

# Integrating Public Health and Physical Activity

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# Objectives

- History of physical activity and public health
- Translating science into practice in physical activity and public health
- Applying scientific findings to differentiate physical activity & public health from other areas such as medicine & exercise physiology
- Career opportunities in physical activity and public health

# Physical Activity



# What comes to mind?

- Elite Olympic athletes who look to be in ideal health?
- Masters-level swimmers who swim a mile a day – because they enjoy it?
- Women who work at a factory and spend their lunch hour each day walking 2 miles together?
- Construction workers who lift, bend, stoop, and carry loads all day?
- Kids in a physical education class jumping ampé?

# Answer is 'Yes' to ALL!

- Physical activity and public health is a field of study that looks at:
  - the health effects and risks of physical activity and
  - ways to help people become active and maintain a healthy level of activity throughout their lives
- It is about:
  - *Science* and
  - *Practice*

# Public Health



# Public Health

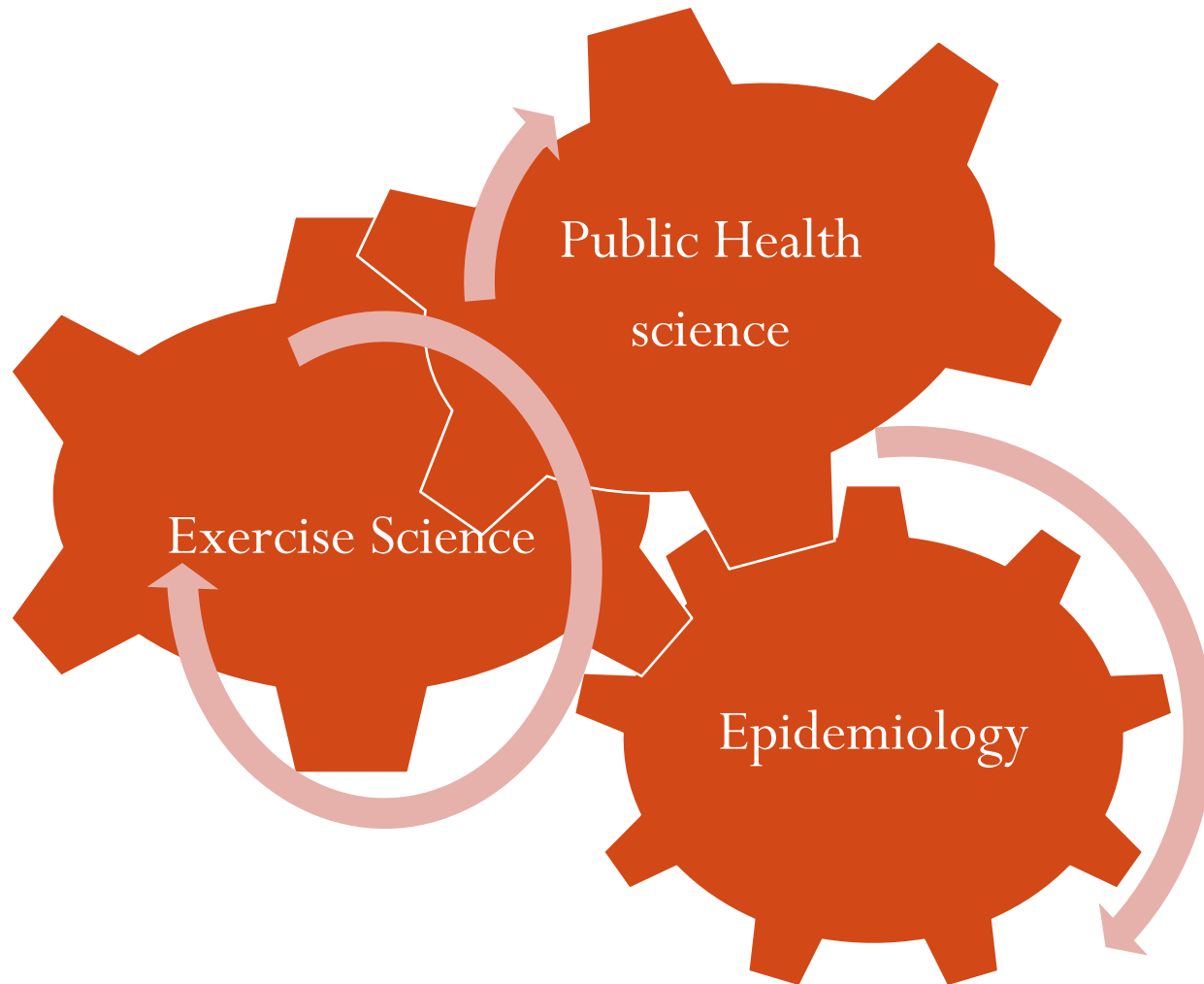
- The science and practice of protecting, promoting, and improving the health of populations and communities
- Public health = interested in the health of populations and communities or groups of people
  - eg; Vaccination vrs diseases;
  - quarantine rules for controlling disease outbreaks;
  - fluoridation of public water supplies to improve dental health;
  - food safety & restaurant inspection to reduce food-borne illnesses

# The link between physical activity and health

- Understood the link since ancient Greece
- Formal study of the health effects of physical activity is only recent
- Newer still, is how to help people change their behavior to take advantage of all the health benefits of a physically active way of life



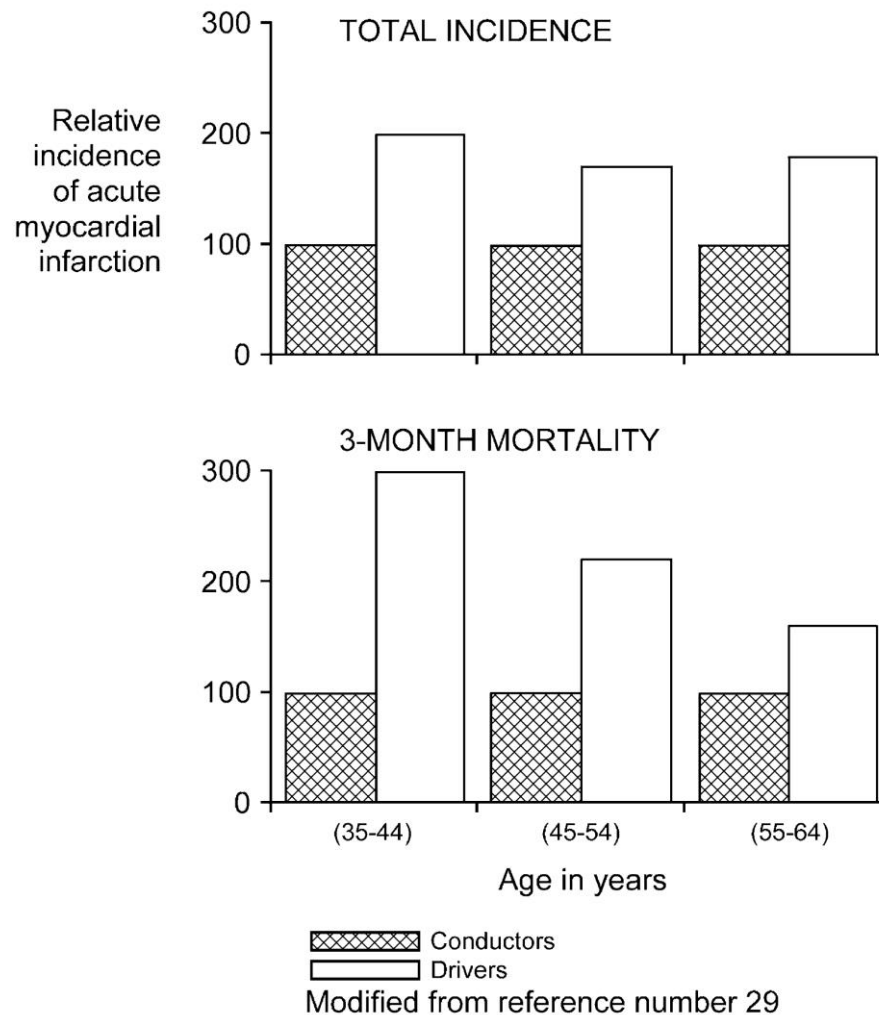
# Major 20<sup>th</sup> century independent developments



The Routemaster bus, a laboratory of early studies of physical activity and health; Morris et al, 1953



# Age-adjusted relative incidence of acute myocardial infarction in London busmen, 1949–1958.



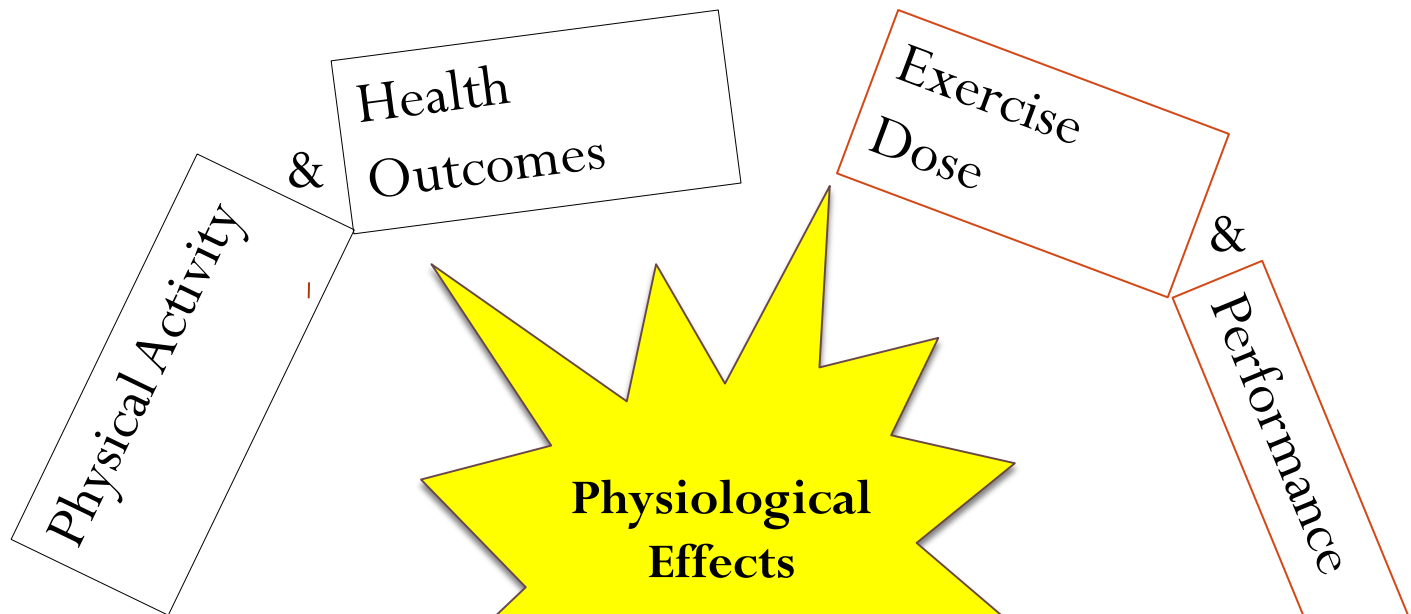
Paffenbarger R S et al. *Int. J. Epidemiol.* 2001;30:1184-1192

# The Exercise/Heart Hypothesis

- People who exercise more frequently have healthier, better functioning circulatory systems than people who do not exercise. This physiological benefit results in a lower risk of death from heart disease among those who are more active.
- Dr. Paffenbarger built on this and identified the amounts and types of physical activity that are associated with improved health.
- → The birth of the field of Physical Activity and Public Health

# Fitting the Jig Saw Puzzle: 1970's and 1980's

## Observational Studies



Scientists began to quantify the substantial health benefits of physical activity (and the risks of inactivity)

Populations and not just individuals are not as healthy as they could be because of physical inactivity

# The Merger of Kinesiology and Epidemiology to create physical activity and public health

## Kinesiology

Kinesiology training studies:  
Exercise and performance

*Exercise physiology*  
*Movement science*  
*Sports psychology*

## Epidemiology

Population observational studies:  
Physical activity and health  
outcomes

*Epidemiology*  
*Clinical health*

**Physical Activity and  
Public Health**

# The New Sub-Discipline

**Physical Activity and Public Health**  
has emerged!

# Role of Physical Activity in Chronic Disease Development

- The most important and powerful health benefits of physical activity are the prevention and treatment of chronic diseases.
- Through a variety of physiological processes, physically active people are much healthier and much less likely to develop and die from chronic diseases than those who are not.
- Moreover, physical activity and exercise reduce the risk of dying prematurely (all cause mortality)



# From Science to Action and Back

# Public Health

- Public health is characterized by science and action
- Epidemiology provides the fundamental science
- The action aspect is the implementation of findings from scientific studies to improve health (Refer Navrongo; VAST, Bednet, CHPS, Artesunte)
- Public health applies science to practice by addressing three critical areas:
  - Surveillance
  - Community interventions
  - Development of health guidelines

# Surveillance

- Public health surveillance is an on-going systematic collection, analysis and interpretation of data essential to the planning, implementation and evaluation of public health practice (Thacker 1980)
- Surveillance helps to determine the extent of the health problem, who is affected, where and when

# Community Interventions

- **Efficacy Trials** – establish the science behind interventions that show that a certain intervention can be used to change a certain condition (Navrongo, Artesunate-Amodiaquine etc)
- **Effectiveness Trials** – how well an intervention works in practice/real life, instead of controlled settings (CHPS)

# The challenge

- Exercise has a known efficacy for improving many parameters that are related to poor health in the human body.
- The effectiveness of such interventions in real life becomes much more difficult and challenging to measure and assess when these studies are taken out of the laboratory into the community

# Development of Health Guidelines

- Official policy statements that provide clear recommendations about a course of action to deal with a pressing public health issue
  - Eg., childhood immunization schedules (when and which vaccines and their timings)

# Pioneer

- In 2008, the US Department of Health and Human Services published the first-ever *2008 Physical Activity Guidelines for Americans (USDHHS 2008)*
- The guidelines were based on a summary of scientific literature with the best science-based recommendations for the weekly amount of physical activity to prevent disease and promote positive health outcomes

## 2008 Physical Activity Guidelines for Americans - I

### Children and Adolescents (Aged 6-17)

- Children and adolescents should do 1 hour (60 minutes) or more of physical activity every day
- Most of the 1 hour or more a day should be either moderate – or vigorous-intensity aerobic physical activity
- As part of their daily physical activity, children and adolescents should do vigorous-intensity activity on at least 3 days per week.....

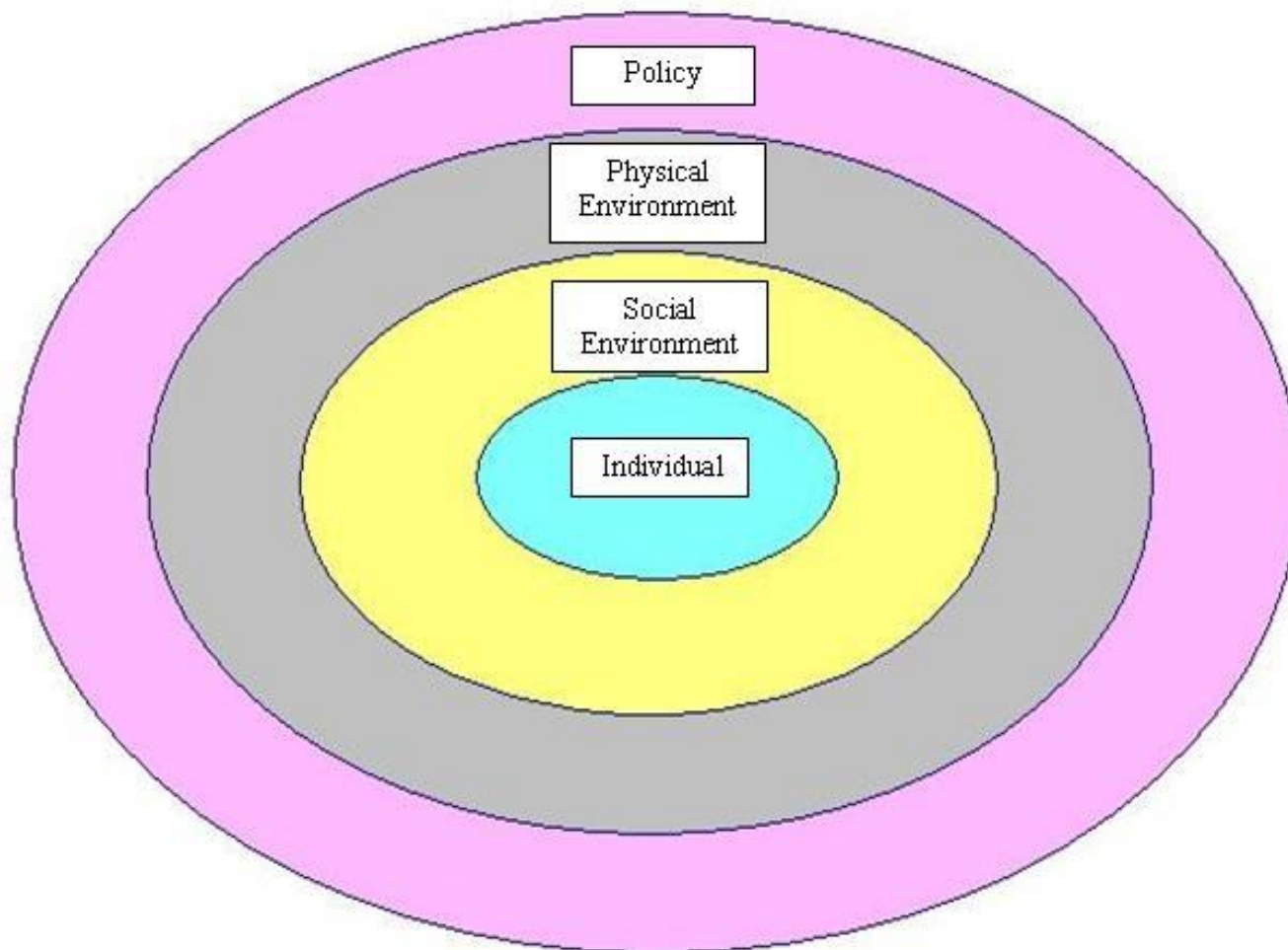


# Promoting Physical Activity for Health

# Physical Activity Behavior

- Many factors at many levels influence physical activity behavior
- Best explained by the social ecological model as a guiding framework

# Factors to consider - 1



# Factors to consider - 2

table  
2.7

*The social-ecological model of influences on physical activity*

Individual (intrapersonal) factors	Interpersonal (social) environment factors	Physical environmental factors		Policy and organisational factors
		Natural environment	Constructed (man-made) environment	
<ul style="list-style-type: none"> <li>• Demographics</li> <li>• Biological</li> <li>• Cognitive or affective</li> <li>• Behavioural</li> </ul>	<ul style="list-style-type: none"> <li>• Supportive behaviours</li> <li>• Social climate</li> <li>• Culture</li> </ul>	<ul style="list-style-type: none"> <li>• Weather</li> <li>• Geography</li> </ul>	<ul style="list-style-type: none"> <li>• Information environment</li> <li>• Urban/suburban environment</li> <li>• Architectural environment</li> <li>• Transportation environment</li> <li>• Entertainment infrastructure</li> <li>• Recreation infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Policies governing incentive for activity or inactivity</li> <li>• Policies governing resources and infrastructure related to activity or inactivity</li> </ul>

Note: Social and physical environments need to be considered within key behaviour settings, such as home, neighbourhood, school, workplace, parks, public buildings and facilities for recreation and sports.

# Careers Combining Exercise Science and Public Health

# Career Opportunities

- Physical Education Teacher
- Physical Activity Specialist
- Firefighter
- Police or Military
- Physician
- Nurse
- Researcher
- Movement Specialist
- Wellness Coach
- Clinical Exercise physiologist
- Athletic trainer
- Consultant
- Coach
- Sporting goods representative
- Biomechanist
- Sports physiologist
- Health or fitness facility owner
- Physical therapist
- Cardiac rehabilitation specialist
- Occupational therapist
- Diabetes or obesity prevention specialist

Thank You