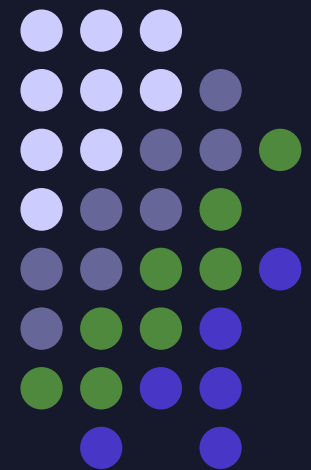


Policies to Promote Physical Activity and Prevent Obesity in Children

Buenos Aires, Argentina
June 2016

Russell R. Pate, PhD
Arnold School of Public Health
University of South Carolina



ARNOLD SCHOOL OF PUBLIC HEALTH



Kids Need More Physical Activity



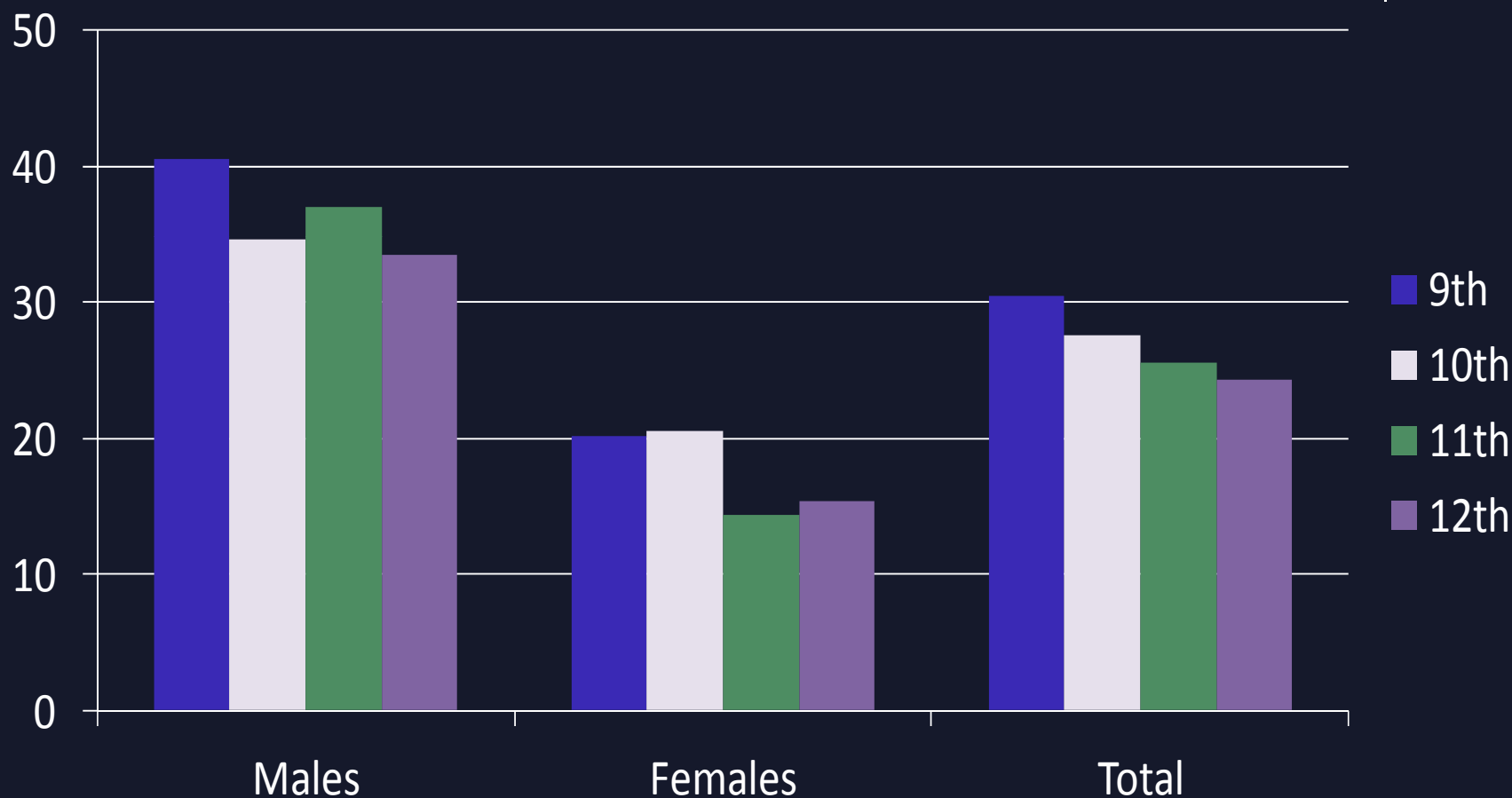
WHO Global Recommendations on Physical Activity for Health



5-17 Years Old

- Children and youth aged 5-17 should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity daily
- Amounts of physical activity greater than 60 minutes provide additional health benefits
- Most of the daily physical activity should be aerobic. Vigorous-intensity activities should be incorporated, including those that strengthen muscle and bone, at least 3 times per week.

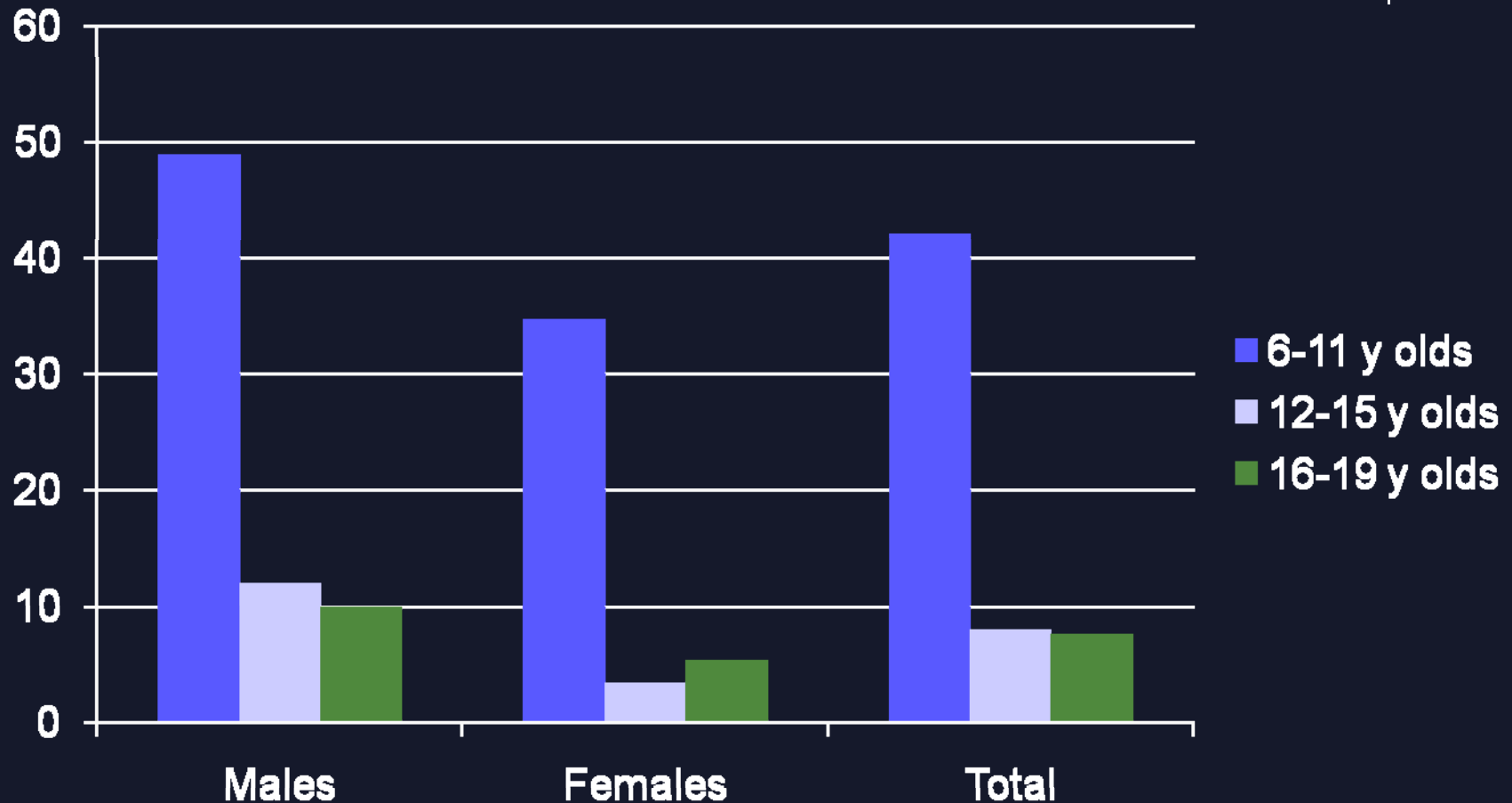
Prevalence of achieving 60 min/d of MVPA on all 7 days - YRBS 2013



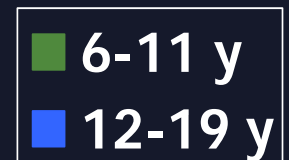
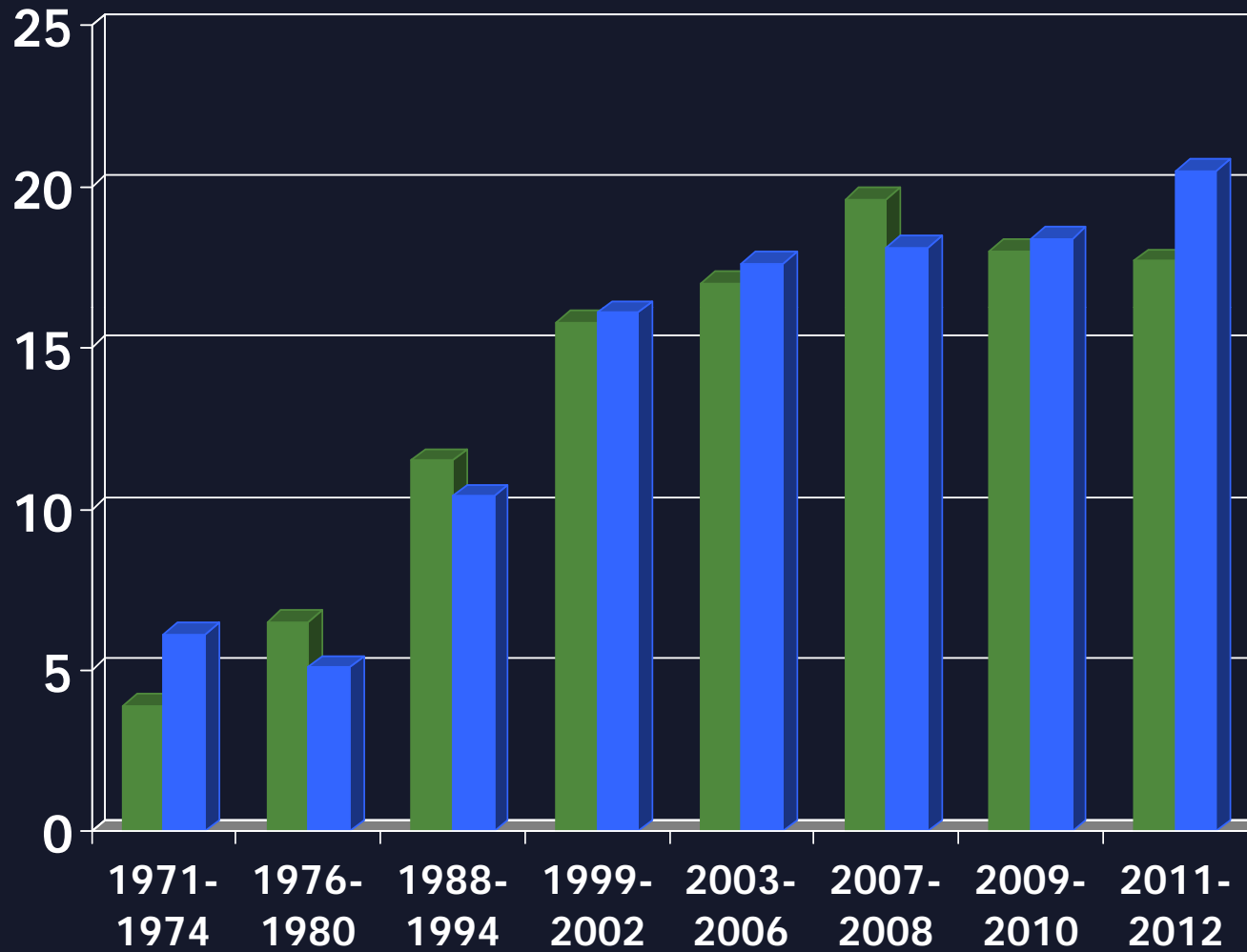
Accelerometer Placement



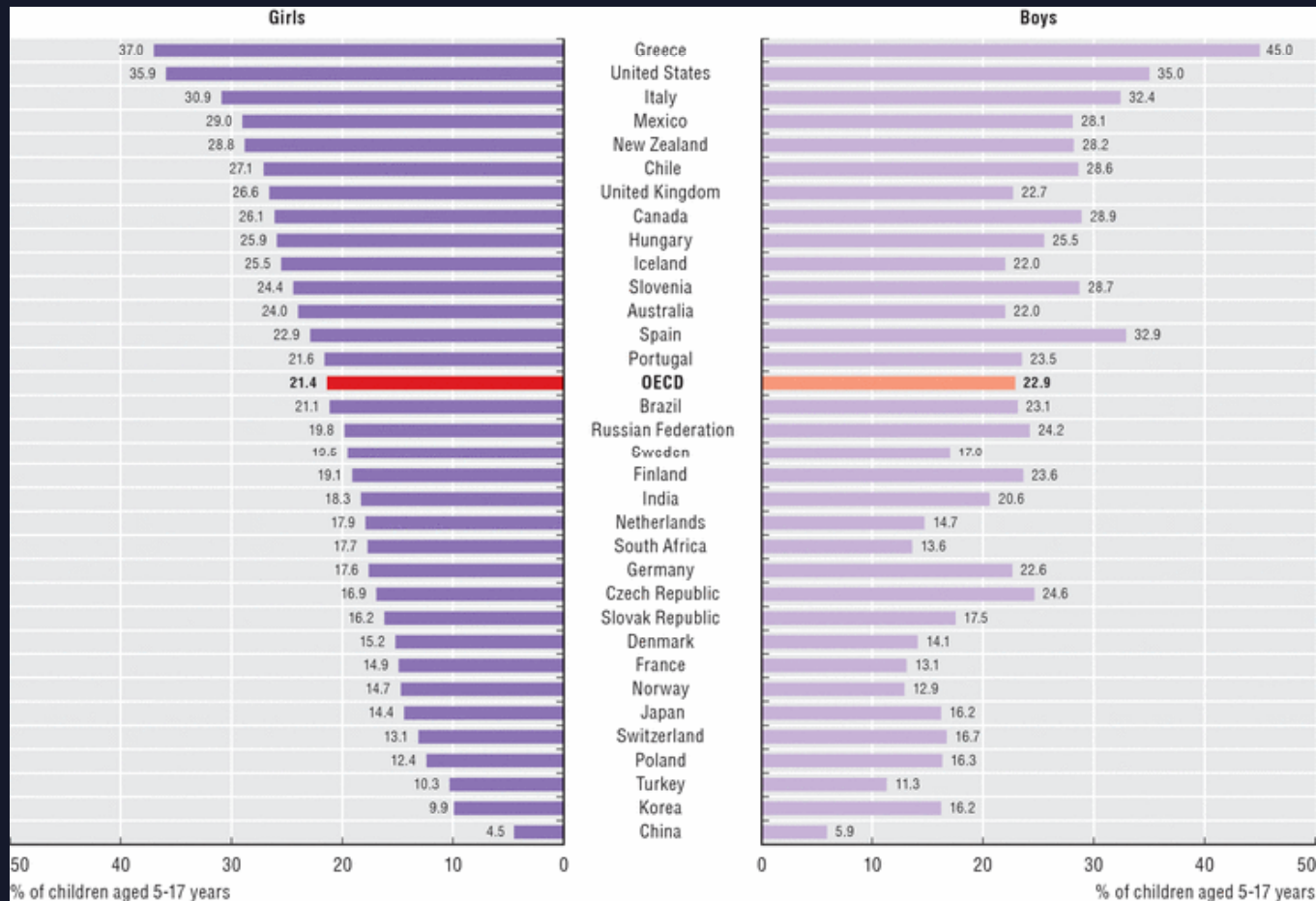
Prevalence of attaining 60 min of MVPA per day - Accelerometry



National Trends of Obesity in Youth



Global Prevalence of Childhood Obesity



Source: International Association for the Study of Obesity (2011).

Prospective associations between objective measures of PA & fat mass in 12-14 year old children: ALSPAC



Riddoch CJ, Leary SD, Ness AR, Blair SN,
Deere K, Mattocks C, Griffiths A, Smith
GD, Tilling K. *BMJ* 2009;339:b4544

Methods



- 12-y olds followed for 2 years
- n = 4150
- Fat mass measured with DEXA
- PA measured with accelerometry
 - 7 days
 - Total PA = counts per minute
 - MVPA > 3600 counts per minute
- Potential Confounders
 - Age, sex, maternal education, maternal smoking during pregnancy, mother's pre-pregnancy BMI, child's pubertal status

Percent change in fat mass with 15 minutes of additional MVPA per day - ALSPAC



Outcome	Exposure	% Change in Fat Mass (95% CI)
Boys		
Fat mass at 14	MVPA at 12	-11.9 (-14.3 to -9.5)
Change in fat mass	Change in MVPA	-2.4 (-3.6 to -1.1)
Girls		
Fat mass at 14	MVPA at 12	-9.8 (-12.8 to -6.7)
Change in fat mass	Change in MVPA	-2.3 (-3.5 to -1.2)

Sustained effect of early PA on body fat mass in older children



Janz KF, Letuchy EM, Eichenberger Gilmore
JM, Burns TL, Torner JC, Willing MC, Levy
SM. *Am J Prev Med* 2009;37:35-40



Methods

- Iowa Bone Development Study
- 5-y olds followed for 6 years
- n = 333
- Fat mass measured with DEXA
- PA measured with accelerometry
 - 5 & 8 y olds: 4 days, 11 y olds: 5 days
 - MVPA \geq 3000 counts per minute



Results

- For boys & girls, MVPA at 5 y predicted fat mass at age 8 & 11
 - For girls, when adjusted for fat mass at age 5 y, MVPA was not significant
- Boys & girls in highest quartile of MVPA at 5 y had lower fat mass at 8 y & 11 y than children in lowest quartile of MVPA at 5 y
- Early-childhood MVPA reduces fatness throughout childhood

Factors associated with development of excessive fatness in children and adolescents: a review of prospective studies



Pate RR, O'Neill JR, Liese AD, Janz KF, Granberg EM, Colabianchi N, Harsha DW, Condrasky MM, O'Neil PM, Lau EY, Taverno Ross SE. *Obesity Reviews* 2013; **14**: 645-658

Review Findings



- Low PA and genetic factors are associated with excessive fatness in children and youth
- Mixed evidence for:
 - Sedentary behavior
 - Dietary intake
 - Biomarkers
 - Family factors
 - PA environment
- No conclusions could be made about:
 - Social cognitive factors
 - Peer factors
 - School nutrition and PA
 - Nutrition environment

Policies to Promote Physical Activity in Youth



Preventing Childhood Obesity: Health in the Balance



Institute of Medicine Committee on Prevention of Obesity in Children and Youth

Policy Recommendations



1. National Priority
2. Industry
3. Nutrition Labeling
4. Advertising & Marketing
5. Multimedia & Public Relations Campaign
6. Community Programs
7. Built Environment
8. Health Care
9. Schools
10. Home

**INITIATIVES
THAT CAN
ADDRESS THE
PROBLEM**





Documented
Problem

Reasons to
Suggest
Solution

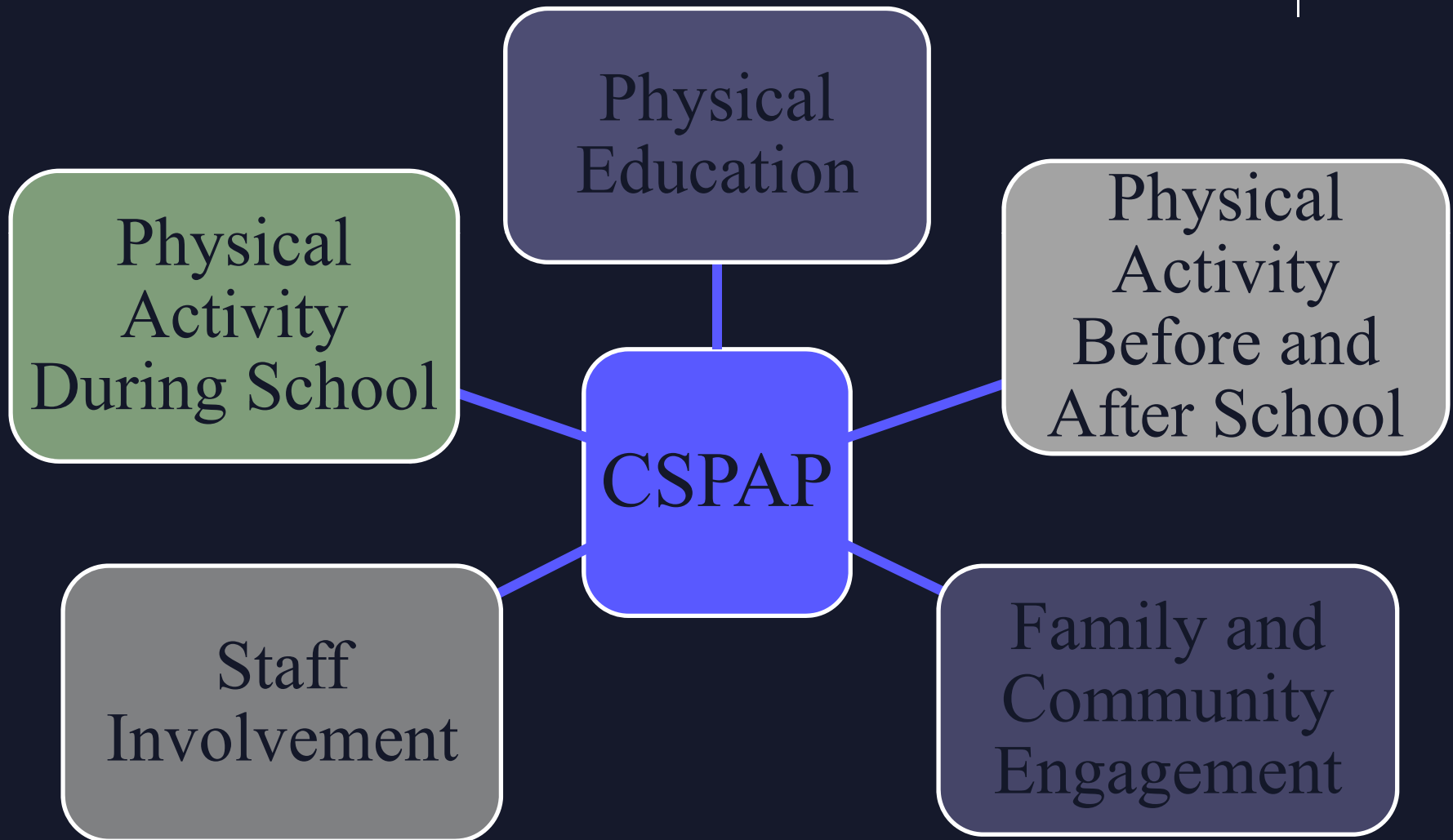
Indication of
Progress

ESTABLISH



**Comprehensive School
Physical Activity Model**

Comprehensive School Physical Activity Physical Activity Model

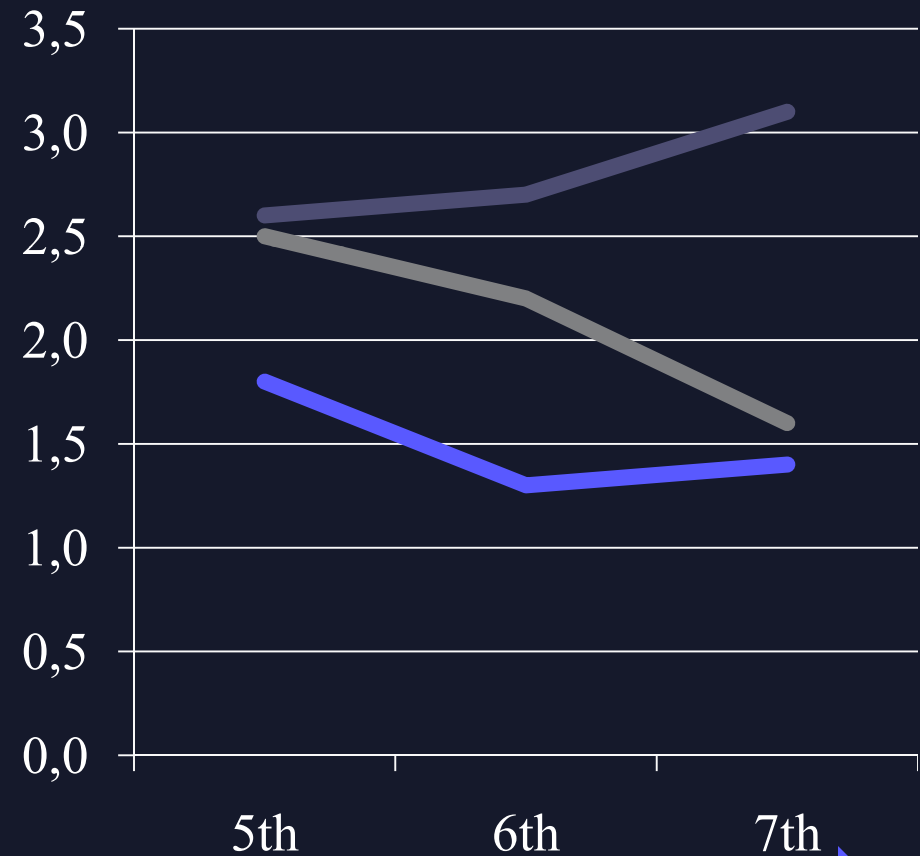
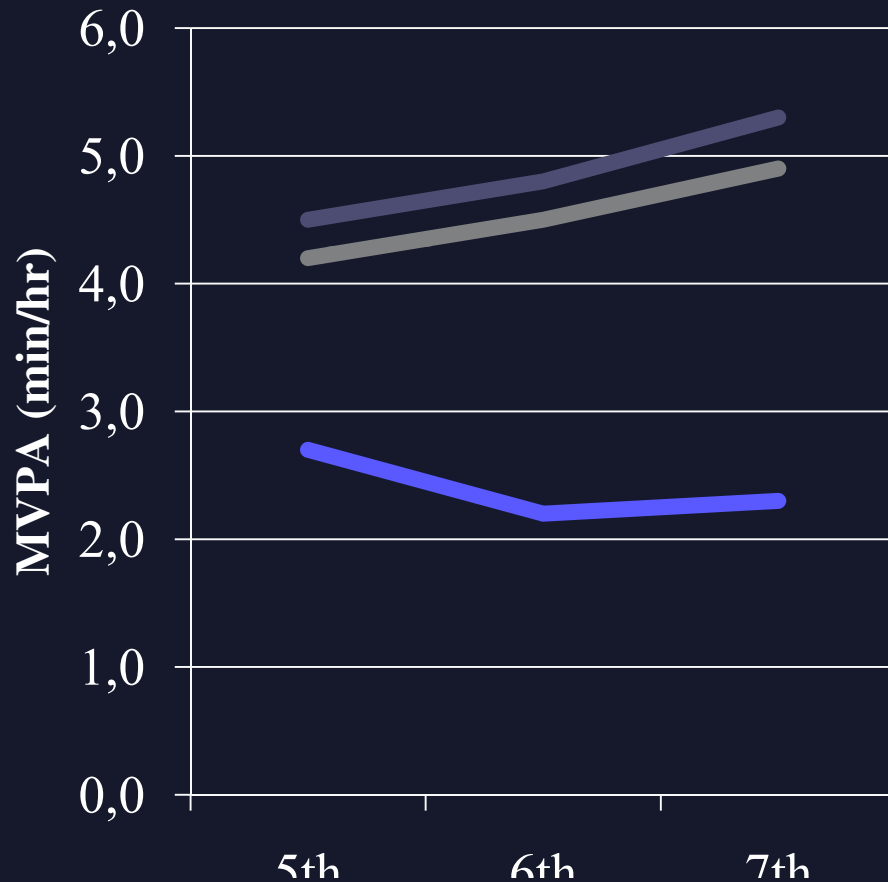


Changes in daily physical activity during school, after school, and in the evening



Boys

Girls



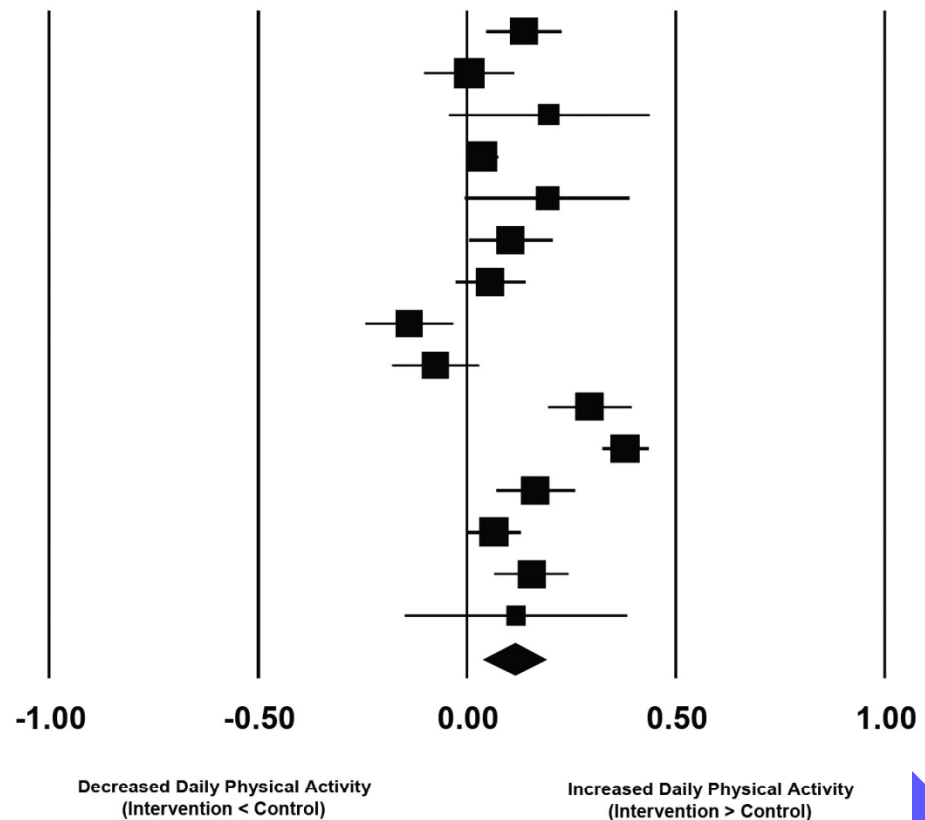
— School — After School — Evening



Meta-analysis of multi-component school interventions to increase physical activity



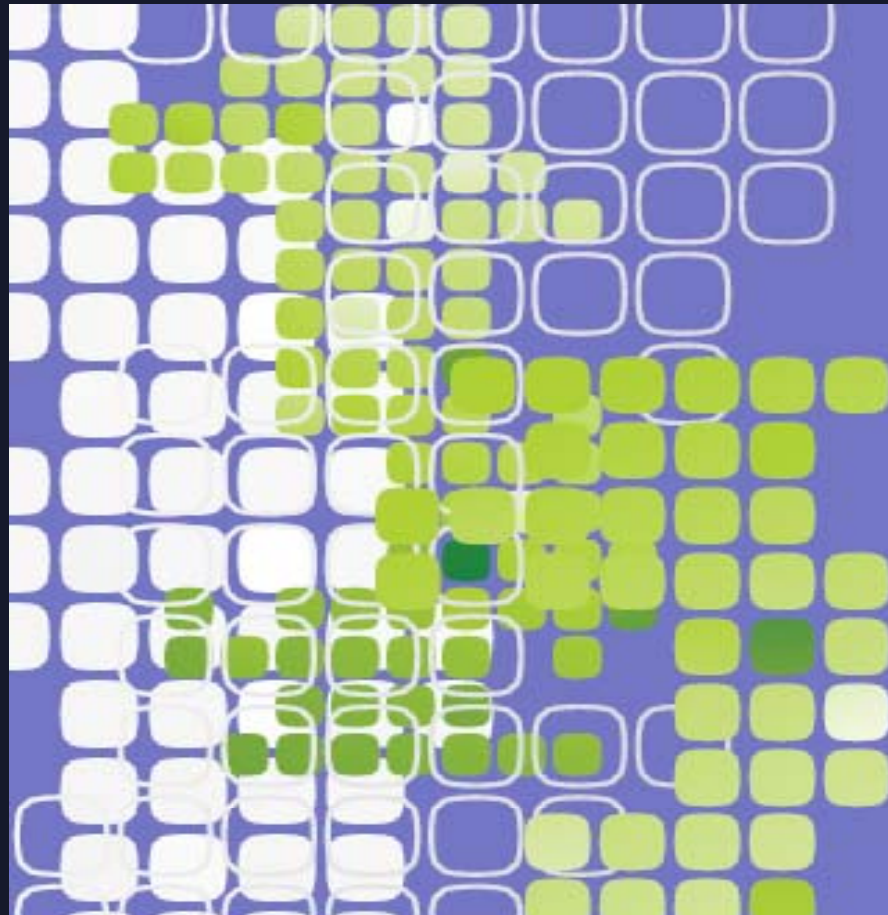
Study name	Hedges's g	(95CI)
Caballero 2003 ²²	0.136	(0.041, 0.232)
Gortmaker 1999 ²³	0.004	(-0.107, 0.116)
Hoelscher 2010 ²⁴	0.196	(-0.050, 0.443)
Leupker 1996 ²⁵	0.037	(-0.008, 0.081)
Neumark-Sztainer 2003 ²⁶	0.192	(-0.010, 0.394)
Neumark-Sztainer 2010 ²⁷	0.105	(0.001, 0.208)
Pate 2005 ²⁸	0.055	(-0.032, 0.142)
Sallis 1997 ^{18, a}	-0.139	(-0.249, -0.029)
Sallis 1997 ^{18, b}	-0.075	(-0.185, 0.035)
Sallis 2003 ²⁹	0.294	(0.190, 0.398)
Seo 2013 ³⁰	0.379	(0.319, 0.438)
Springer 2012 ³¹	0.164	(0.064, 0.264)
Webber 2008 ³²	0.065	(-0.002, 0.133)
Williamson 2007 ³³	0.154	(0.061, 0.248)
Young 2006 ³⁴	0.117	(-0.153, 0.387)
Pooled Effect	0.110	(0.033, 0.187)



Documented Problem

Reasons to Suggest Solution

Indication of Progress



COMPREHENSIVE SCHOOL PHYSICAL ACTIVITY PROGRAMS: A GUIDE FOR SCHOOLS



Healthy Schools



Documented Problem

Reasons to Suggest Solution

Indication of Progress



SHAPE America

SOCIETY
OF HEALTH
AND PHYSICAL
EDUCATORS

health. moves. minds.

Documented
Problem

Reasons to
Suggest Solution

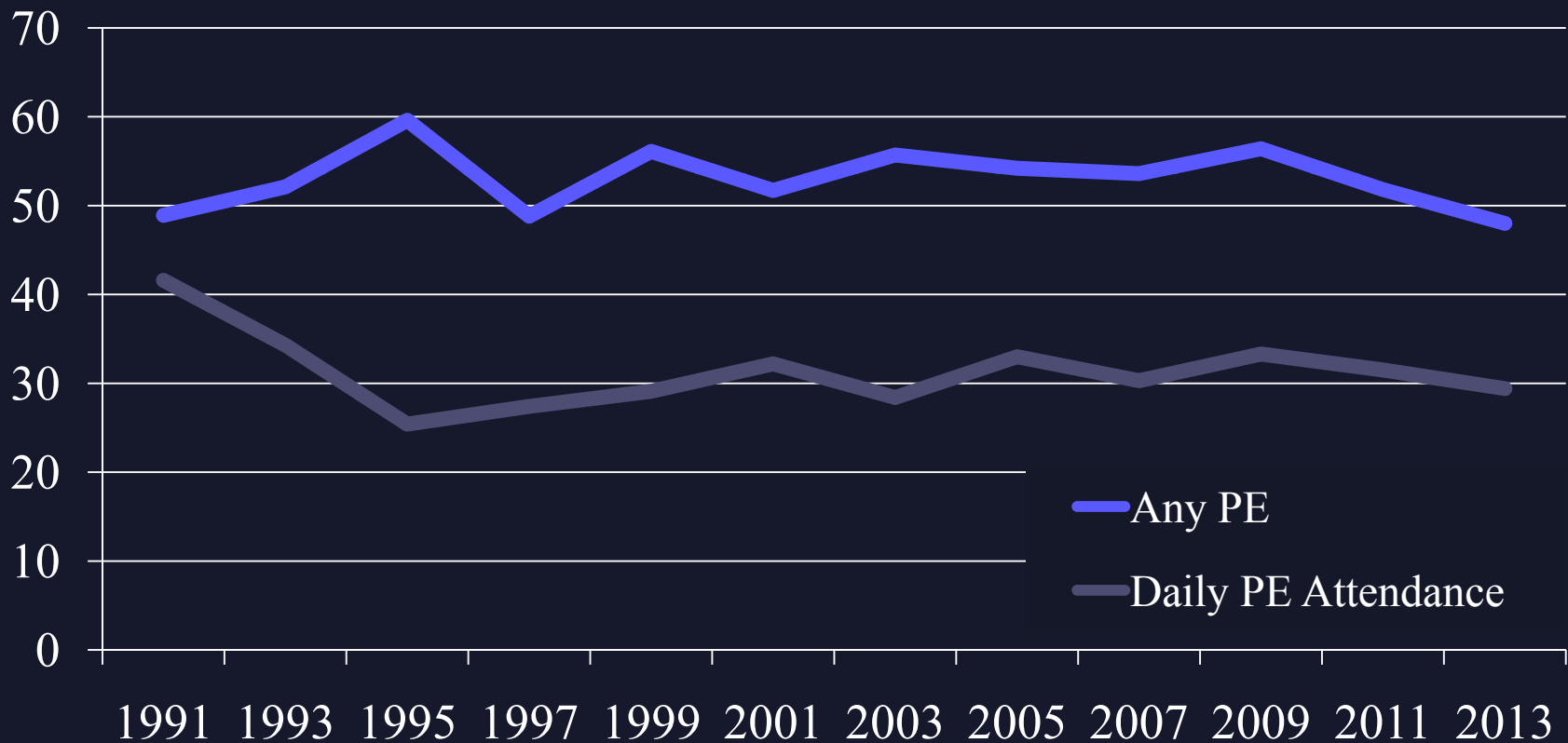
Indication of
Progress

DEMAND



High Quality Physical Education

Percentage of U.S. High School Students Attending Daily Physical Education - YRBS 1991-2013.



Documented Problem

Reasons to Suggest Solution

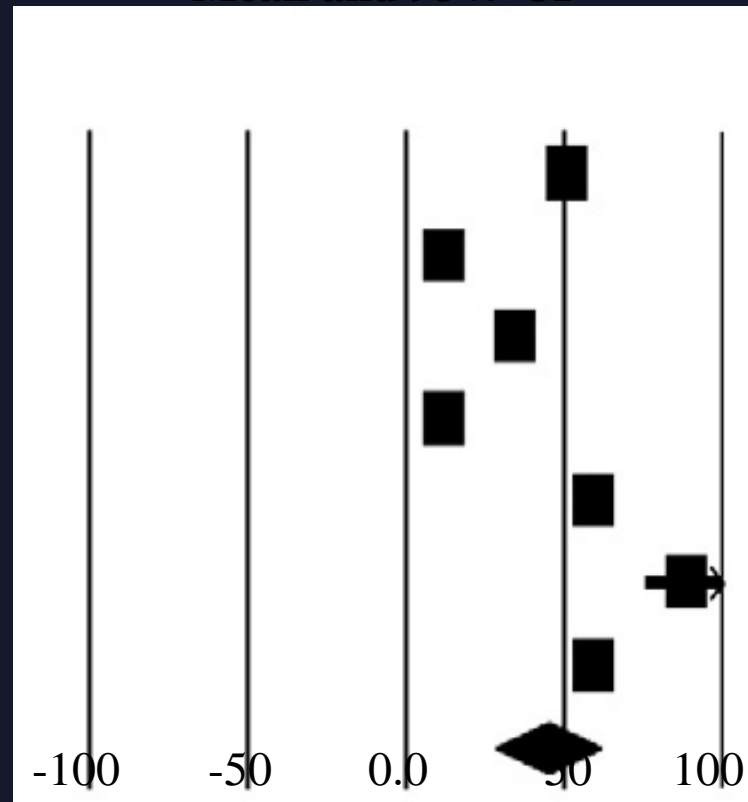
Indication of Progress

Clemin et al., In Development.

Percentage of elementary school PE lesson time spent in MVPA



Mean and 95% CI

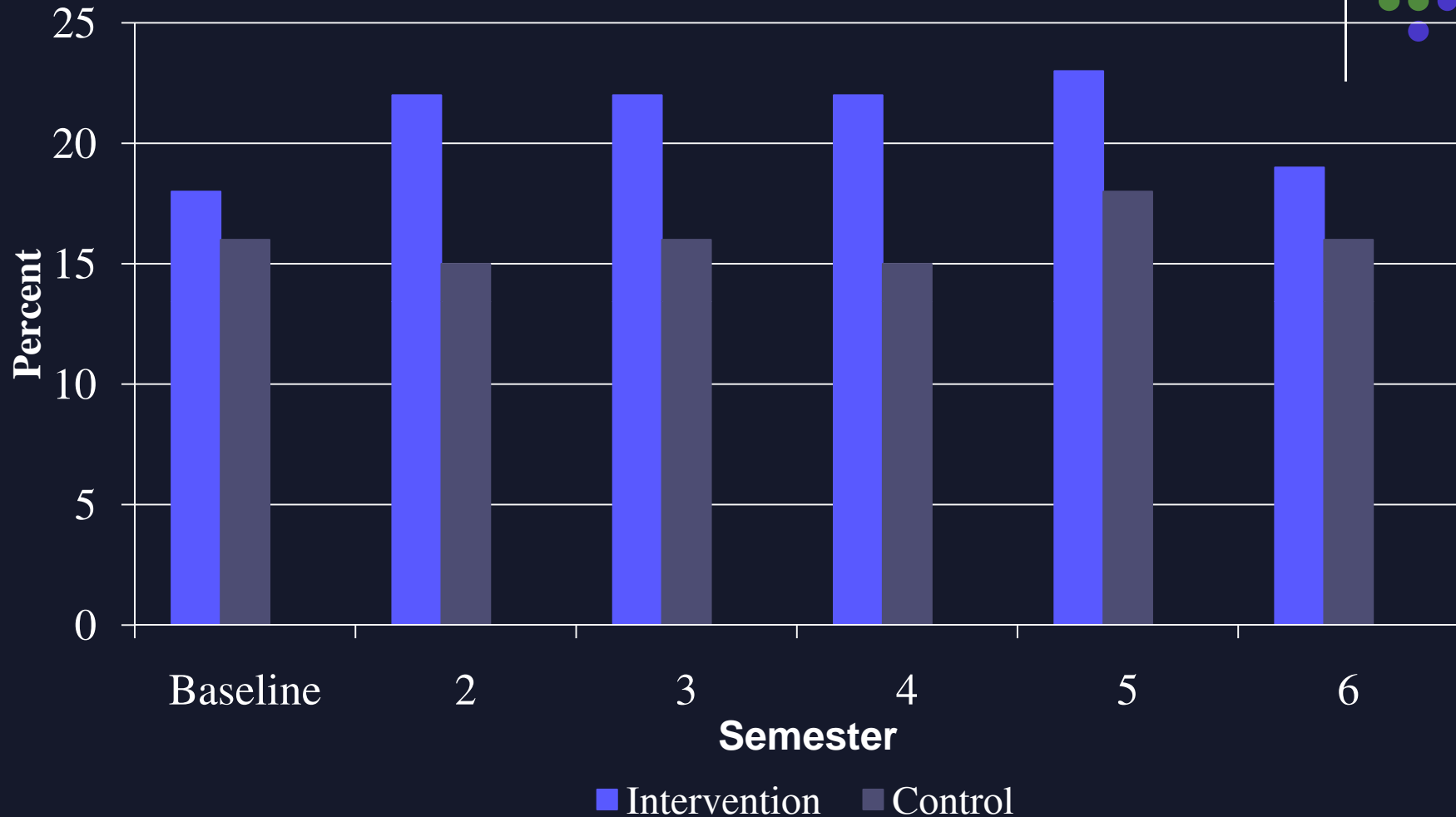


Documented Problem

Reasons to Suggest Solution

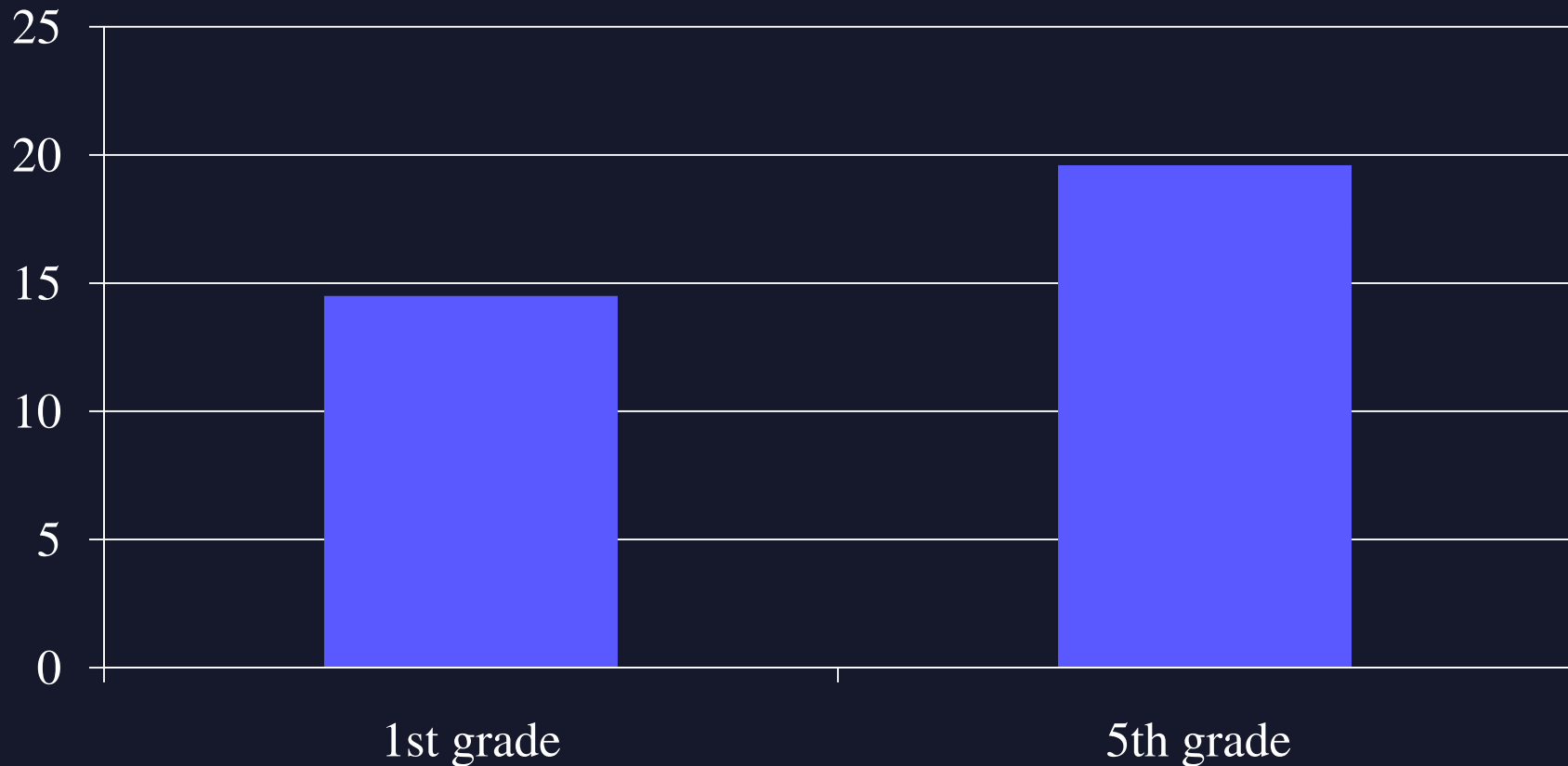
Indication of Progress

CATCH - VPA-% of Lesson



Luepker et al. *JAMA*. 1996.

Percent Contribution of PE to School Day MVPA

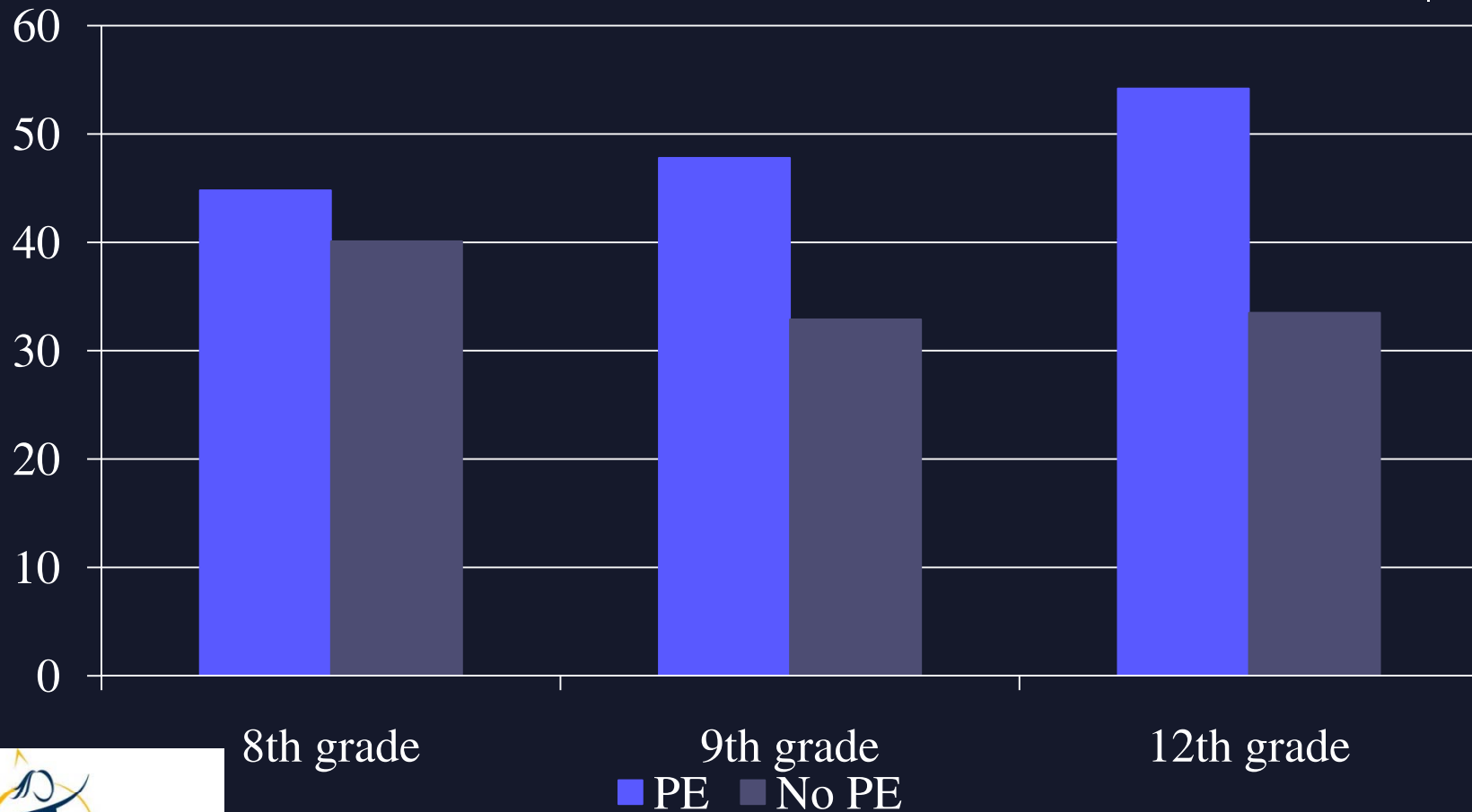


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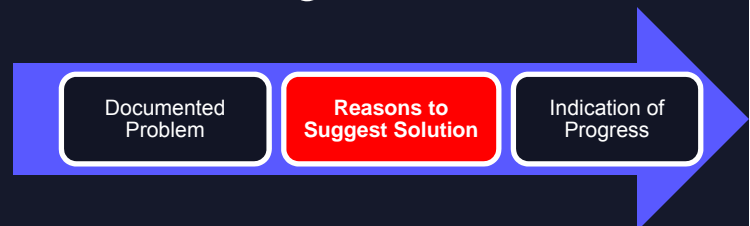
Reasons to Suggest Solution

Indication of Progress

Percentage of girls with ≥ 1 block of vigorous physical activity by PE enrollment



Pate et al. *RQES*. 2007.



Every Student Succeeds Act, S. 1177



“Well Rounded Education - The term ‘well-rounded education’ means courses, activities, and programming in subjects such as English, reading or language arts, writing, science, technology, engineering, mathematics, foreign languages, civics and government, economics, arts, history, geography, computer science, music, career and technical education, health, **physical education**, and any other subject, as determined by the State or local educational agency, with the purpose of providing all students access to an enriched curriculum and educational experience.’”

Documented
Problem

Reasons to
Suggest Solution

Indication of
Progress

United Nations Educational, Scientific and Cultural Organization



Quality Physical Education Guidelines

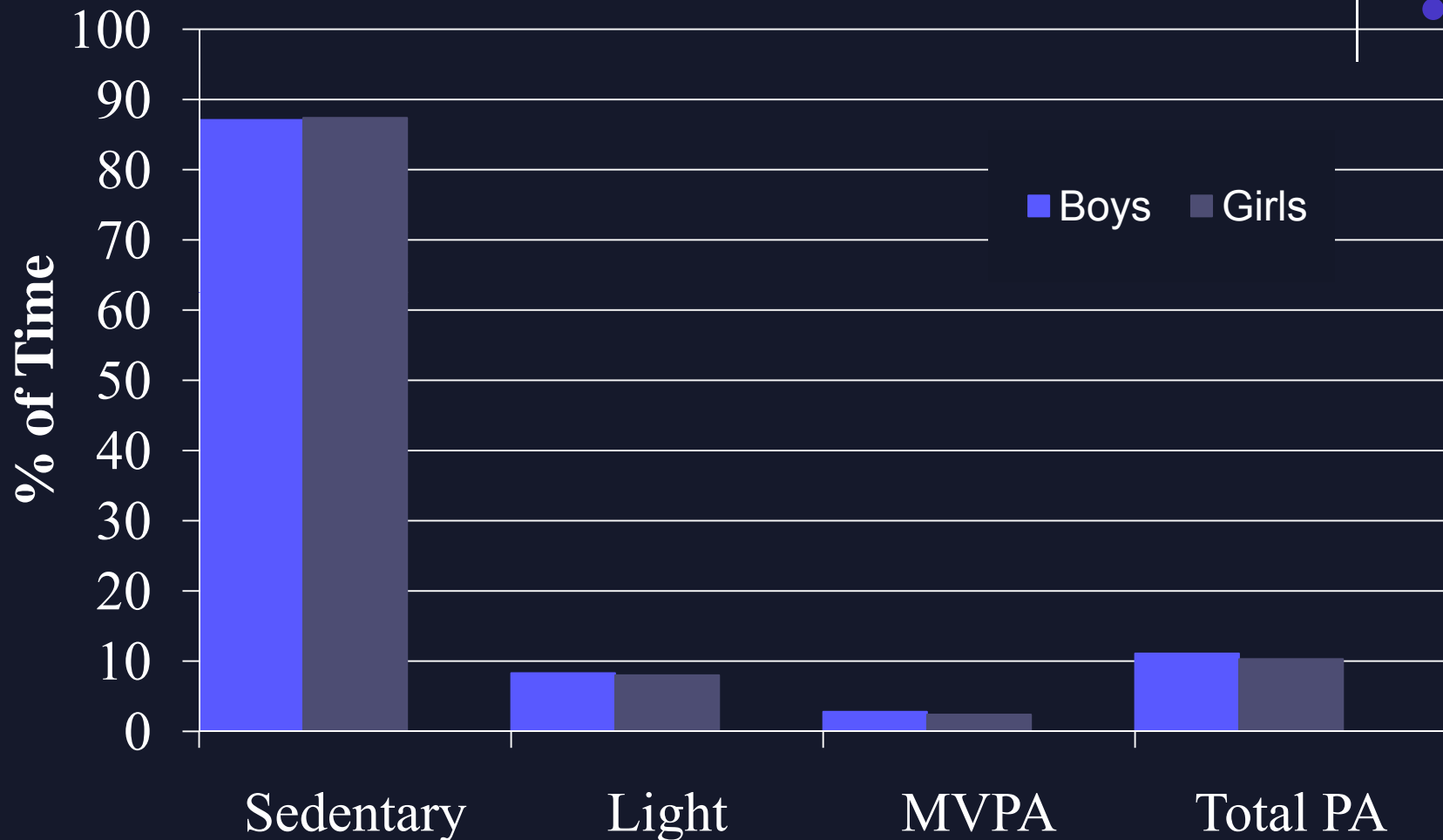
- Developed to inform the provision of quality physical education across the full age range from early years through secondary education

REQUIRE



Physical Activity in Early Childcare and Education

Directly observed physical activity levels of preschoolers



Documented Problem

Reasons to Suggest Solution

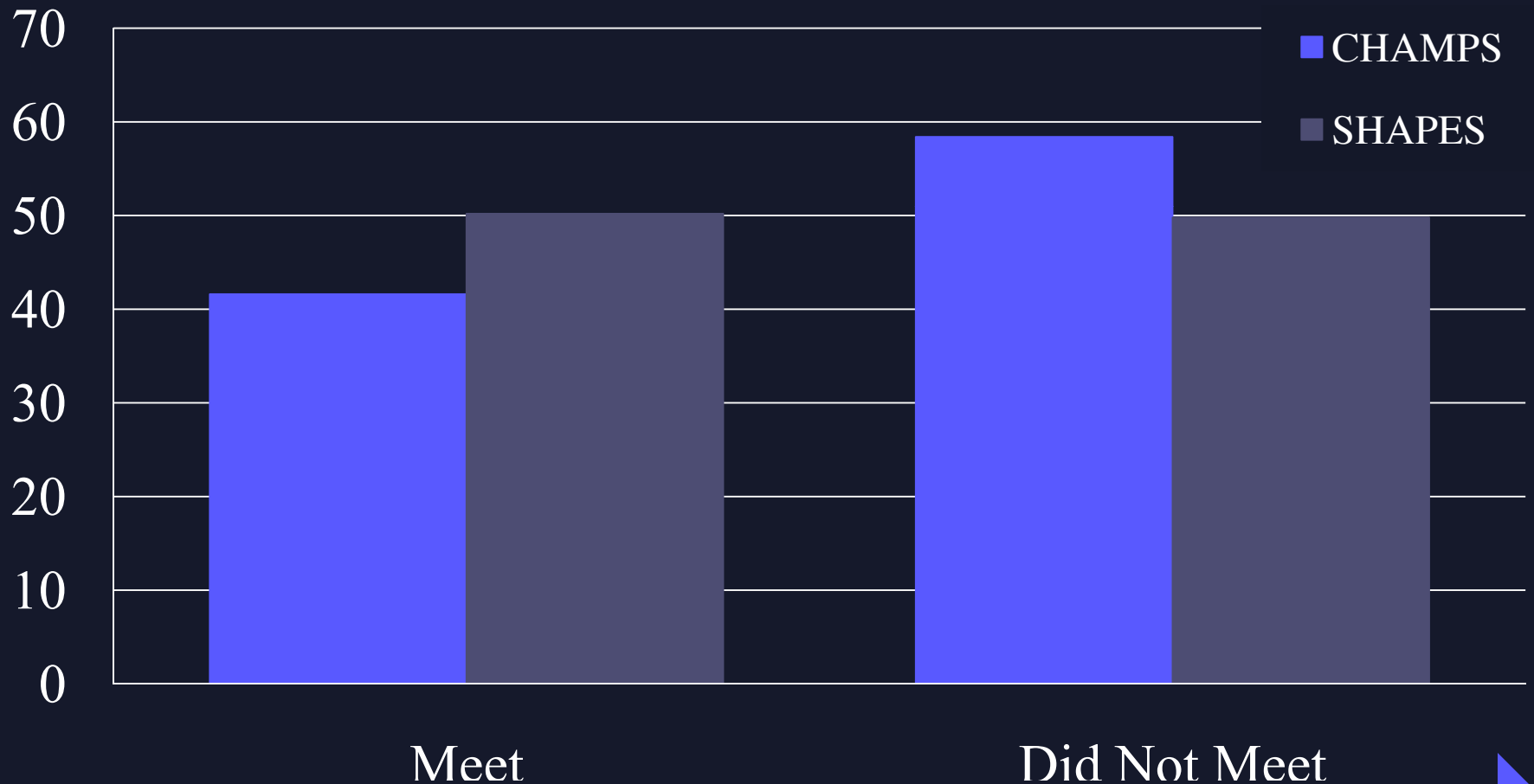
Indication of Progress

Physical Activity Guidelines for Young Children

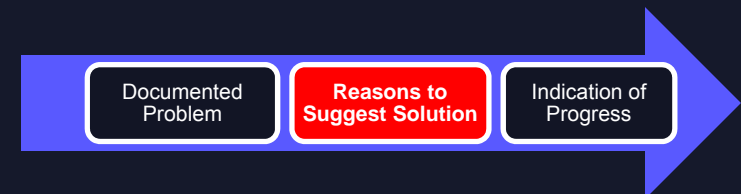
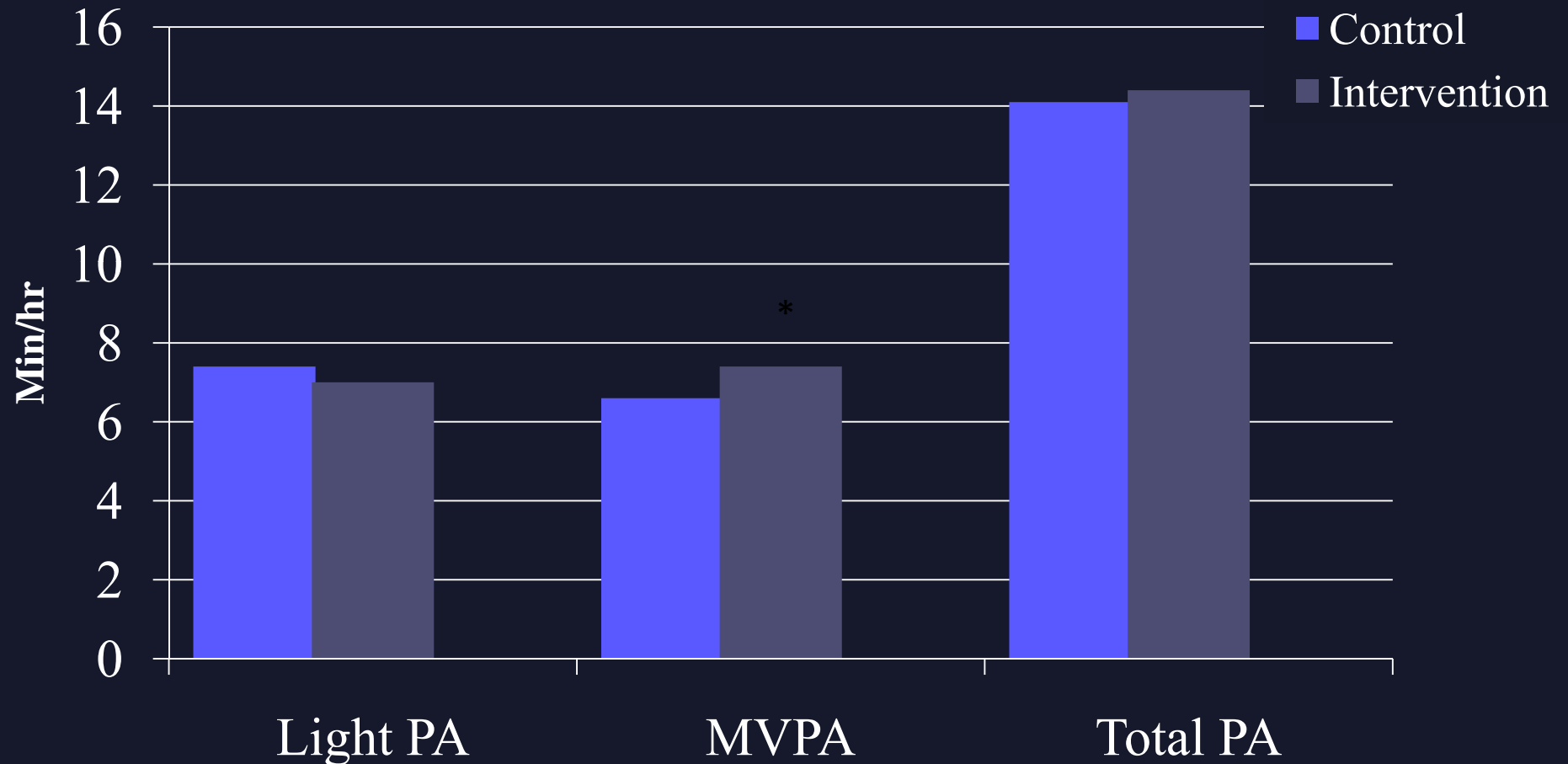


- 3 hours per day (120 min) of total physical activity
 - United States, Institute of Medicine, 2011
 - Canada, Canadian Society of Exercise Physiology, 2012
 - Australia – Dept. of Health and Ageing, 2010
 - UK – Dept. of Health, Physical Activity, Health Improvement and Protection, 2011

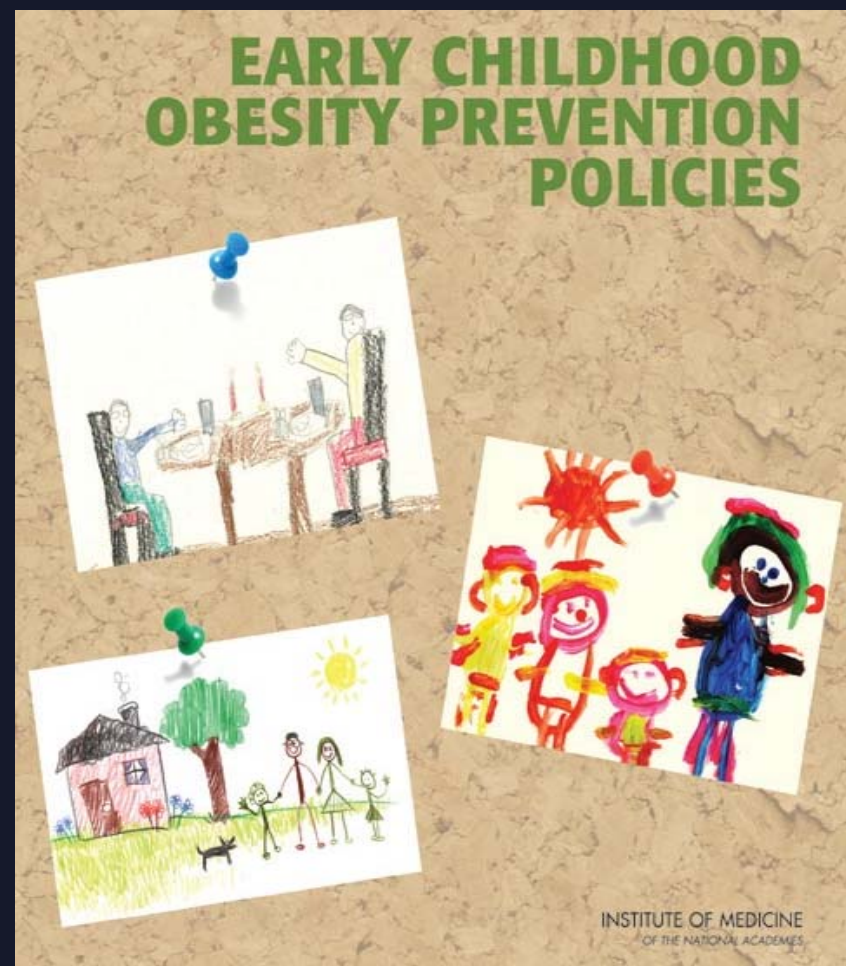
Prevalence of Compliance with a New Physical Activity Guidelines for Preschoolers



An RCT to increase physical activity in 4-year-olds in preschool



Institute of Medicine Early Childhood Obesity Prevention Policies, 2011



Documented
Problem

Reasons to
Suggest Solution

Indication of
Progress

ABC Grow Healthy (South Carolina) Physical Activity Standards for 3- to 5- year olds



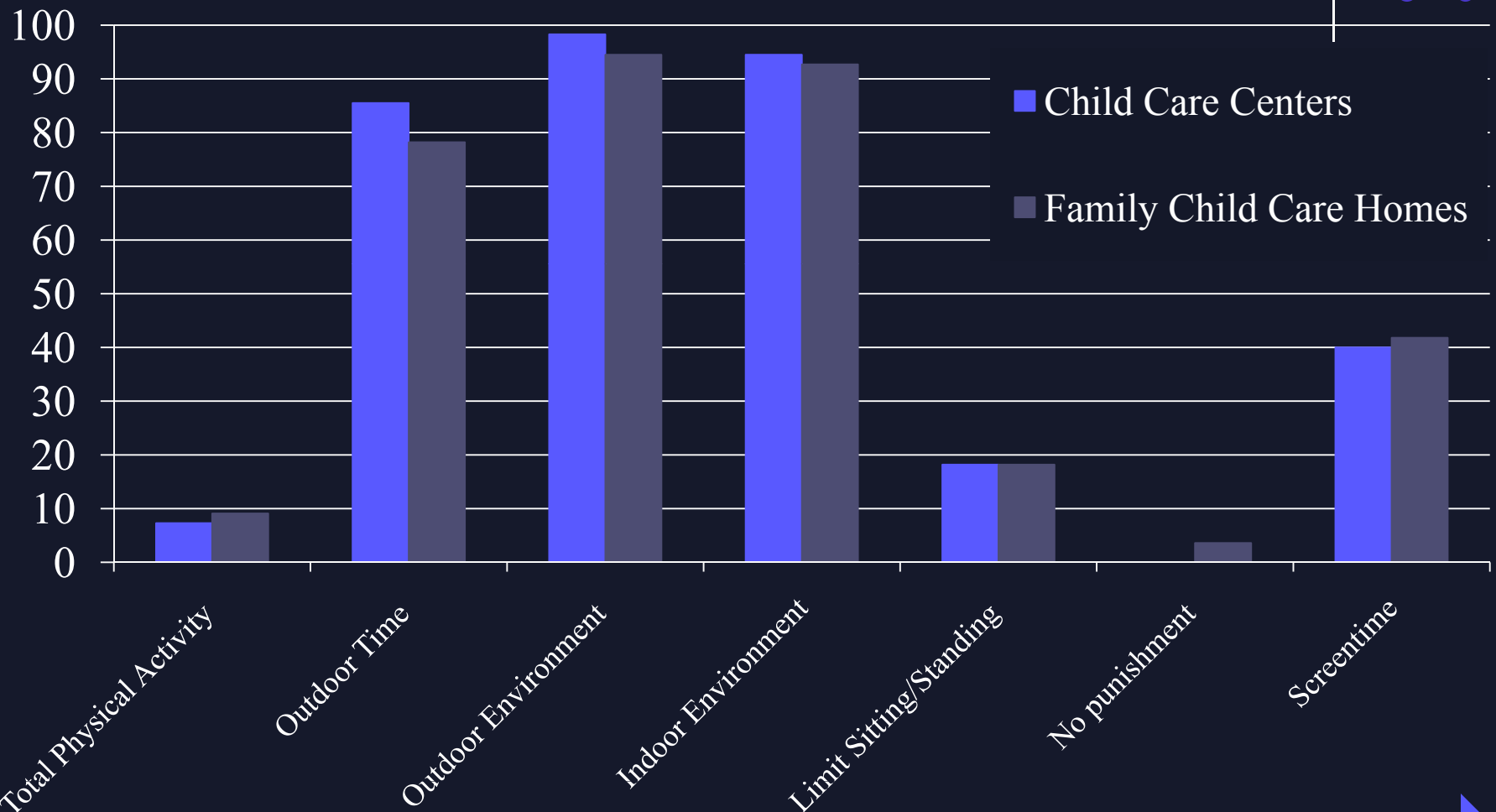
- Offer *teacher planned physical* activities of 5-10 min ≥ 2 times a day
- *Do not withhold PA* as punishment & do not use PA as punishment
- Provide *daily outdoor play* for all children ages 1-5, weather permitting
- Provide a variety of *play materials* that promote PA indoors & outdoors
- Provide open *outdoor play space* that allows for active play

Documented
Problem

Reasons to
Suggest Solution

Indication of
Progress

Percentage of states with early child care physical activity policies

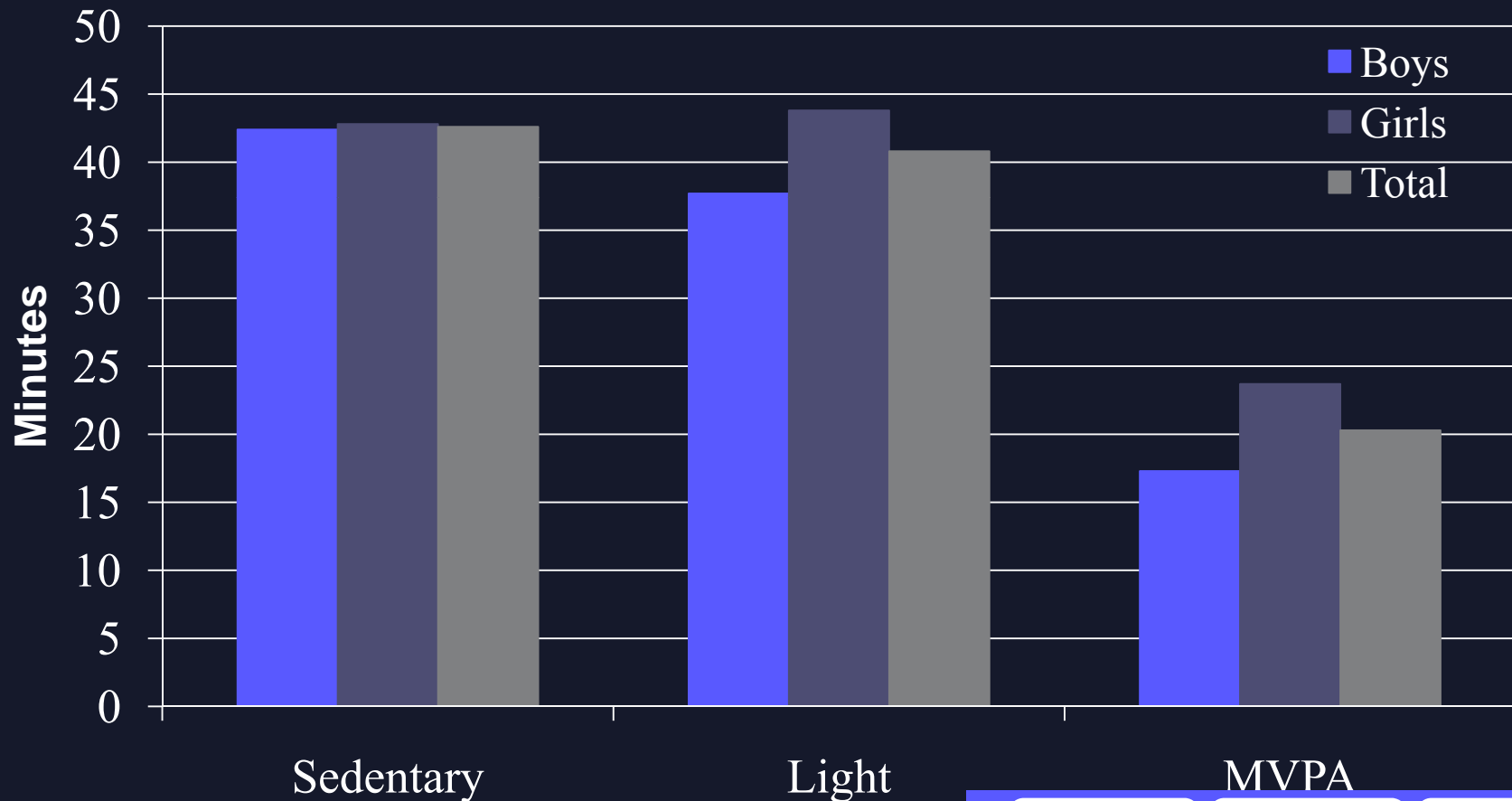


REQUIRE



Physical Activity in Afterschool Programs

Physical activity levels among children attending after-school programs



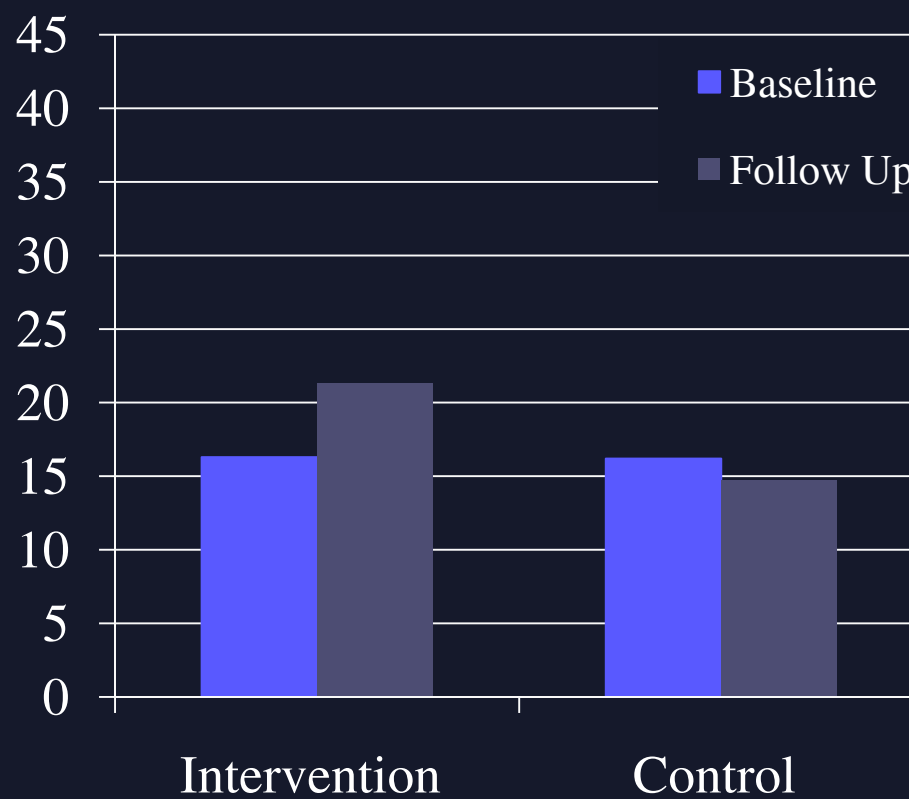
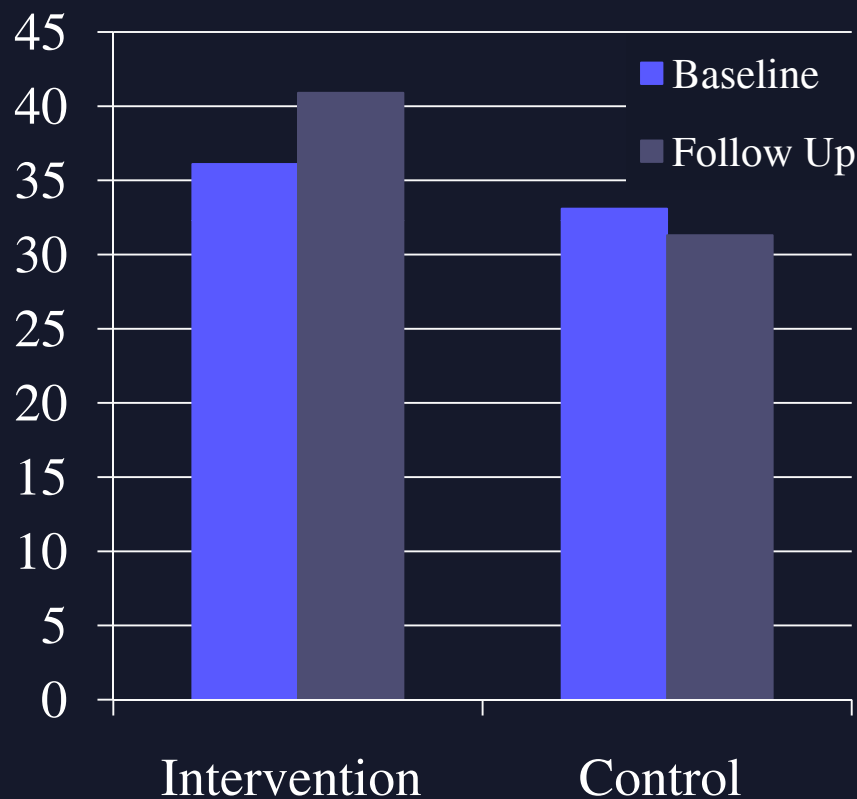
Trost et al., *Med Sci Sports Exerc.* 2008.

Percent of children who achieved the 30 min/day of MVPA following an after-school intervention



Boys

Girls



YMCA After-School Physical Activity Policies



- Provide children and youth with at least 30 minutes of physical activity
- Include a mixture of moderate and vigorous activity and bone/muscle strengthening activities
- Play will take place outdoors whenever possible.



Documented
Problem

Reasons to
Suggest Solution

Indication of
Progress

Boys and Girls Club



TRIPLE PLAY

a game plan for the mind, body and soul

Documented
Problem

Reasons to
Suggest Solution

Indication of
Progress

CREATE



**Equity in
Community Resources**

Inequality in the built environment



- Higher-SES block groups had greater odds of having > 1 PA facility
- Low-SES and minority block groups were less likely to have PA facilities
- Increasing number of PA facilities was associated with decreased overweight and increased odds of achieving > 5 bouts/week of MVPA

Documented
Problem

Reasons to
Suggest Solution

Indication of
Progress



- Urban Park Movement to revitalize the Los Angeles River - 2009
 - The City Project provided policy and legal advocacy to help create the 40-acre Rio de Los Angeles State Park

Documented
Problem

Reasons to
Suggest Solution

Indication of
Progress



The
City
Project



- United Teachers of LA
 - City Project filed complaints under civil rights and education laws
 - Board of Education passed resolution to enforce PE laws

Documented
Problem

Reasons to
Suggest Solution

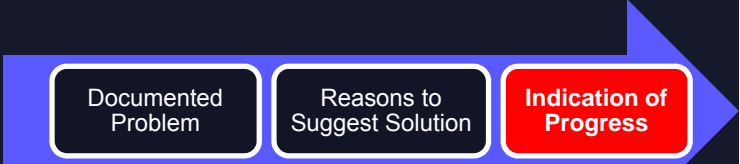
Indication of
Progress

84.6% of US youth live in neighborhoods with at least one park or playground area



Summary of Report Card Indicators & Grades

GRADE	INDICATOR
D- ★★★★★	OVERALL PHYSICAL ACTIVITY
D ★★★★★	SEDENTARY BEHAVIORS
F ★★★★★	ACTIVE TRANSPORTATION
C- ★★★★★	ORGANIZED SPORT PARTICIPATION
INC ★★★★★	ACTIVE PLAY
INC ★★★★★	HEALTH-RELATED FITNESS
INC ★★★★★	FAMILY & PEERS
C- ★★★★★	SCHOOL
B- ★★★★★	COMMUNITY & THE BUILT ENVIRONMENT
INC ★★★★★	GOVERNMENT STRATEGIES & INVESTMENTS

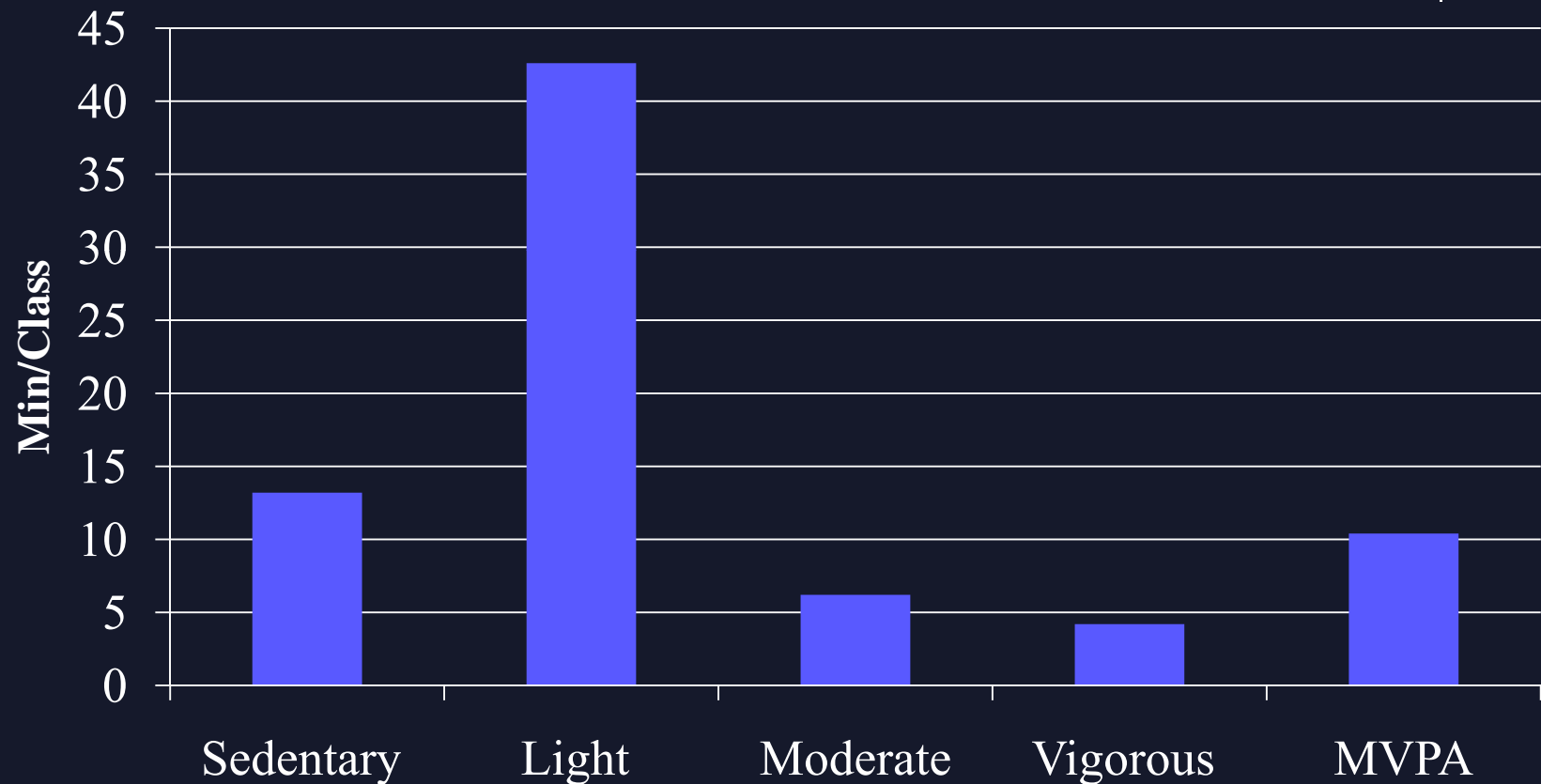


ACTIVATE



Youth Sports Programs

Physical activity during dance class among adolescent girls

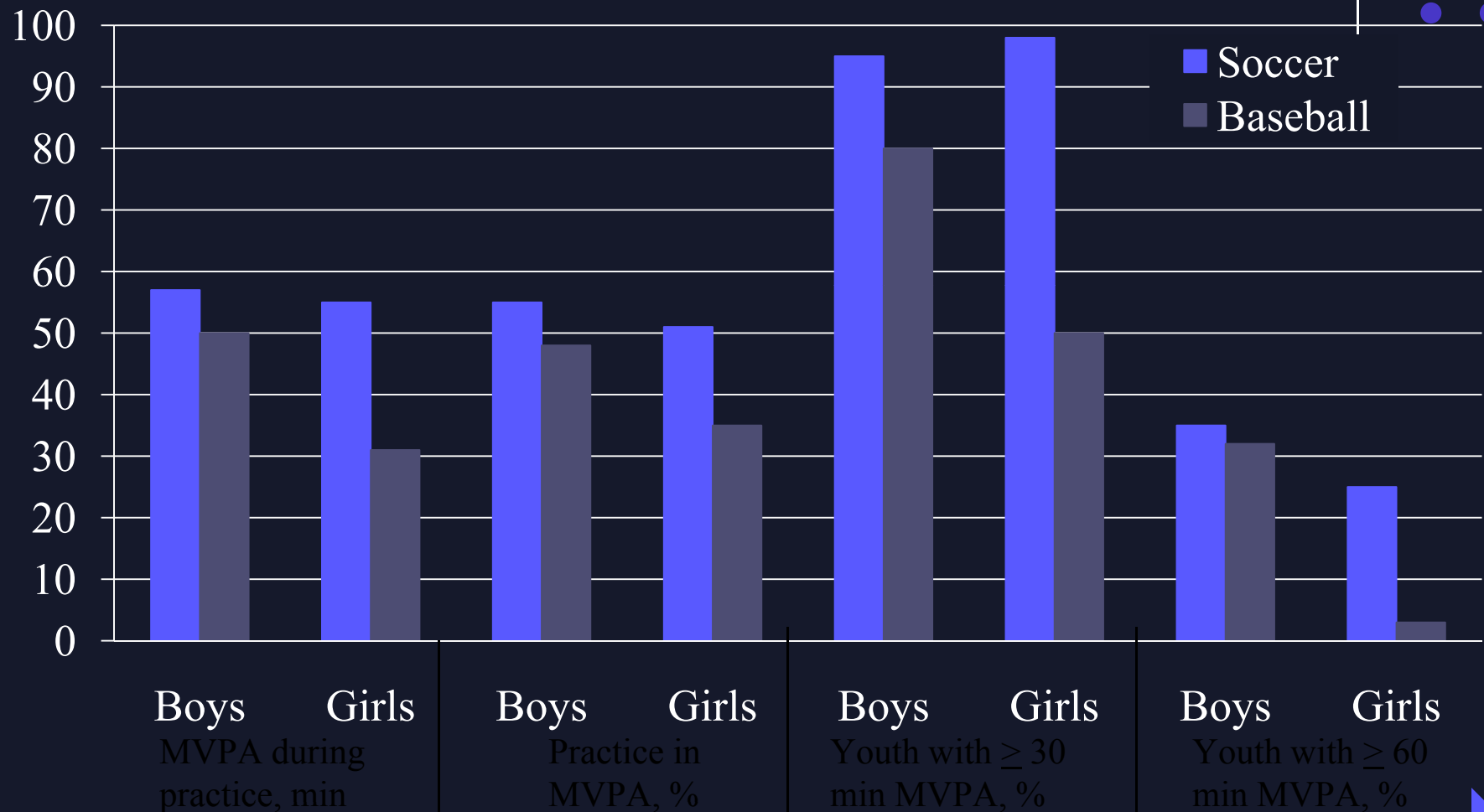


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Problem

Reasons to
Suggest Solution

Indication of
Progress

Physical activity during youth sport practices

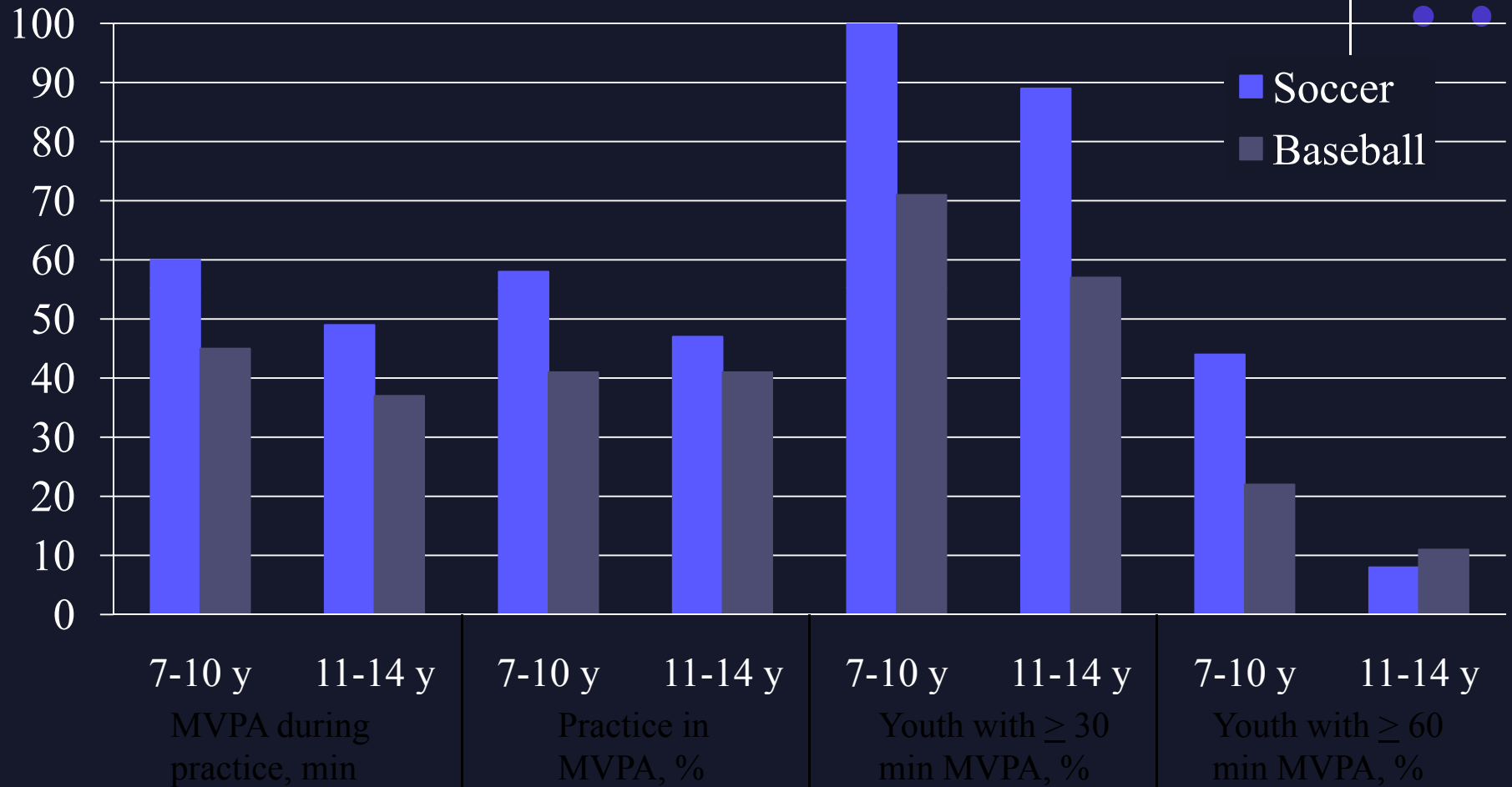


Documented Problem

Reasons to Suggest Solution

Indication of Progress

Physical activity during youth sport practices



Documented Problem

Reasons to Suggest Solution

Indication of Progress

Associations between sports team participation and US high school students meeting the physical activity guidelines



Sports participation (> 1 team in the past 12 months)

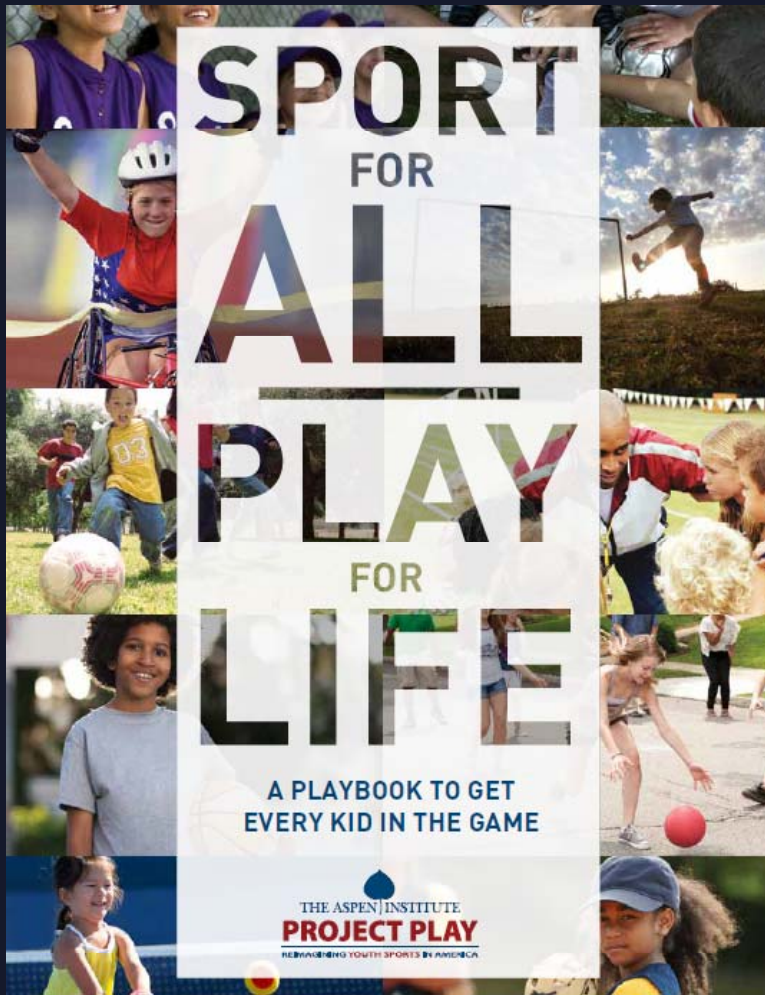
Meeting guidelines for...	OR
MVPA (≥ 60 min/day, 7 days/week)	1.74
VPA (≥ 20 min/day, ≥ 3 days/week)	1.92
Muscle-strengthening activities (≥ 3 days/week)	1.53

Documented
Problem

Reasons to
Suggest Solution

Indication of
Progress

The Aspen Institute - Project Play



Strategies specific to physical activity:

- Reintroduce free play
- Developmental appropriateness
- Think small
- Revitalize in-town leagues
- Ask kids what they want

Documented Problem

Reasons to Suggest Solution

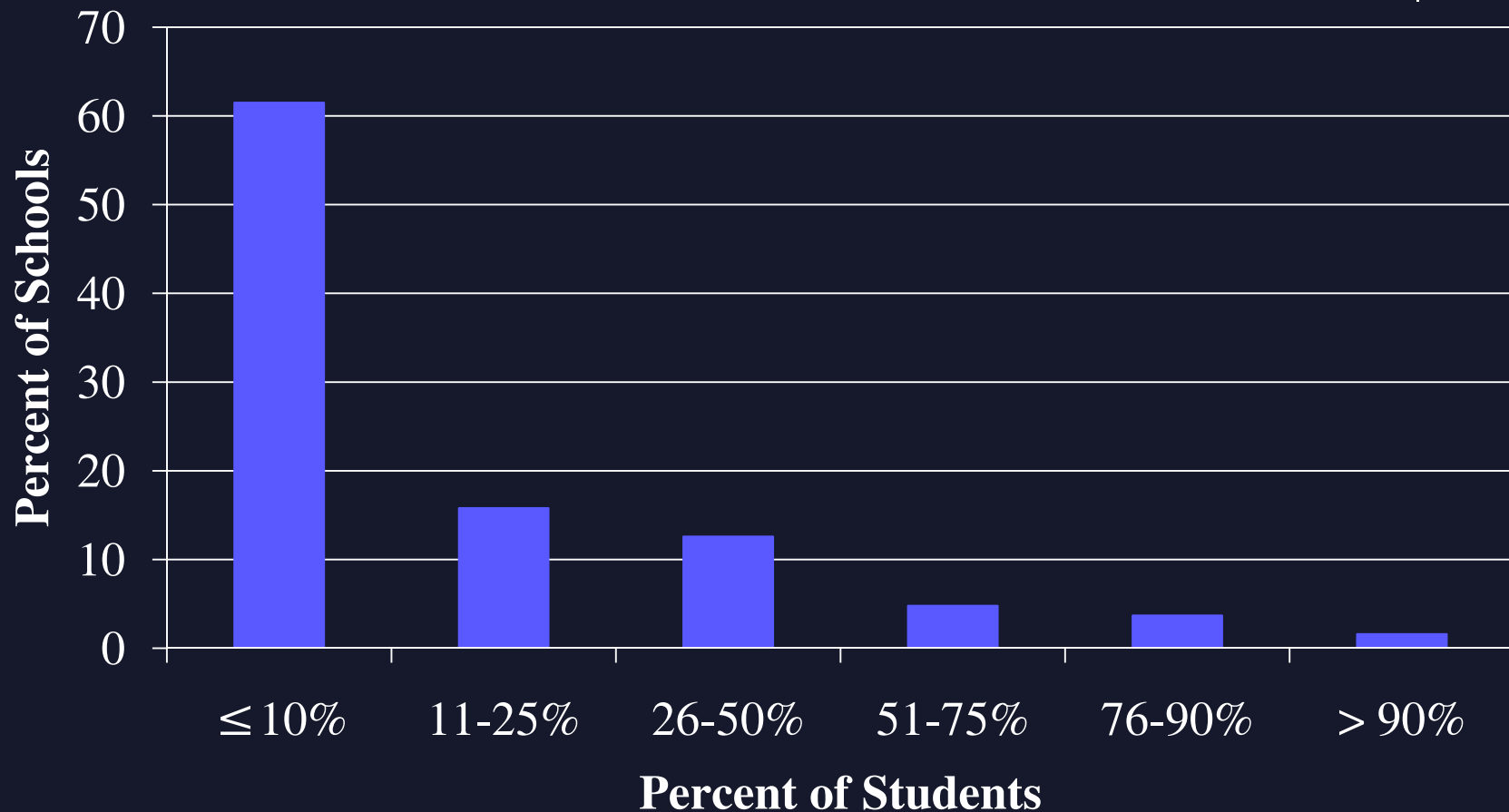
Indication of Progress

RE-NORMALIZE



**Active Transport
to School**

Percent of Students who Walk or Bike to School in Morning – SHPPS, 2014

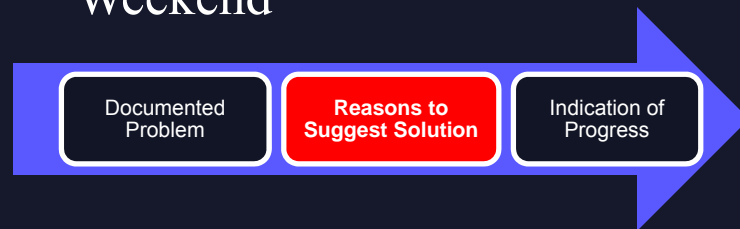
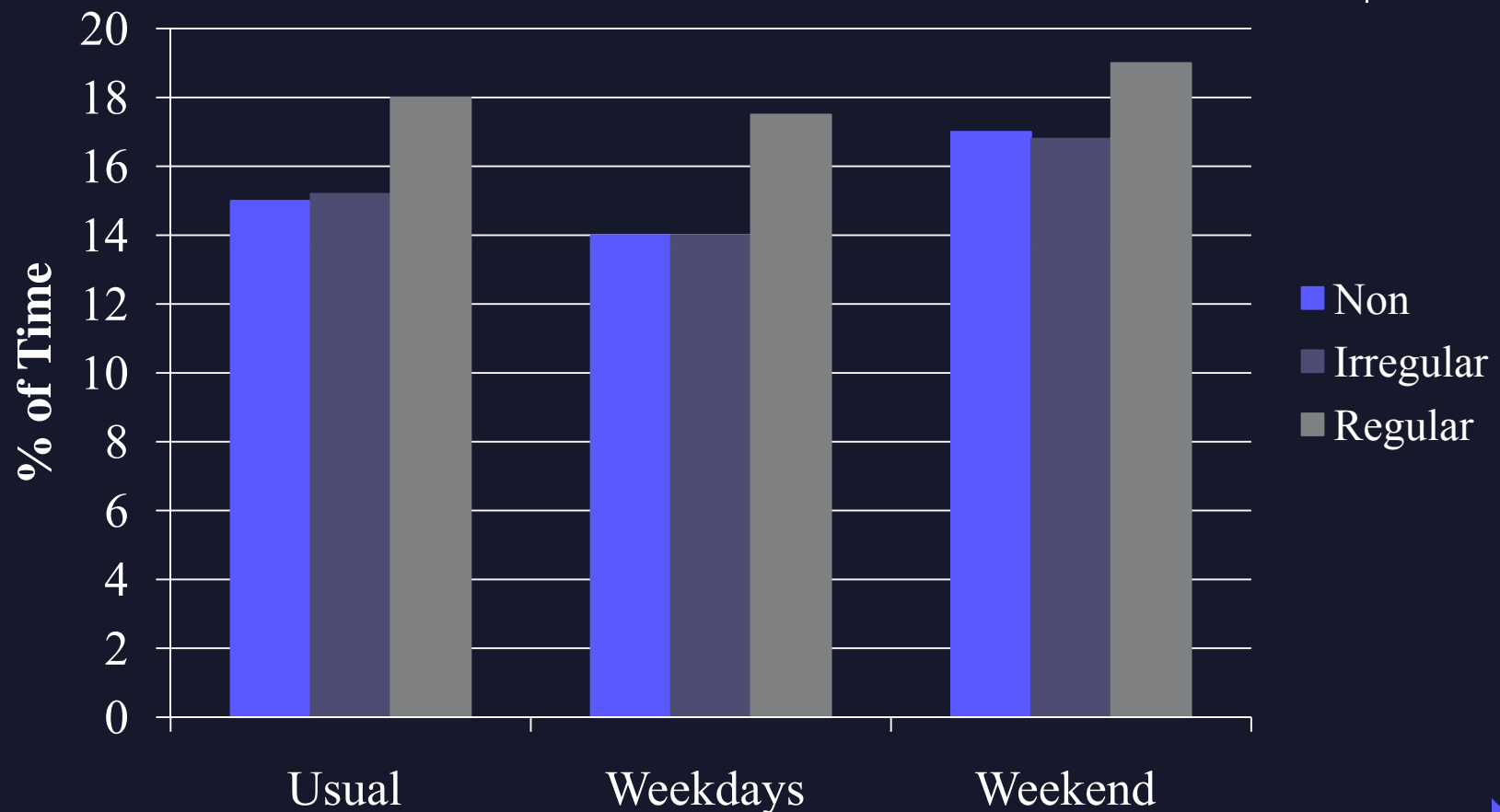


Documented Problem

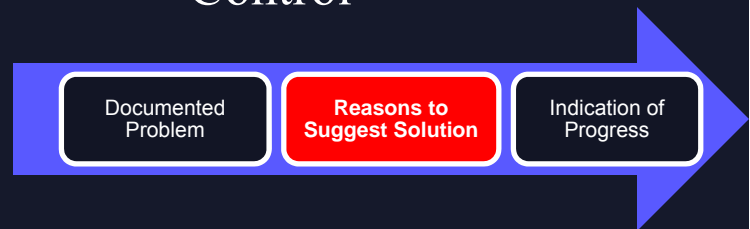
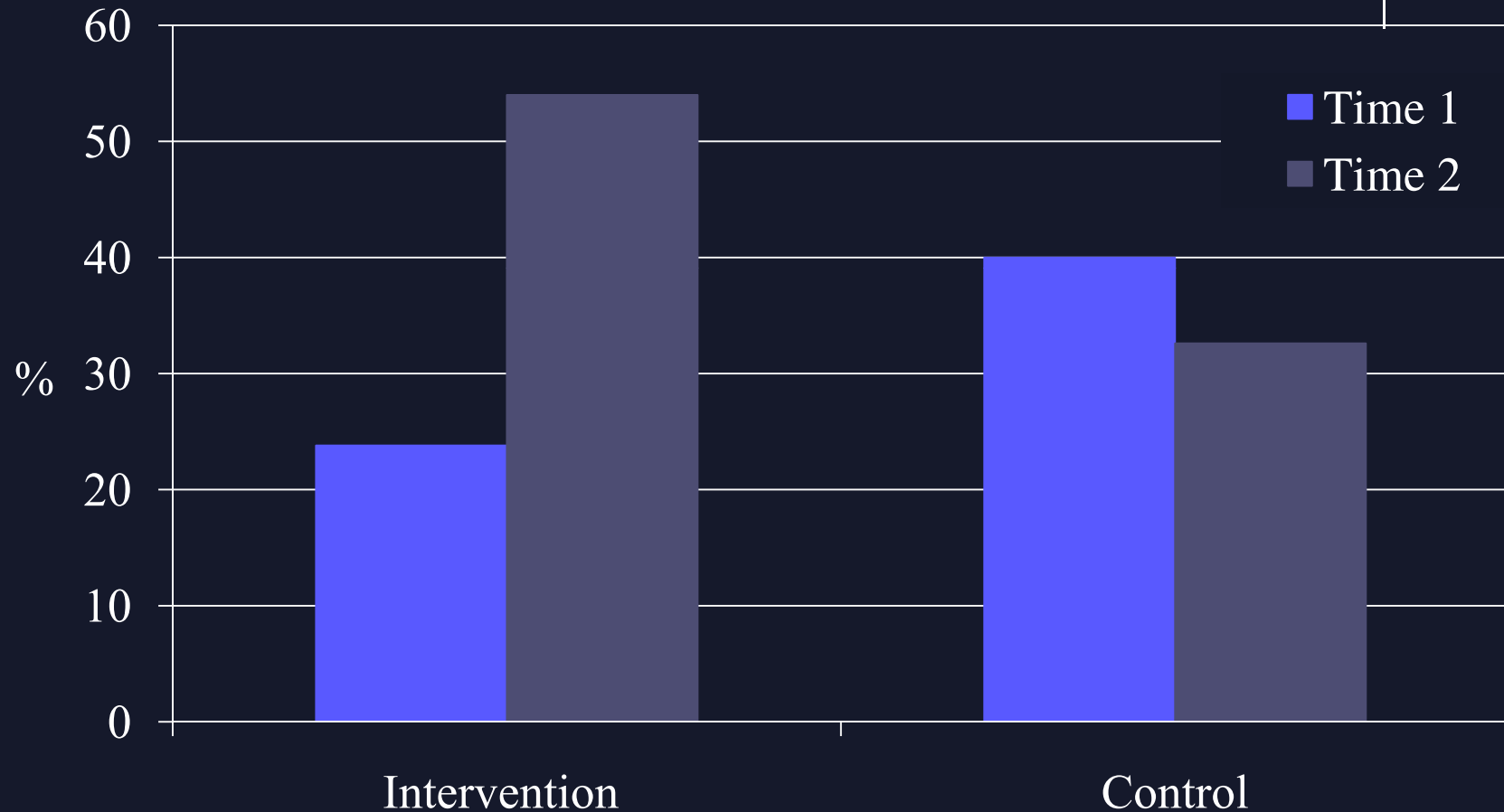
Reasons to Suggest Solution

Indication of Progress

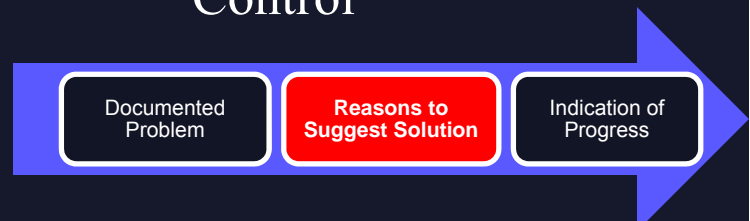
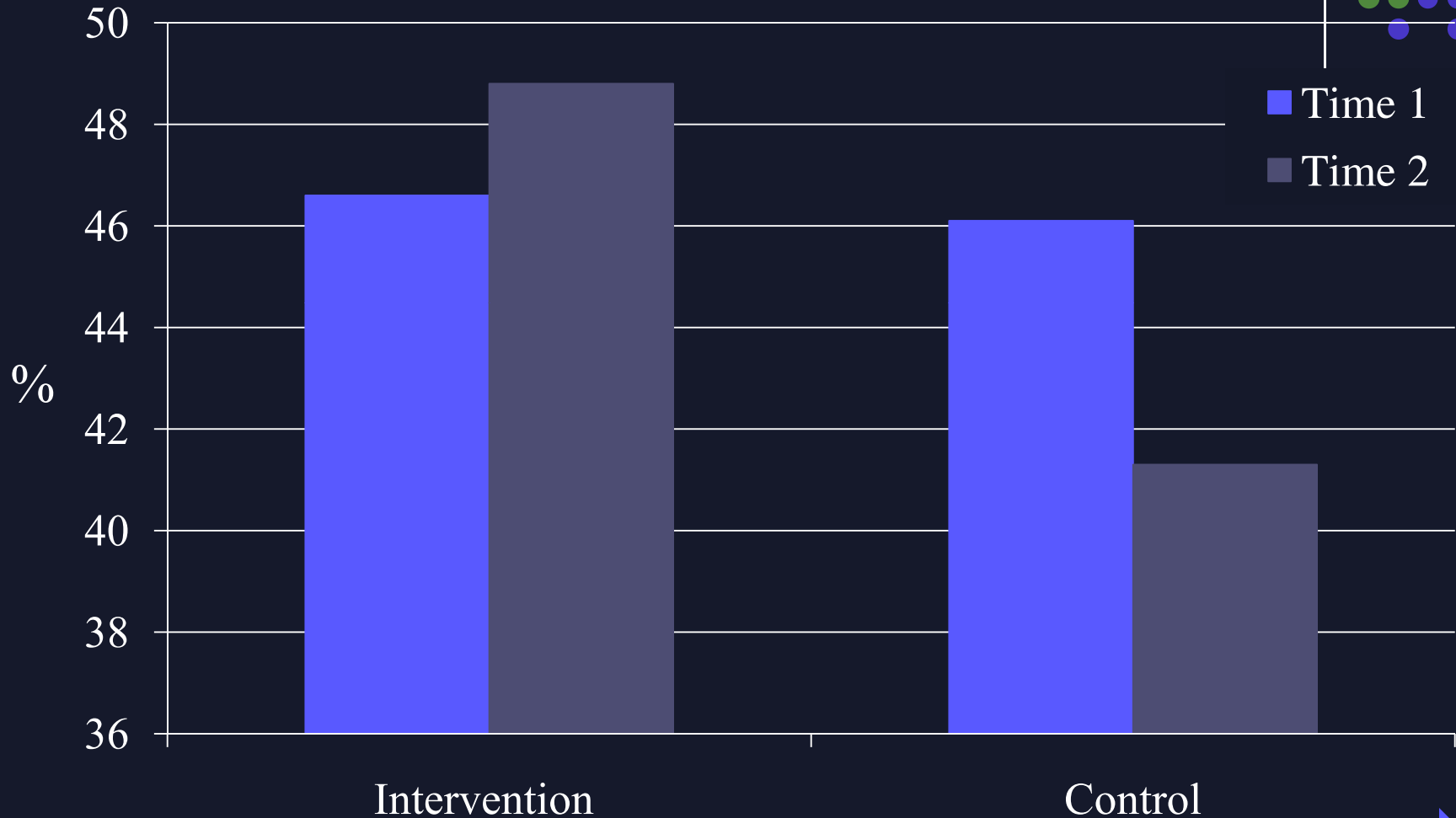
Percent of time in MVPA for children who walked/biked to school versus those who did not



Percent of children who actively commuted to school

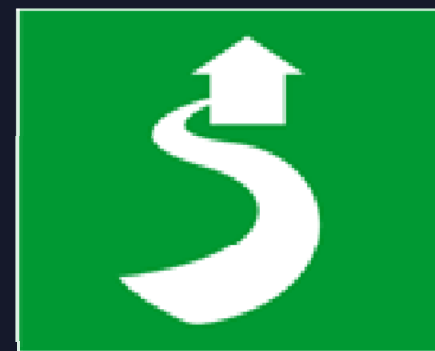


MVPA for children who actively commuted to school



SafeRoutes

National Center for Safe Routes to School



Documented
Problem

Reasons to
Suggest Solution

Indication of
Progress

http://saferoutesinfo.org/sites/default/files/VisionZero_final.pdf



INSTITUTIONALIZE

**Clinic-Based
Physical Activity
Assessment and
Counseling**

Barriers to Physician Counseling



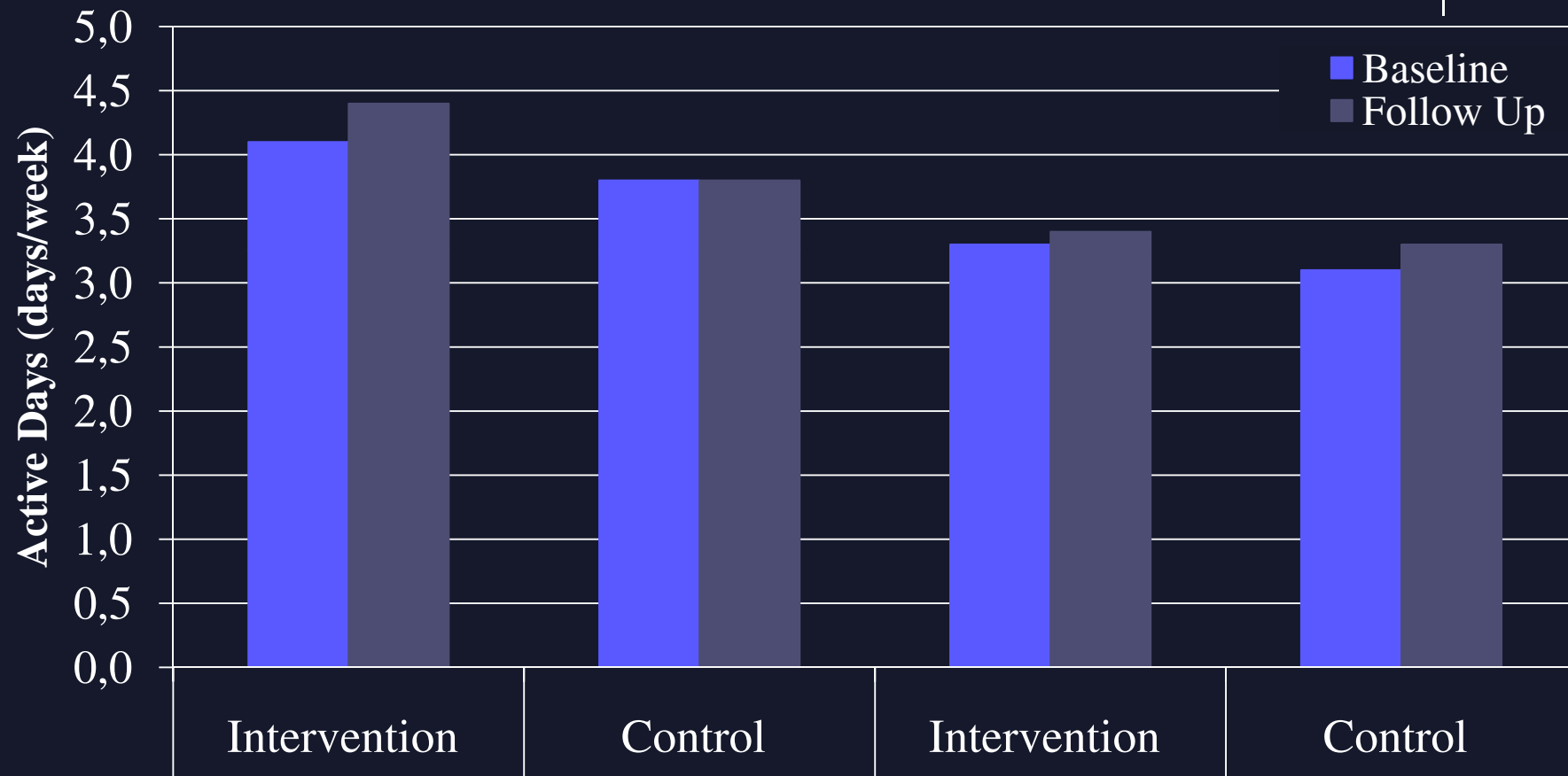
- 80% of US children and adolescents visit a primary care physician in a given year
- Barriers to physical activity counseling include:
 - Lack of time/payment
 - Lack of office staff support
 - Lack of systems for follow-up
 - Lack of essential knowledge and skills related to physical activity counseling

Documented
Problem

Reasons to
Suggest Solution

Indication of
Progress

Changes in active days/week following primary care physical activity intervention



Documented Problem

Reasons to Suggest Solution

Indication of Progress



Your Prescription for Health

Exercise is Medicine[®]

Documented
Problem

Reasons to
Suggest Solution

Indication of
Progress



Intermountain[®] Healthcare



 **Live Well**

Rx to Live Well



**A PRESCRIPTION FOR KIDS,
TEENS, AND FAMILIES**

To reach and keep a healthy weight, build better habits together. The 8 habits prescribed below are the best place to start. Scientific studies show that these have the biggest impact on your weight, your health, and your outlook.

This prescription is for (name): _____ Age: _____ Date: _____

ACTIVITY

1. MOVE MORE (aim for 60 minutes every day)

- Daily activity:** _____ minutes _____ times a week
(breathing harder than normal, heart beating faster than normal)
- Walk or bike to school: _____
- Physical education class at school: _____
- Sports or group exercise: _____
- Play outside after school: _____
- Other activity: _____

2. SIT LESS — AND LIMIT SCREEN TIME

- Less than** _____ **hours a day** (aim for less than 1 or 2 hours)

OTHER RECOMMENDATIONS / GOALS:

BUILD



Activity-Friendly Home Environments

Prevalence of adult support for physical activity among US high school students



Adult support for physical activity (>1 time/week)

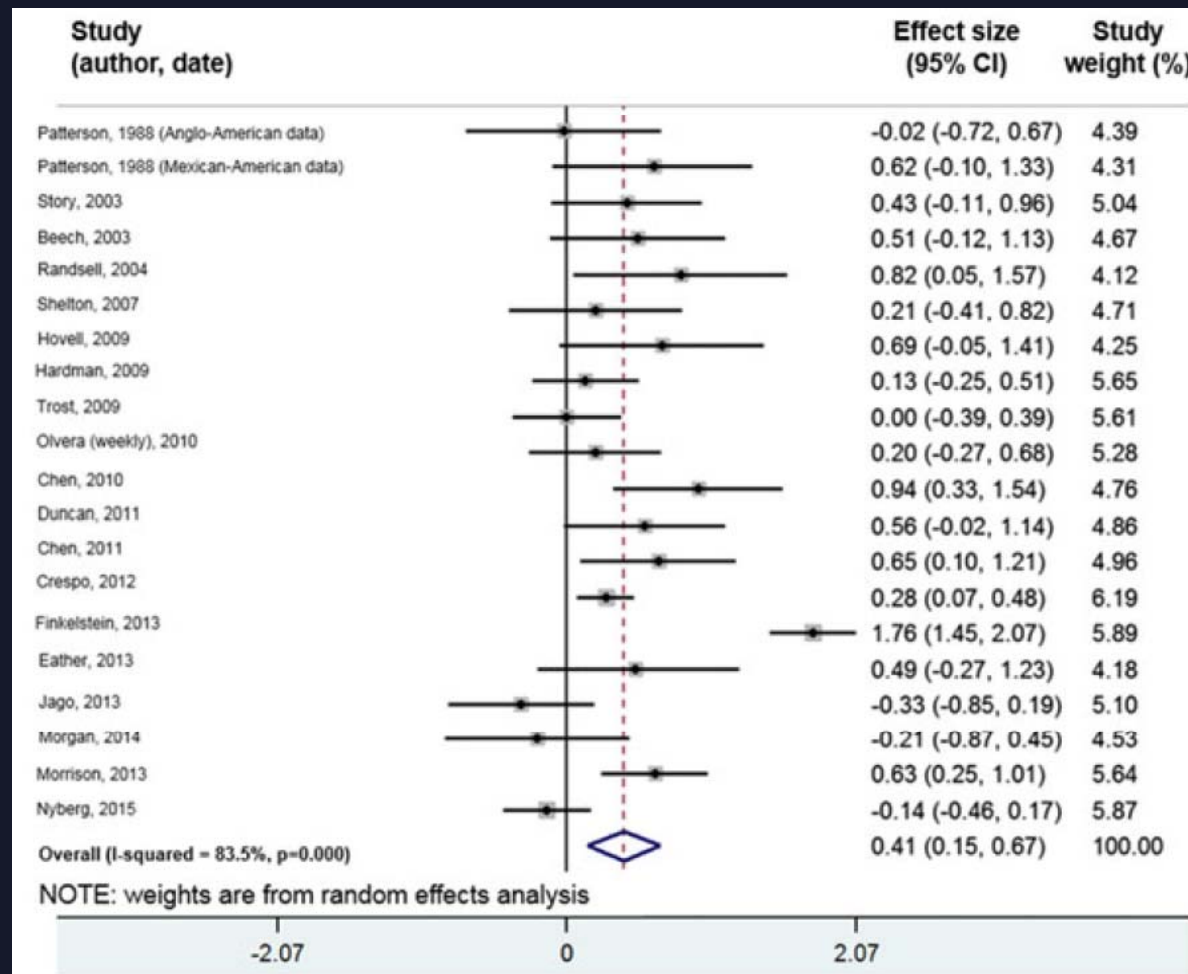
How often does the adult in the household...	%
Encourage the adolescent to participate in physical activity or play sports?	73.0%
Do physical activity/plays sports with the adolescent?	48.5%
Provide transportation to physical activity or sports adolescent participates in?	67.8%
Watch the adolescent do physical activity/play sports	61.8%

Documented Problem

Reasons to Suggest Solution

Indication of Progress

Effect of family-based interventions on children's physical activity



Documented
Problem

Reasons to
Suggest Solution

Indication of
Progress

YMCA's Healthy Family Home



FOR YOUTH DEVELOPMENT®
FOR HEALTHY LIVING
FOR SOCIAL RESPONSIBILITY

ABOUT US

OUR FOCUS

BE INVOLVED

NEWS & MEDIA

CAREER OPPORTUNITIES

GIVE

Search

GO

HOME > OUR FOCUS > HEALTHY LIVING > HEALTHY FAMILY HOME > PLAY EVERY DAY

PLAY EVERY DAY

You don't have to be an athlete or in love with exercise equipment to practice healthy living. In fact, when your family makes play a priority, you'll probably find yourself having so much fun that you won't even notice how active you are. Adding short periods of playful activity to your day helps provide you with the energy that you need to live a full and balanced life. It is also one of the keys to avoiding a variety of chronic conditions down the road, and what better way to spend time with your kids now?

📄 [DOWNLOAD THE QUICK START KIT \(.PDF\)](#)



Families at Play for an Hour a Day

Playful movement is one of the keys to a healthy family home. It doesn't matter what you choose to do. As long as your arms and legs are moving, it's good for you. To get 60 minutes of activity throughout your day just add ten minutes here and fifteen minutes there. It adds up and it all counts, so get playing!

FIND YOUR Y

City, State, or Zip

GO

HEALTHY FAMILY HOME STARTER KIT

[READ MORE](#)

HEALTHY FAMILY HOME NEWSLETTER

[READ MORE](#)

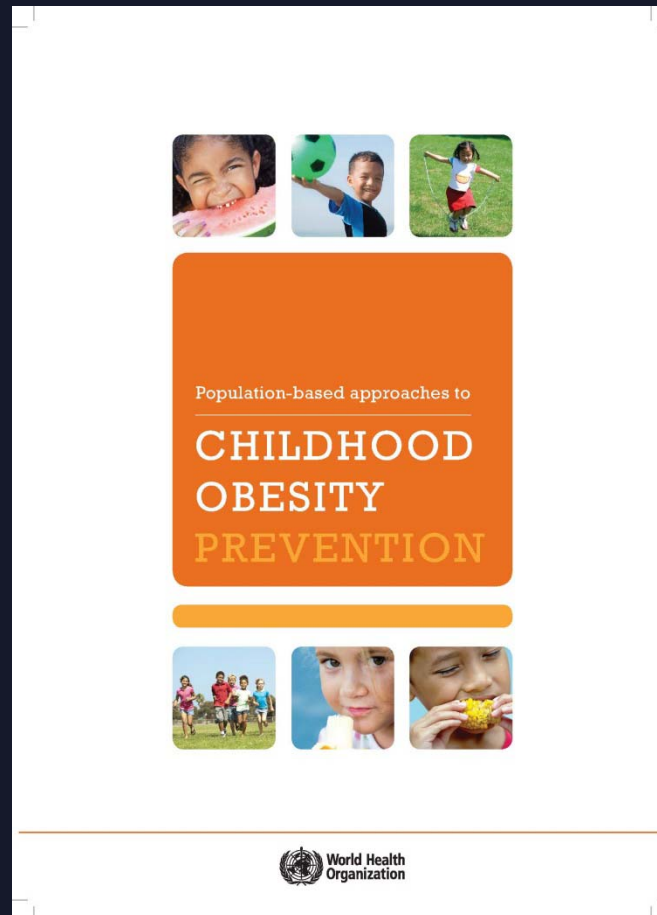
Documented Problem

Reasons to Suggest Solution

Indication of Progress

<http://ymca.net/healthy-family-home/play-every-day.html>

WHO Population-based Approaches to Childhood Obesity Prevention



WHO Population-based Approaches to Childhood Obesity Prevention



POPULATION-BASED APPROACHES TO CHILDHOOD OBESITY PREVENTION		
Structures to support policies & interventions	Population-wide policies and initiatives	Community-based interventions
<ul style="list-style-type: none"> • Leadership • 'Health-in-all' policies • Dedicated funding for health promotion • NCD monitoring systems • Workforce capacity • Networks and partnerships • Standards and guidelines 	<ul style="list-style-type: none"> • Marketing of unhealthy foods and beverages to children • Nutrition labelling • Food taxes and subsidies • Fruit and vegetable initiatives • Physical activity policies • Social marketing campaigns 	<ul style="list-style-type: none"> • Multi-component community-based interventions • Early childcare settings • Primary and secondary schools • Other community settings

