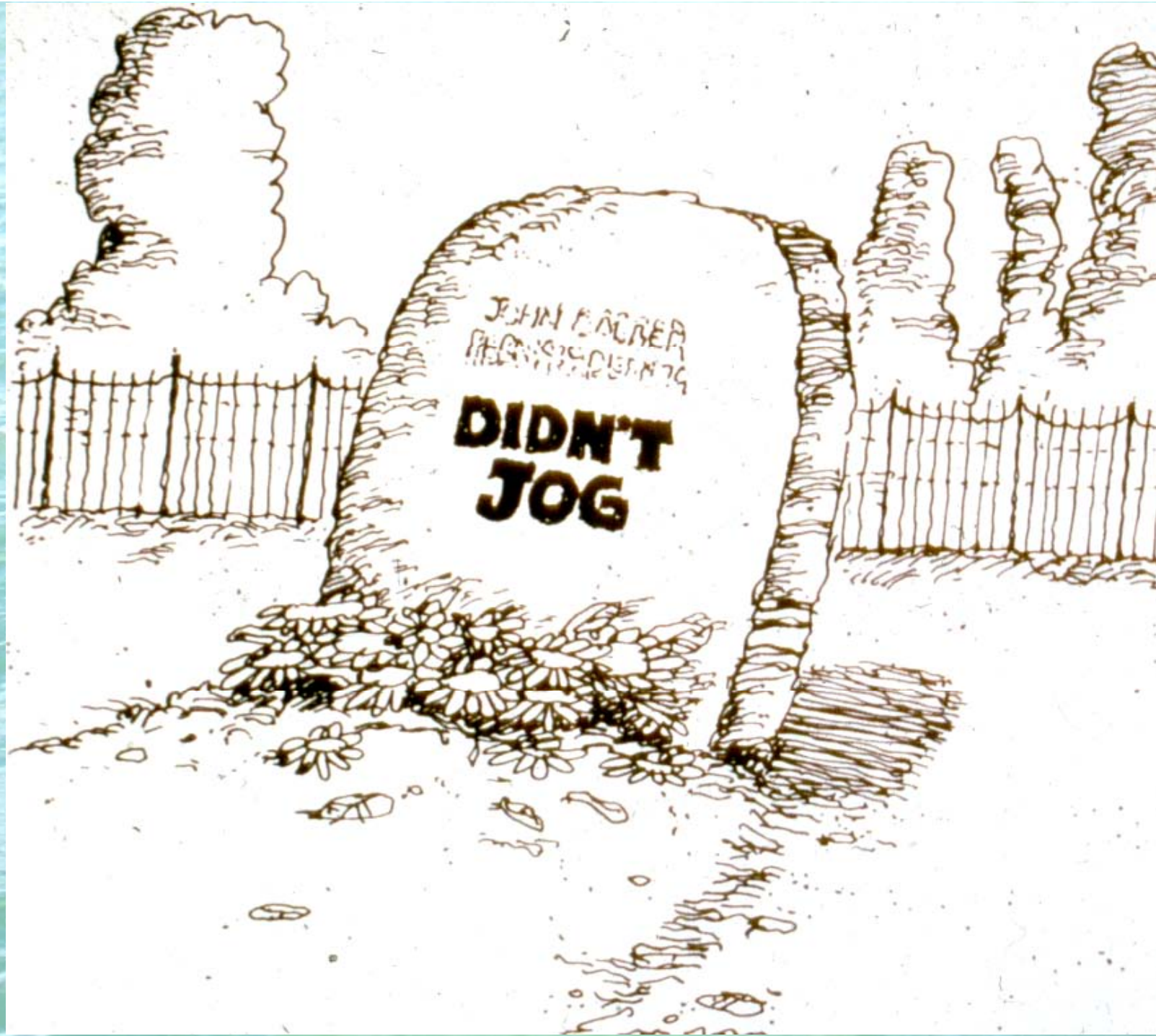


An aerial photograph of a city street intersection. In the foreground, a large, curved sign reads 'WILDCREST'. The street is filled with cars and a few pedestrians. Buildings line the streets, and a tall, thin structure is visible on the right. The overall scene is a busy urban environment.

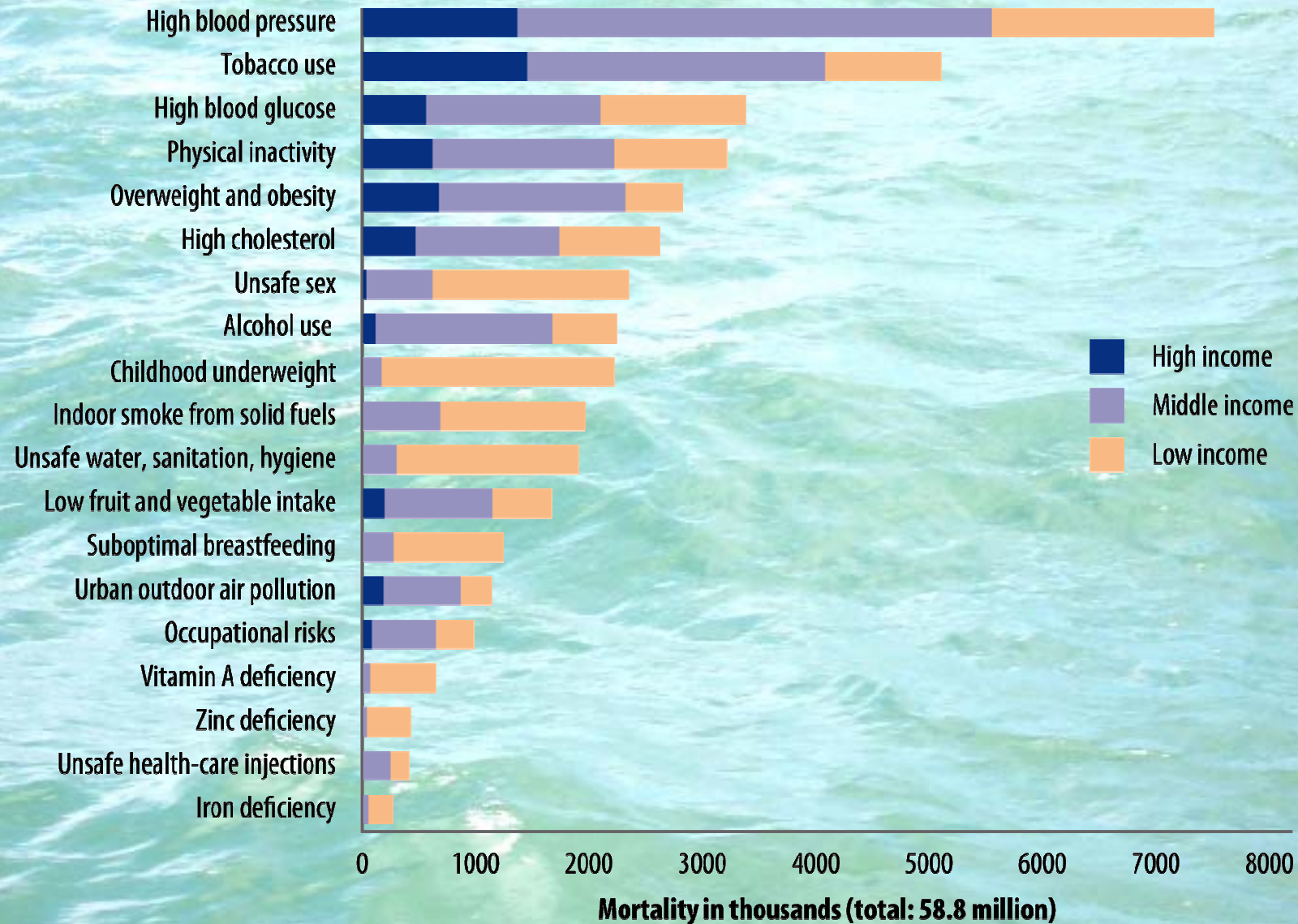
# ***Research That Drives Change: The Case of Physical Activity***

**James Sallis, PhD**  
**San Diego State University**  
**[www.drjamesallis.sdsu.edu](http://www.drjamesallis.sdsu.edu)**

**Dublin, Institute for Public Health**  
**June 10, 2010**

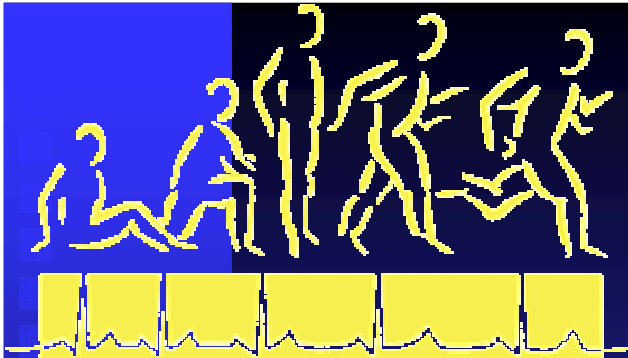


# Deaths attributed to 19 leading factors, by country income level, 2004



# What to do about it?

- **This talk is about my personal journey trying to use research to help people be active**
- **Organized by 3 phases**
- **Phase I: I used the tools I learned as a psychologist to change individual behavior**
  - Methods of measuring behavior
  - Theories that state behavior is affected by
    - Individual, psychological, emotional factors
    - Social & cultural factors
    - Behavioral self-regulation skills, like goal setting, positive self-talk, social support
  - Interventions based on these theories



P A C E

# Patient-centered Assessment and Counseling for Exercise plus Nutrition

Kevin Patrick, M.D., M.S.

Karen J. Calfas, Ph.D.

Greg Norman, Ph.D.

Marion Zabinski, Ph.D., M.P.H.

Judith J. Prochaska, Ph.D., M.P.H.

Barbara J. Long, M.D., M.P.H.

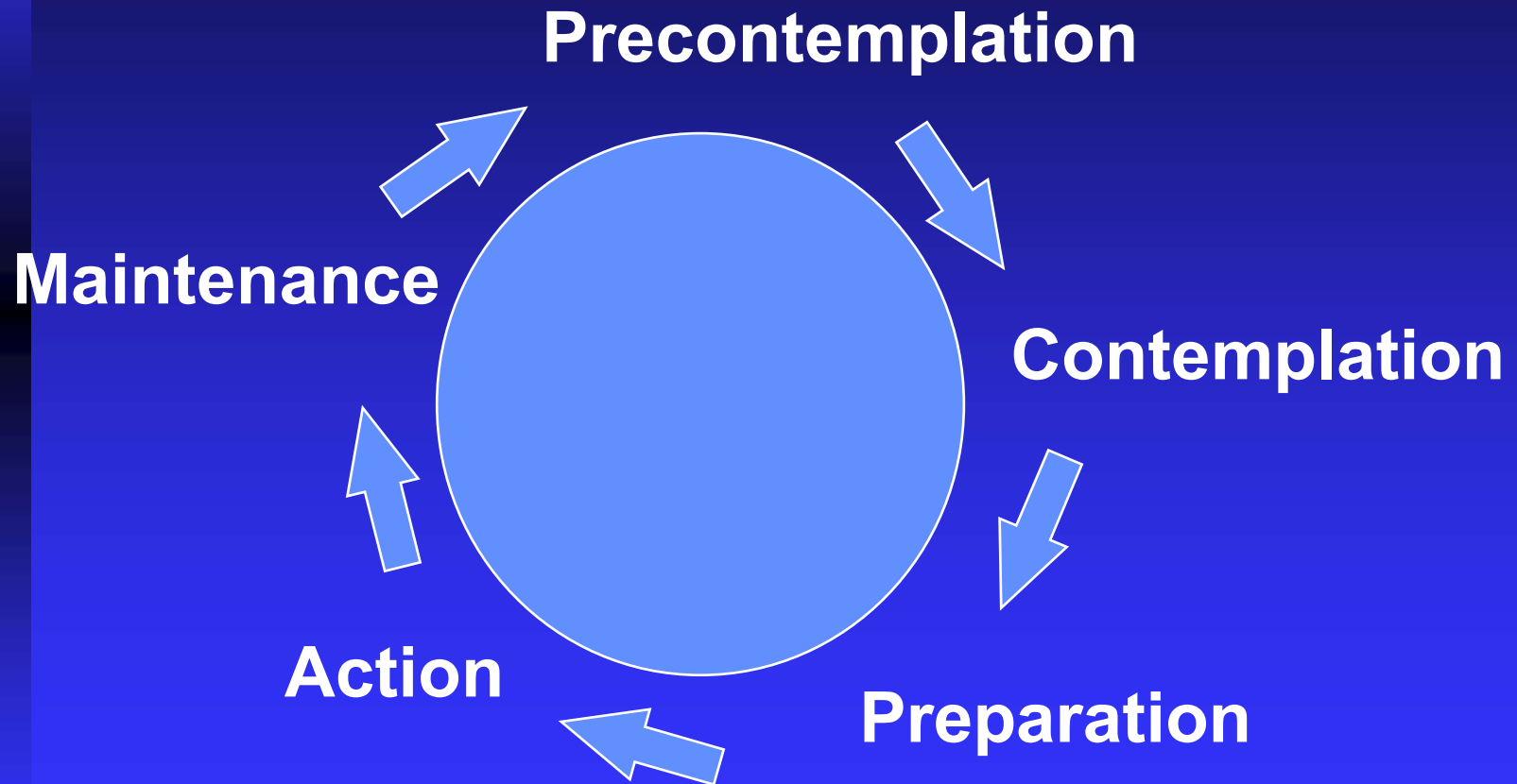
Gina Fleming, M.D., M.P.H.

. . . and many others

# Impact of Physicians in Promoting Healthy Lifestyles

- 80% of the population visits a primary care provider at least once a year.
- Patients want information on physical activity and nutrition.
- Patients feel their physician is a reliable source of health information.

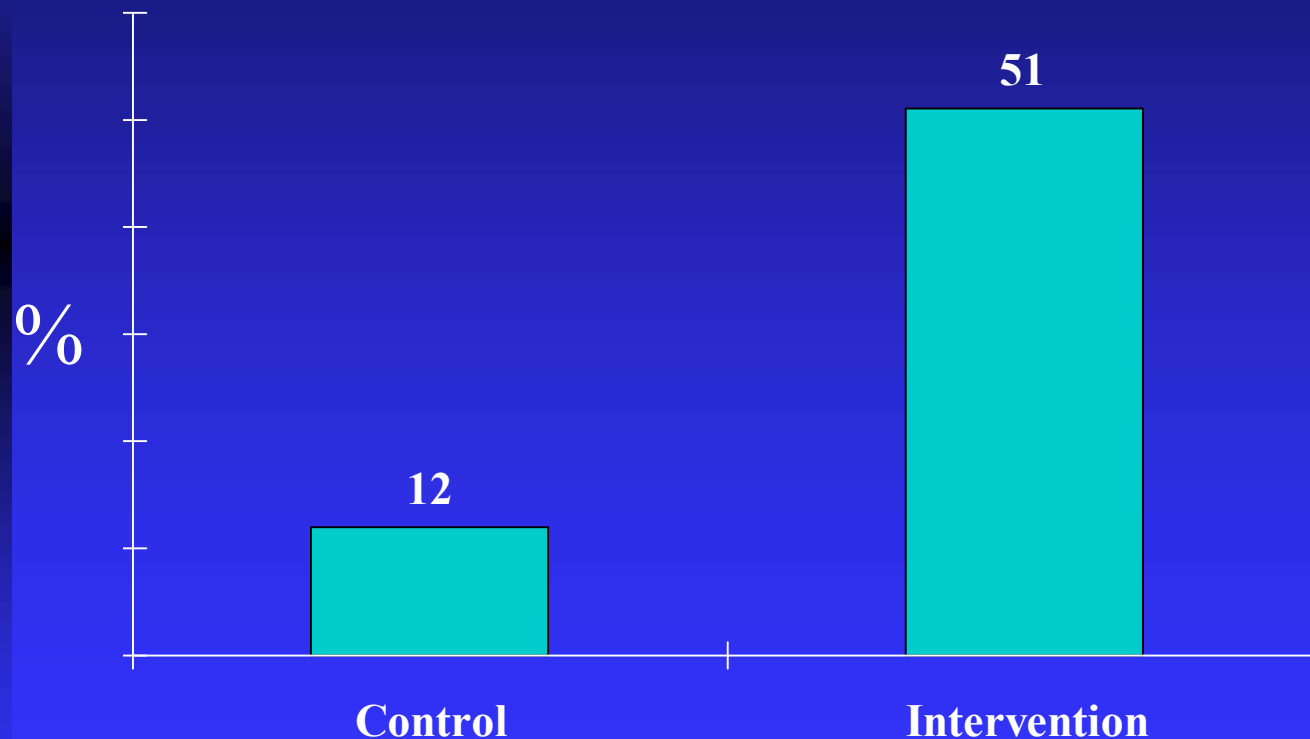
# Stages of Change



# PACE Components

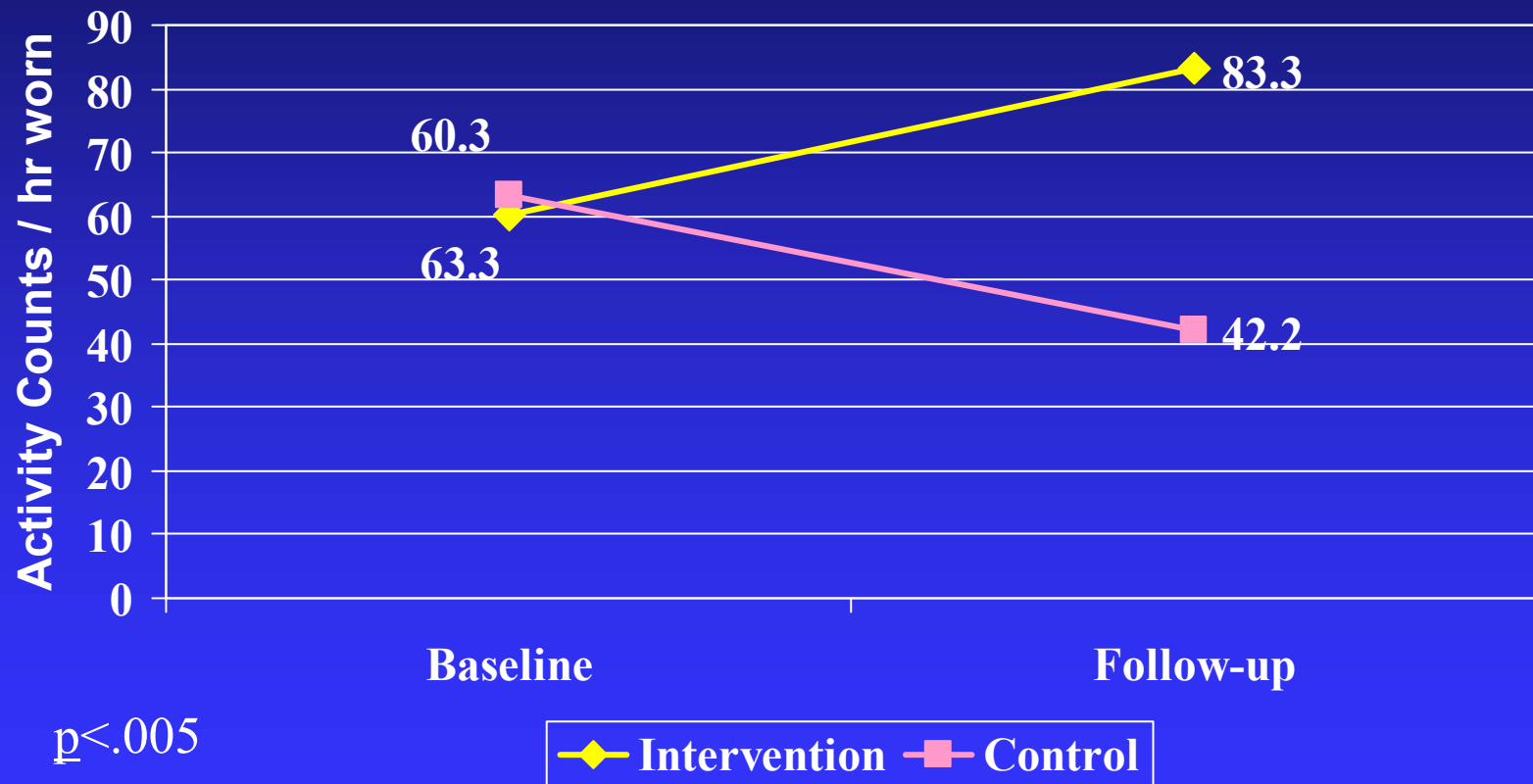
- 1-page assessment of stage of change
- 3 Self-completed, stage-based plans for change
  - ◆ Precontemplators
  - ◆ Contemplators
  - ◆ Actives
- Provider reviews plans & gives brief counseling
- Follow-up by postcard & brief phone call from health educator

# % Moving into “Action” Stage of Change at Follow-Up



# Accelerometer Scores (subgroup)

(Calfas, Long, Sallis et al., Prev Med, 1996)



# Dissemination of PACE

- Started a company to sell materials & training
- Limited adoption, despite good results, due to lack of reimbursement & support for prevention in primary care
- Changed company to Santech, Inc, to pursue web-based and cell phone-based programs
  - ◆ Extends resources in health care
  - ◆ Provide feedback & intervention at decision points throughout the day



## Two year outcomes of a behavioral intervention on physical activity in college seniors: Project GRAD

Karen J. Calfas, Ph.D.

James F. Sallis, Ph.D.

Jeanne Nichols, Ph.D.

Sheri Thompson, Ph.D.



## Rationale

- College seniors--last chance to prepare youth for an active lifetime
- An effective course could be widely disseminated
- SDSU seniors randomized to intervention or control course

# Pre-Graduation Physical Activity Intervention

- 2 credit, 1 semester course
- 1 hour/wk lecture by professor (behavioral and exercise science)
- 2 hrs/wk peer-led lab



# Post-Graduation Intervention

- 18 months of follow-up
- Tailored to stage of change
- Phone counseling by peers (completed 90%)
- Mailed: GRAD newsletter

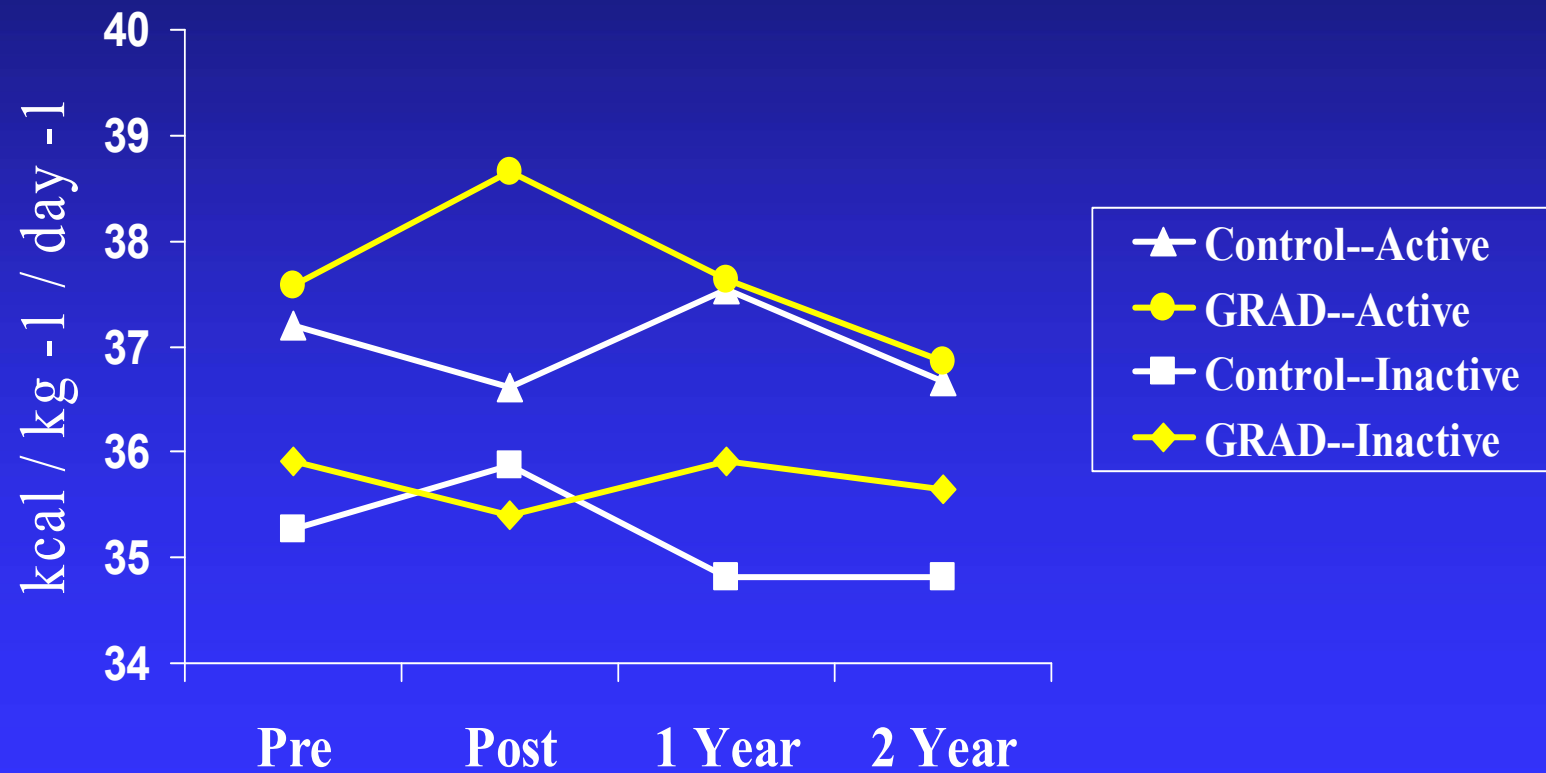


# Control Group Intervention

- General Health Survey Course (2 credits, 2 hour lecture/week)
- Covering a variety of health topics
- Designed to increase knowledge only
- Berkeley Health Newsletters for 18 months



# Total Energy Expenditure During Leisure Among Women Over 2 yrs



$p < .03$ , post only



## Conclusions

- Initial effects on PA decayed over time despite follow-up intervention
- Only improvements were among women; none among men
- Small changes, disappointing results

# End of phase 1

- These and other studies targeting individuals and families had disappointing effects
- I decided targeting individuals could not solve the problem of inactivity
  - Limited reach
  - Small effects
  - No maintenance
- **Phase 2: Create healthier school environments that could affect all youth**

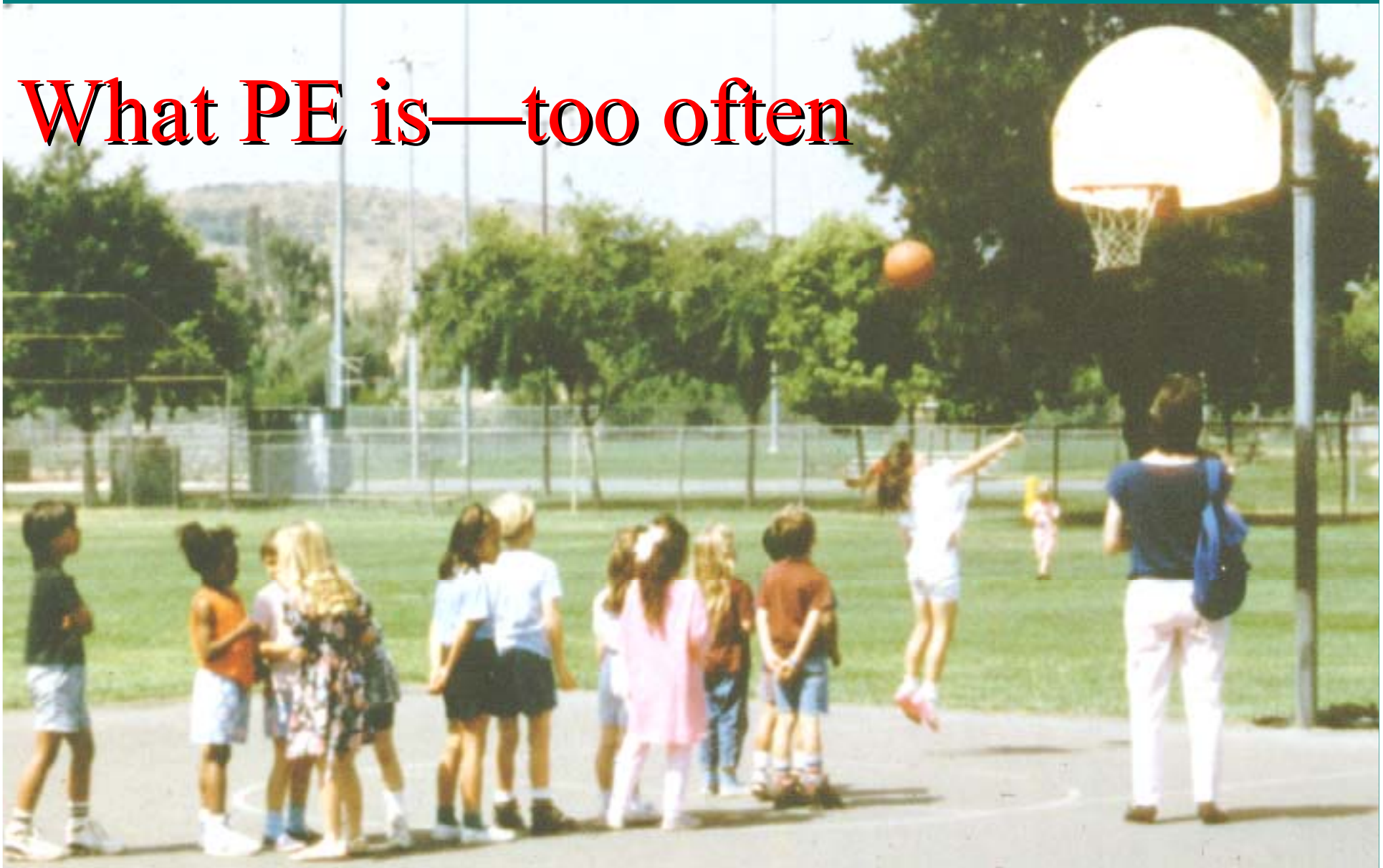
SPORTS, PLAY & ACTIVE

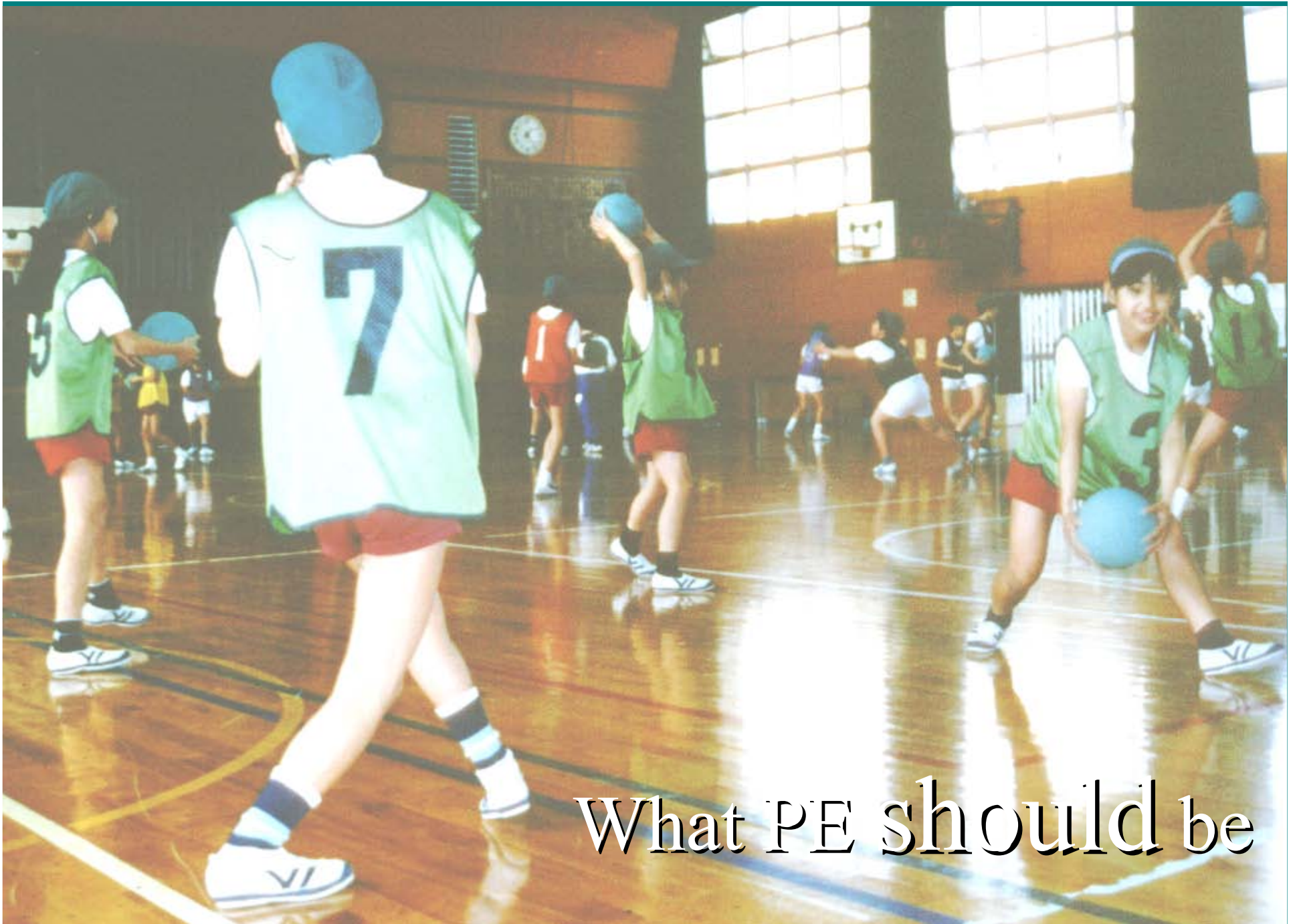
# SIPARK

RECREATION FOR KIDS!



What PE is—too often





What PE should be

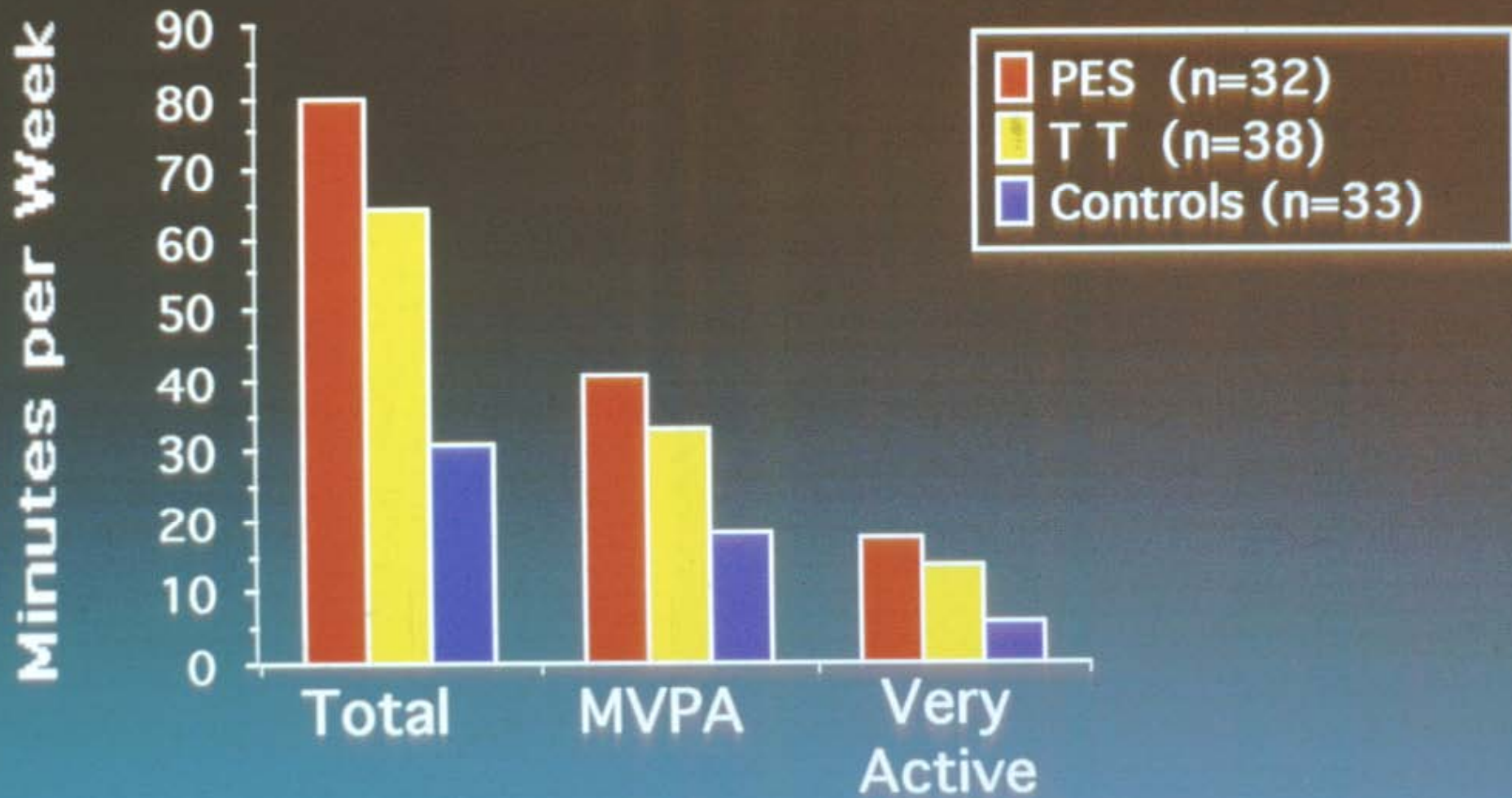
# SPARK Study: 1989-1994

- Goal: Create a model elementary PE program; seen as a behavior change program
- 7 primary schools randomly assigned to 3 conditions
  - Usual PE taught by classroom teachers
  - SPARK taught by trained classroom teachers
  - SPARK taught by PE specialists
- Program delivered in 4<sup>th</sup> & 5<sup>th</sup> grades

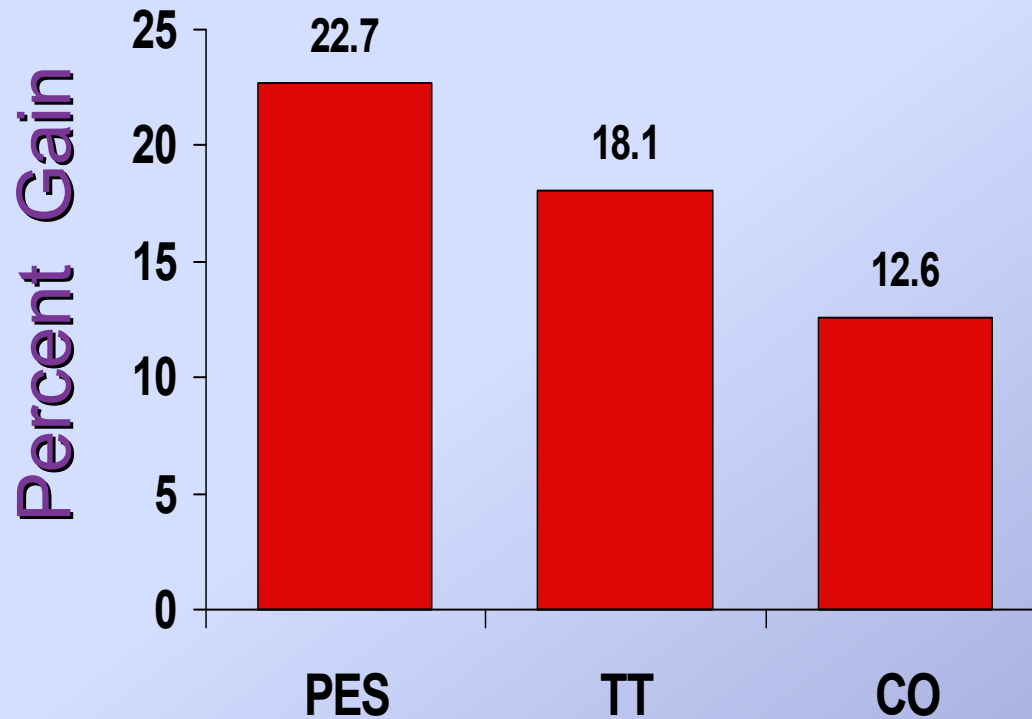
# SPARK Intervention

- **PE classes** emphasize
  - Movement for all
  - Sports skills
  - Enjoyment
- **Self-management classes**
  - Taught behavior change skills
  - Included weekly activity goals
  - Involved families
- **Staff development** prepared teachers to implement the curricula
- **Ongoing support**

# 1990-1993



# Motor Skill Gains: SPARK

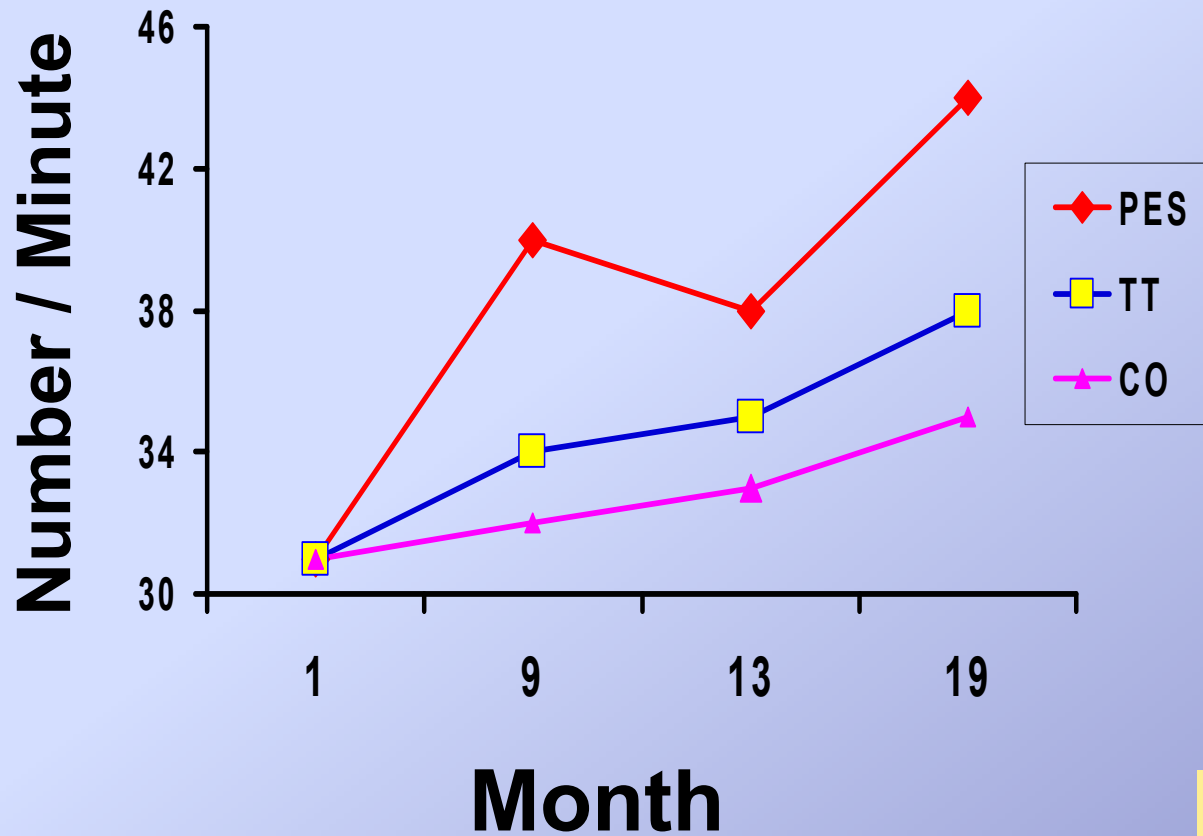


Catch, throw, & kick gains after 6 months

(McKenzie et al., 1998; JTPE)



# Boy's Sit-Ups



(Sallis et al., 1998; AJPH)



# Effects on Academic Achievement

## 3-Year Changes in Percentile Rank

---

Eight comparisons on standardized MAT tests:

-4 better, 1 worse, 3 no difference

Increasing PE from 32 to 98 or 109  
min/week did not reduce academic  
performance

(Sallis et al, RQES, 1999)





# SPARK Dissemination

- From 1994 to 2003, sold through SDSU on non-profit basis
- In 2003, licensed to Sportime, Inc
- 9 Programs now offered
  - Early Childhood thru High School PE
  - Active Recreation
- 900 trainings annually; 1000s of schools
- >1 million children per day in SPARK



For a SPARK  
program for  
your school  
call 800-SPARK PE  
or e-mail  
spark@projects.sdsu.edu



# SPARK Collaborators

- Major adoptions: Florida, New York City, North Carolina, Memphis, Pittsburgh, San Diego, Portland, Navajo Nation, DC
- Research: TAAG, Pathways, PEACH, OPprA, Aventuras, OPI, Memphis EC, Hawaii, Kalasugan
- Nike
- American Heart Assoc.
- American Cancer Society



For a SPARK  
program for  
your school  
call 800-SPARK PE  
or e-mail  
[spark@projects.sdsu.edu](mailto:spark@projects.sdsu.edu)

# Phase 2 is having a big impact & continues to grow



For a SPARK  
program for  
your school  
call 800-SPARK PE  
or e-mail  
[spark@projects.sdsu.edu](mailto:spark@projects.sdsu.edu)

# Phase 3: We Need Bigger Tools To Build a More Active World

- Expand the physical activity target
- Expand behavior change models
- Expand partnerships to bring more skills to the job
- Set bigger goals

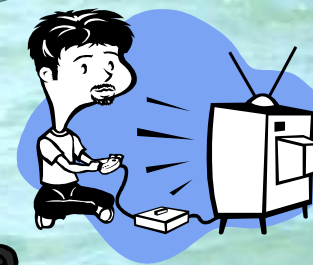


# SLOTH Model of Physical Activity

- **Sleep**



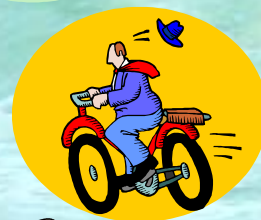
- **Leisure**



- **Occupation**



- **Transportation**



- **Household**



# Why are people (probably) less active?

- People
  - Biology
  - Psychology
  - Social/cultural factors
  
- Environment
  - Reliance on cars
  - Computers at work
  - Electronic entertainment



# Why Environmental & Policy Approaches?

- Affect large populations
- Likely to have long-term or permanent effects
- Make the healthy choice easier
  - Remove/reduce barriers
  - Provide incentives
- Make educational & motivational interventions more effective

# Elements of An Active Living Community

**Community Design  
Destinations**



**Home**

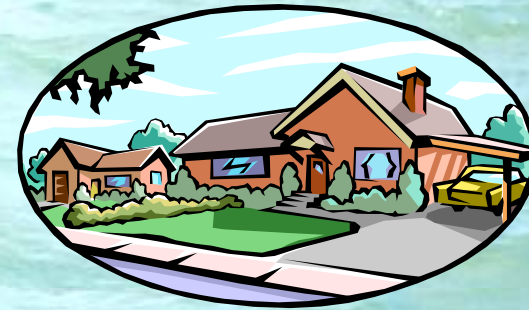


# Elements of An Active Living Community

**Community Design  
Destinations**



**Home**



**Park & Rec**

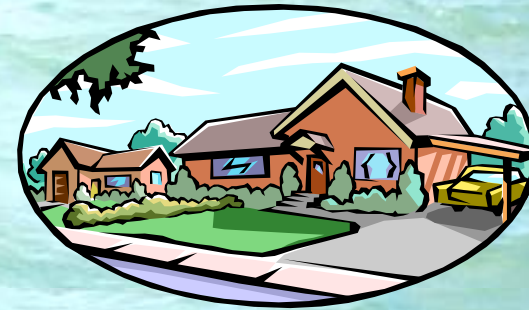


# Elements of An Active Living Community

**Community Design  
Destinations**



**Home**



**School & Worksite**



**Park & Rec**



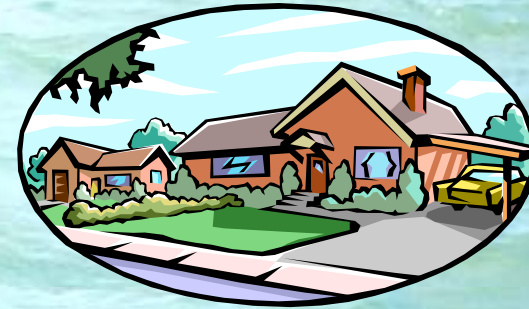
# Elements of An Active Living Community

**Community Design  
Destinations**



**Transportation System**

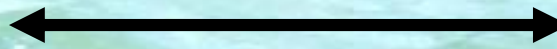
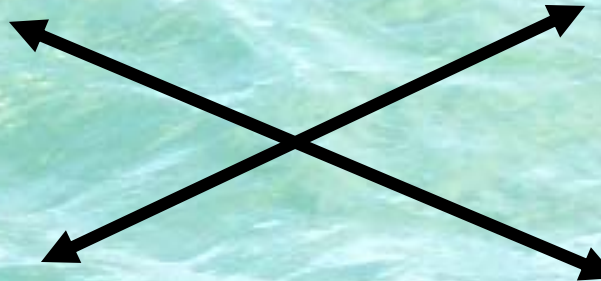
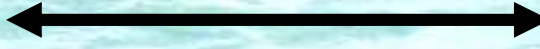
**Home**



**School & Worksite**



**Park & Rec**





**“Walkable”**: Mixed use, connected, dense



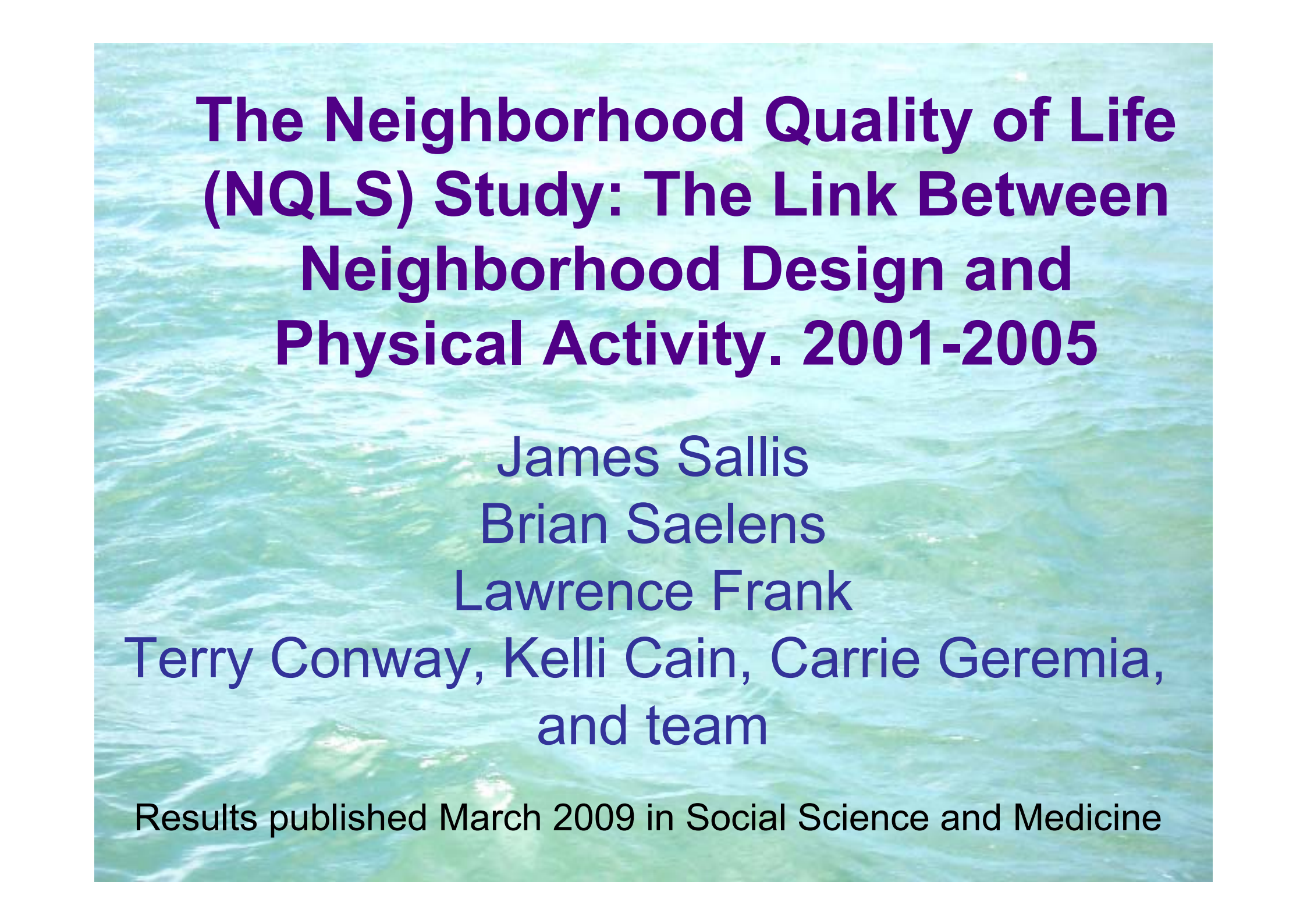
Not “walkable”



street connectivity and



mixed land use



**The Neighborhood Quality of Life  
(NQLS) Study: The Link Between  
Neighborhood Design and  
Physical Activity. 2001-2005**

James Sallis

Brian Saelens

Lawrence Frank

Terry Conway, Kelli Cain, Carrie Geremia,  
and team

Results published March 2009 in Social Science and Medicine

# NQLS Neighborhood Categories

## Walkability

Low

High

Socioeconomic Status

Low

High

4 per city

4 per city

4 per city

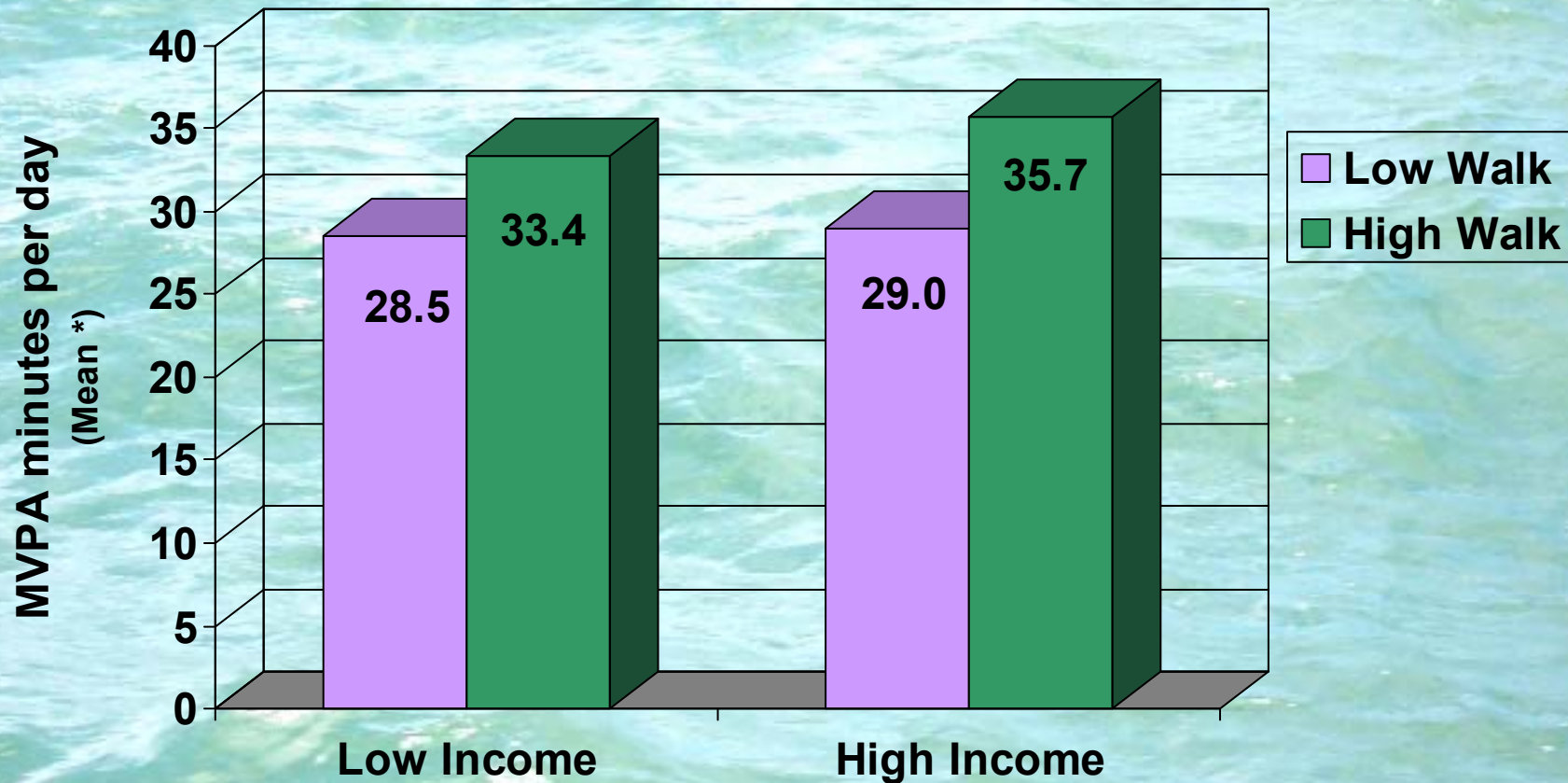
4 per city

# Accelerometer-based MVPA Min/day in Walkability-by-Income Quadrants

Walkability:  $p = .0002$

Income:  $p = .36$

Walkability X Income:  $p = .57$



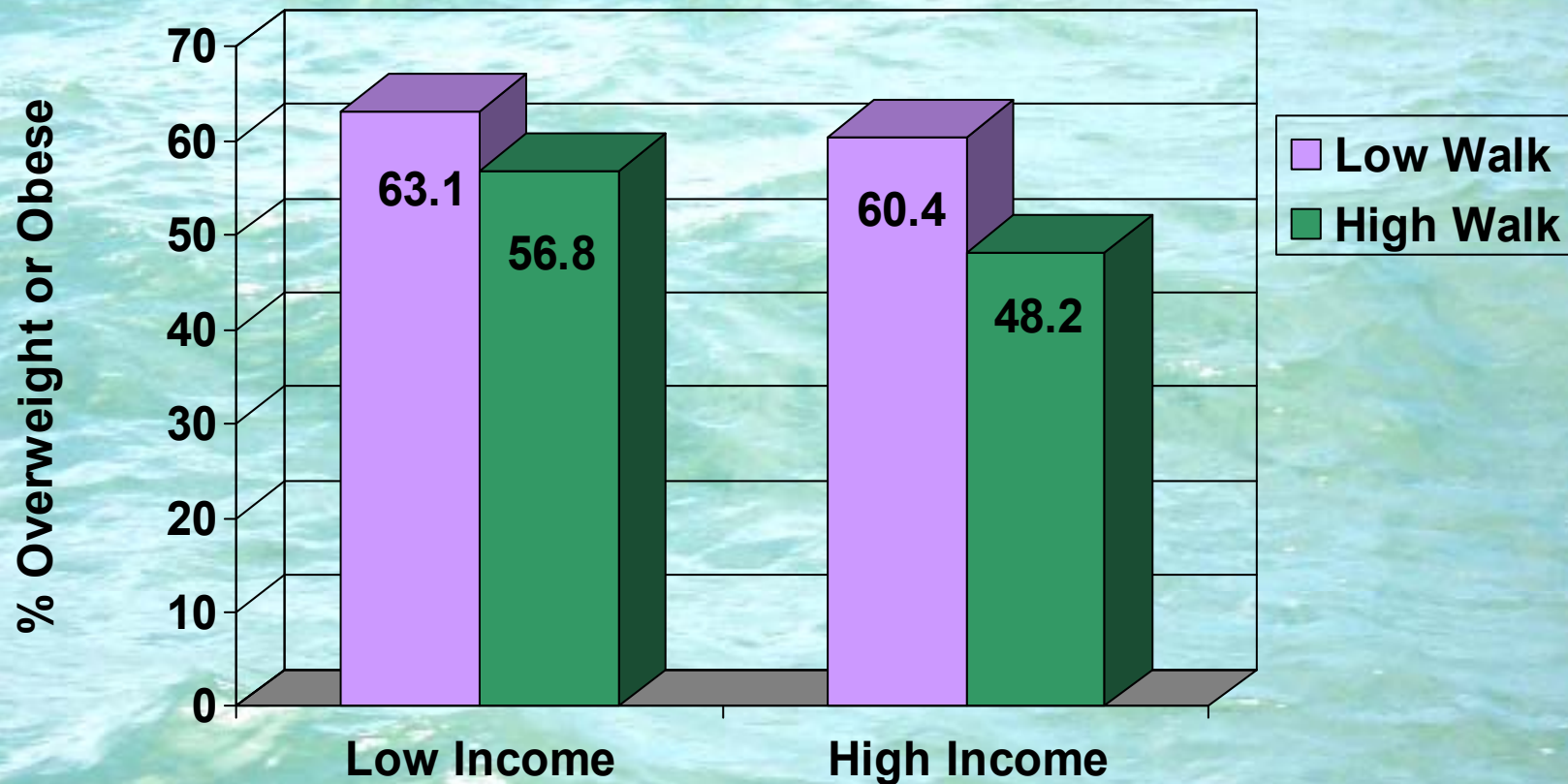
\* Adjusted for neighborhood clustering, gender, age, education, ethnicity, # motor vehicles/adult in household, site, marital status, number of people in household, and length of time at current address.

# Percent Overweight or Obese (BMI>25) in Walkability-by-Income Quadrants

Walkability:  $p = .007$

Income:  $p = .081$

Walkability X Income:  $p = .26$



\* Adjusted for neighborhood clustering, gender, age, education, ethnicity, # motor vehicles/adult in household, site, marital status, number of people in household, and length of time at current address.

**Multiple Pathways from Land Use to Health:  
Walkability Associations With Active Transportation,  
Body Mass Index, and Air Quality.**

**Frank et al. JAPA 2007**

- 5% increase in walkability associated with:
  - 32% increase in walking for transport
  - ¼ point decrease in BMI (about 1.25 pounds)
  - 6.5% decrease in vehicle miles traveled
  - 5.6% decrease in oxides of nitrogen (NO<sub>x</sub>) grams
  - 5.5% decrease in volatile organic compounds (VOC) grams
- County government is acting on results



- \* NCI grant to coordinate studies in 12 countries using common design & methods
- \* Build capacity for environmental research
- \* Use research to influence policy internationally

An Active Living Program supported by The Robert Wood Johnson Foundation  
and administered by San Diego State University.

# **Active Living Research:** Nurturing a New Transdisciplinary Field

**James Sallis**

**Leslie Linton, Carmen Cutter**

**Amanda Wilson, Chad Spoon**

**Debbie Lou, Debra Rubio, Irvin Harrison**



[www.activelivingresearch.org](http://www.activelivingresearch.org)

# Active Living Research: 2001-2012

- Contribute to Robert Wood Johnson Foundation's goal of reversing the childhood obesity epidemic by 2015
- Focus on groups at highest risk
  - African American, Latino, Native American, Asian/Pacific Islander, lower income
- Build the evidence base
  - We manage \$27 million in research grants
  - Investigators from 30+ disciplines
  - Funded 150+ studies
- Use research to inform policy

# Using Research to Inform Policy

- Highlighting research findings in the media
- Research summaries, briefs, syntheses
- Presentations at policy & practice meetings
- Seek audiences with governors, mayors, legislators, school boards
- Policy maker interactions at ALR Conf
- Policy makers advise research teams
- Proposals explain policy relevance

# Resources at [www.activelivingresearch.org](http://www.activelivingresearch.org)



# Our research is being used



- I briefed the First Lady on evidence-based approaches
- President's multi-agency Obesity Task Force is consistent with the research
- New vehicles for research → policy

# Progress closer to home



- In December 2009 I and others met with the Governor & recommended evidence-based policies for PE, after-school, and safe routes to schools
- At February 2010 health summit, Governor announced legislation for these topics and others

# But What Can I Do? Be An Advocate!

- Make new friends
  - Get to know your city planners, school officials, park board, elected officials
- Join with others
  - Join advocacy groups to amplify your voice and strengthen their efforts.
- Show up and speak up—often
  - Be the voice of health at committee meetings, write letters to editors
- Be an informed spokesperson
  - Know the research, write a summary, praise good decisions

# Vision for The Future

Less of this



More of this