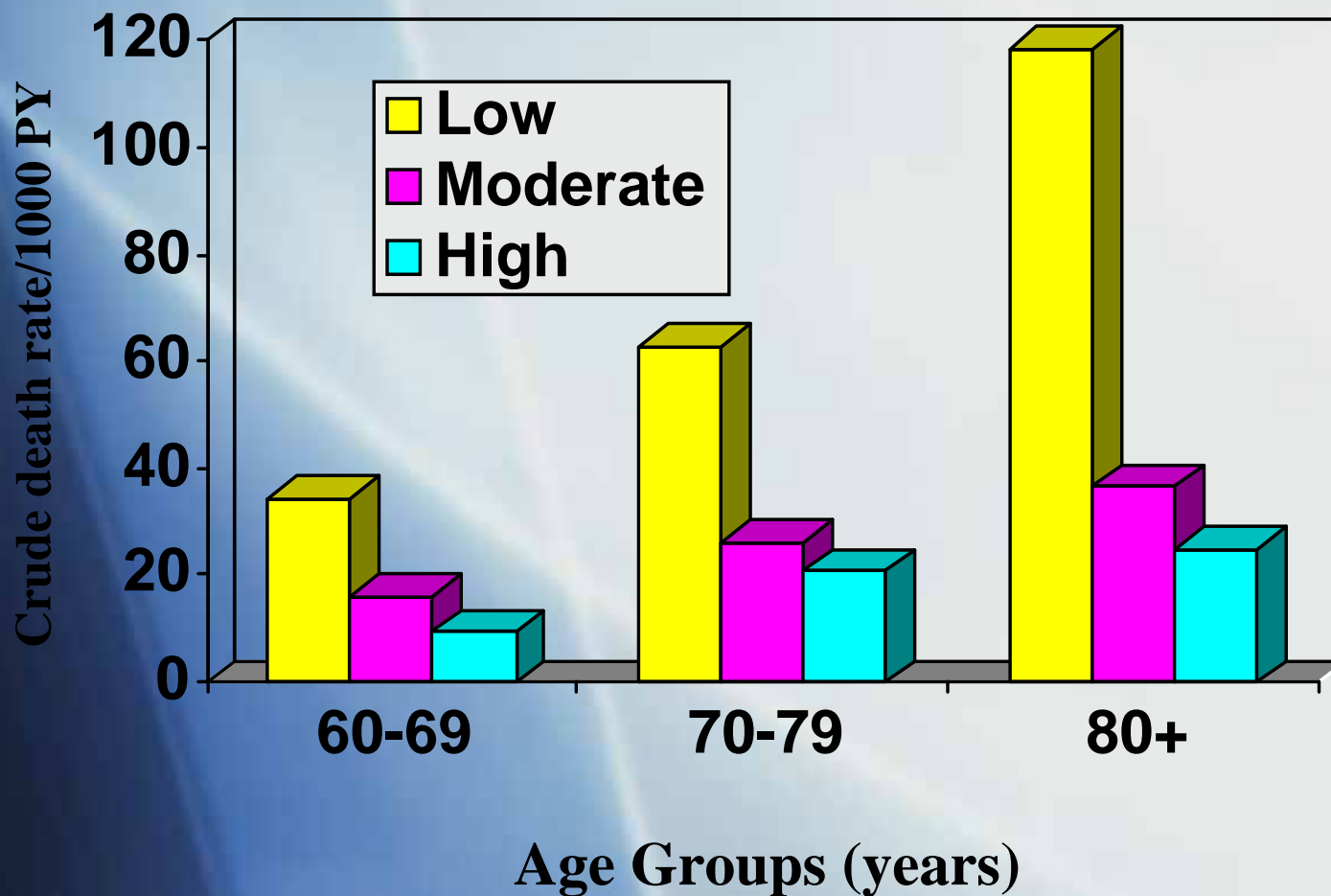
Relative risk adjusted for age and risk factors



Physical Activity Promotes Longevity

Death Rates/1000 by Fitness Groups

Men 60 years+



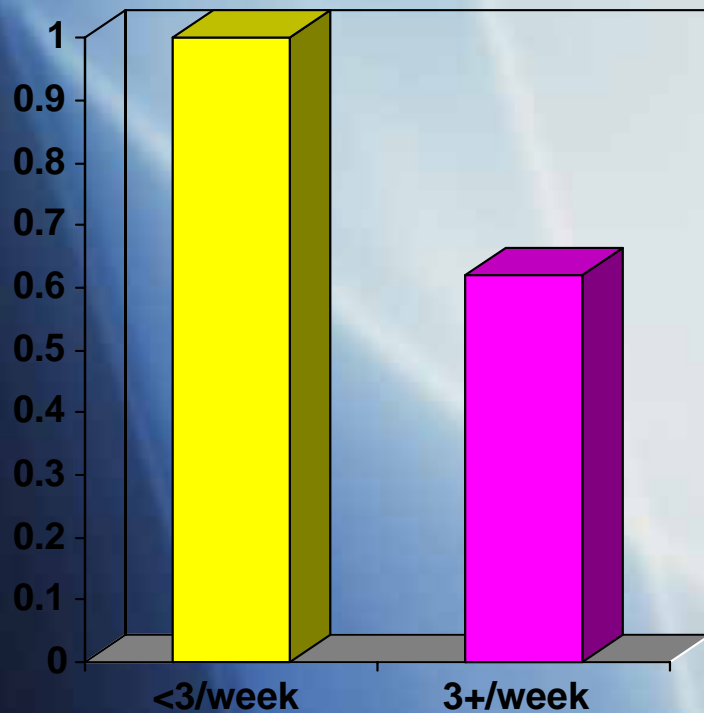
Physical Activity Improves Quality of Life CRF and Neurocognitive Function in Preadolescence

- 24 children, mean age, 9.6 years
- Fitness assessed by *FITNESSGRAM*
- Neurocognitive function assessed by neuroelectric and behavioral responses to stimulus discrimination
- **Increased fitness results in improved attention span, working memory, response speed, and cognitive processing speed**

Physical Activity Improves Quality of Life

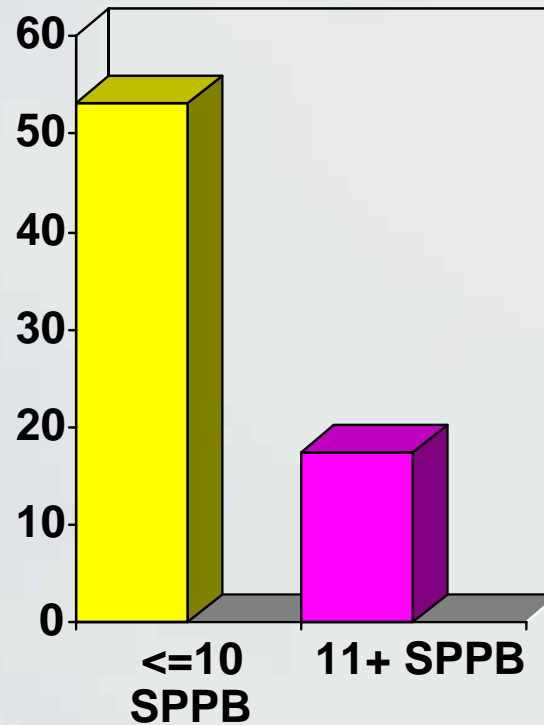
Physical Activity and Dementia in Women and Men 65 Years+

Age- and sex-adjusted Hazard ratio for incident dementia



Exercise Habits

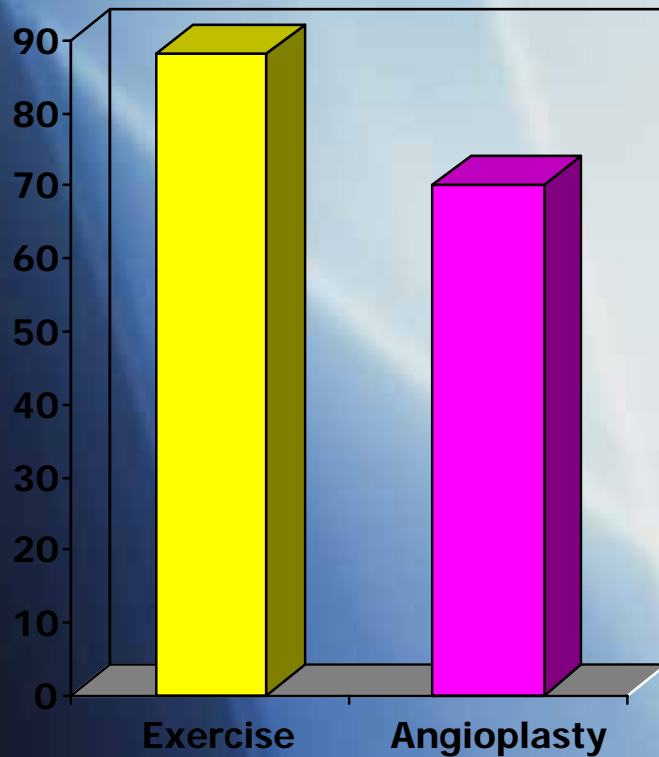
Age-specific incidence of dementia/1000 person-years



Short physical performance battery scores

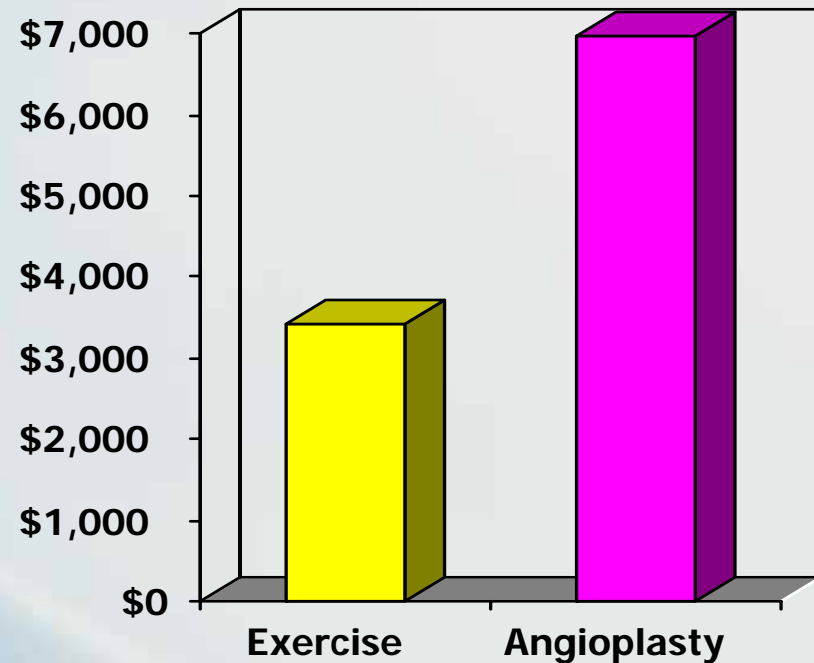
Physical Activity is Cost Effective Compared to Angioplasty for CAD

Event-free survival (%)



Exercise = 20 minutes/day
on a cycle ergometer

Per unit change in angina-CCS



Hambrecht R et al. *Circulation* 2004; 109:1371

Physical Activity is Cost Effective

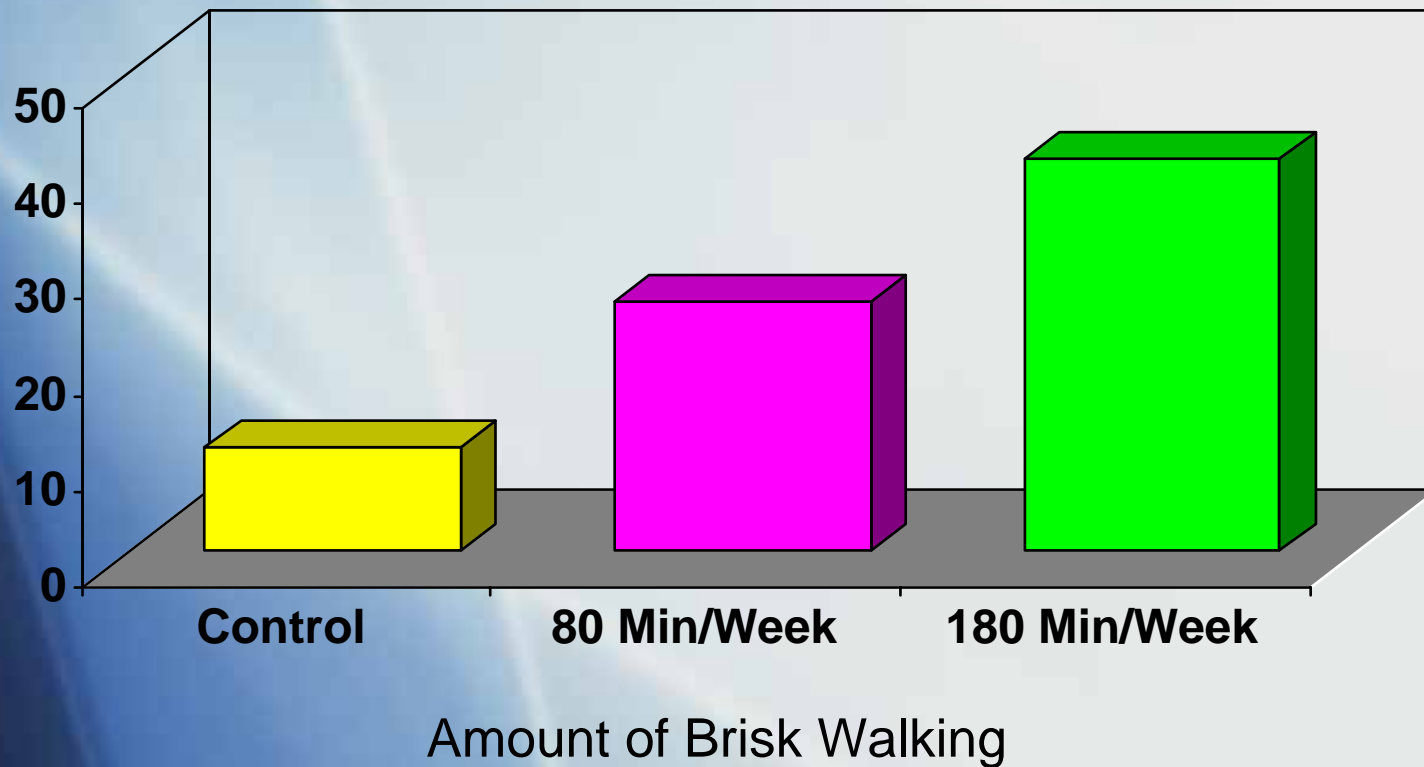
Relative Benefits of CVD Interventions

▪ Mediterranean diet	65%
▪ Smoking Cessation	60%
▪ Physical Activity/weight loss	50%
▪ Blood pressure control	42%
▪ Lipid control	25%
▪ Aspirin for CAD	25%
▪ ACE inhibitor for CHF/MI	22%
▪ Beta-blockers for MI	18%
▪ Tight blood sugar control in DM2	?
▪ Triglyceride/HDL control	?
▪ Vitamins	0
▪ Hormone Replacement Therapy	0

Physical Activity is Cost-Effective

Exercise for Depression

% of patients with remission of depression



Drug therapy and cognitive behavioral therapy produce remission in approximately 40% of clinically depressed individuals

Should We Be Afraid of Physical Activity?

Only if You're Not Active!

Sudden Death With Exercise

- Exercising < 20 minutes per week
 - Risk of sudden death during exercise = 56 times higher than baseline
- Exercising > 140 minutes per week
 - Risk of sudden death during exercise = 5 times higher than baseline

What Should You Do

Physical Activity as a “vital sign”

- Document hours per day spent on sedentary activities (and screen time in children)
- Determine physical activity levels for the family at regular health care visits
- Break out how much physical activity occurs at work, school, home, or in leisure activities, organized and unorganized sports, or part of daily transportation

What Should You Do

Motivate your families to include physical activity in daily life

- Encourage families to be physically active at least 60 minutes throughout the day through multiple activities
- Help identify barriers preventing families from increasing physical activity
- Collaborate with families in developing strategies to overcome these barriers
- Encourage families to be role models, leaders, and become community advocates themselves

What Should You Do

Be a community advocate

- Compulsory PE in all schools between K-12
- Comprehensive community sport and recreation programs and facilities (including school)
- Social marketing that promotes active living
- **REDUCTION OF ENVIRONMENTAL BARRIERS TO ACTIVE LIVING**