# Physical activity and health related fitness: How to enhance students' intrinsic motivation for both

PHYSICAL EDUCATION ASSOCIATION OF IRELAND

Waterford, 2013.

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Chair, HEPA Youth Network (WHO).
School of Health and Human Performance
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# Presentation Overview

- HEPA: what is it and why?
- HELF: what is it and why?
- Appropriate and Inappropriate uses of fitness testing.
- Self-motivated, self-managing students!

## Part 1

# Health Enhancing Physical Activity: What is it?

# Physical Activity

"any bodily movement that is produced by the skeletal muscles that results in energy expenditure"

(Caspersen et al., 1985)

# For youth: There are many types of Physical Activity

Elite → General

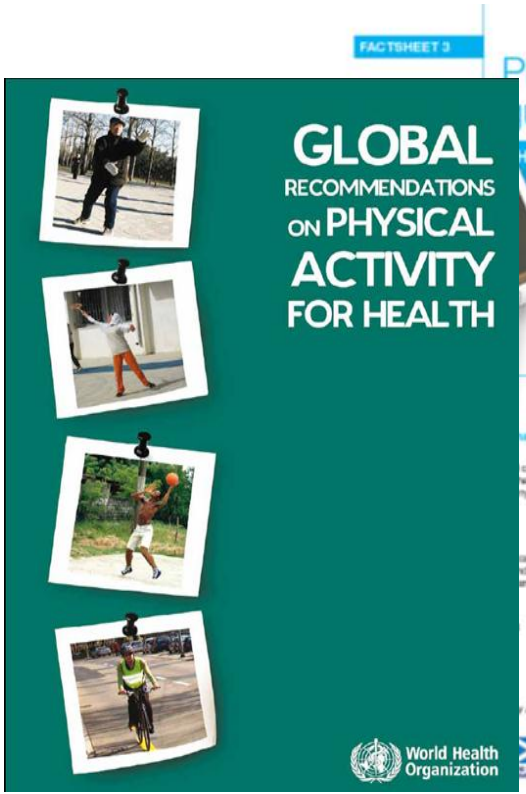
Competitive Sport

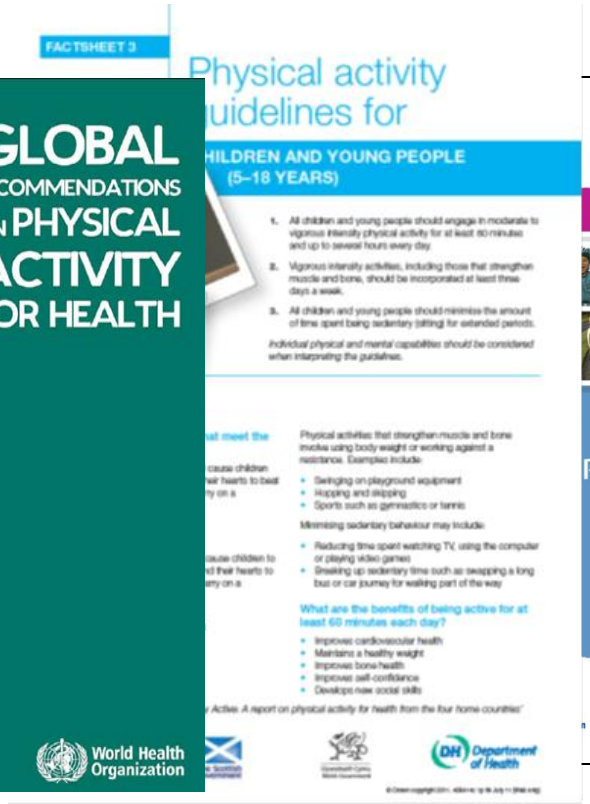
Structured Exercise

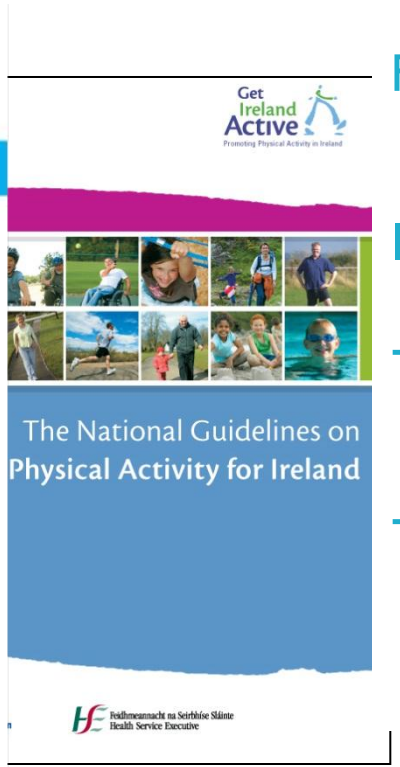
Active Living

Play

# HEPA recommendations




## Frequency

- Most days of the week

## Intensity

- MVPA

## Time

- 60 minutes accumulated PA

## Type

- Sport, Exercise or Active Living.

- Most of the daily PA should be aerobic, with **muscle and bone strength** at least 3 times per week.
- Very little information on recommended levels of **Sedentary leisure habits.**
- $\geq$ 2 hours / day during daylight hours (children: SST)

# Message 1

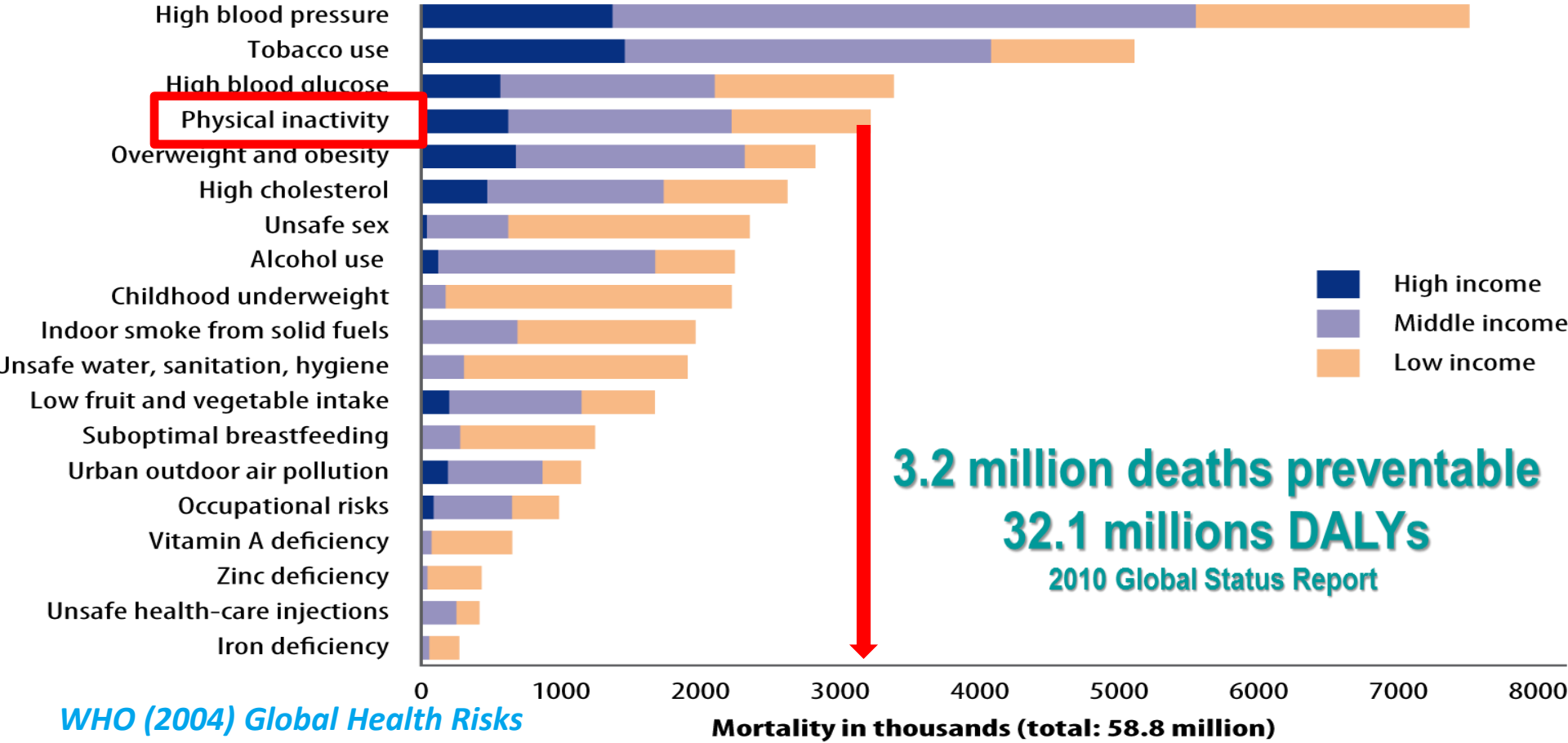
- Health Enhancing PA guidelines for youth

- Sedentary behaviour, less information

# Health Enhancing Physical Activity: Why?

Making the case for HEPA

World Health Organization




**3.2 million deaths preventable**

**32.1 millions DALYs**

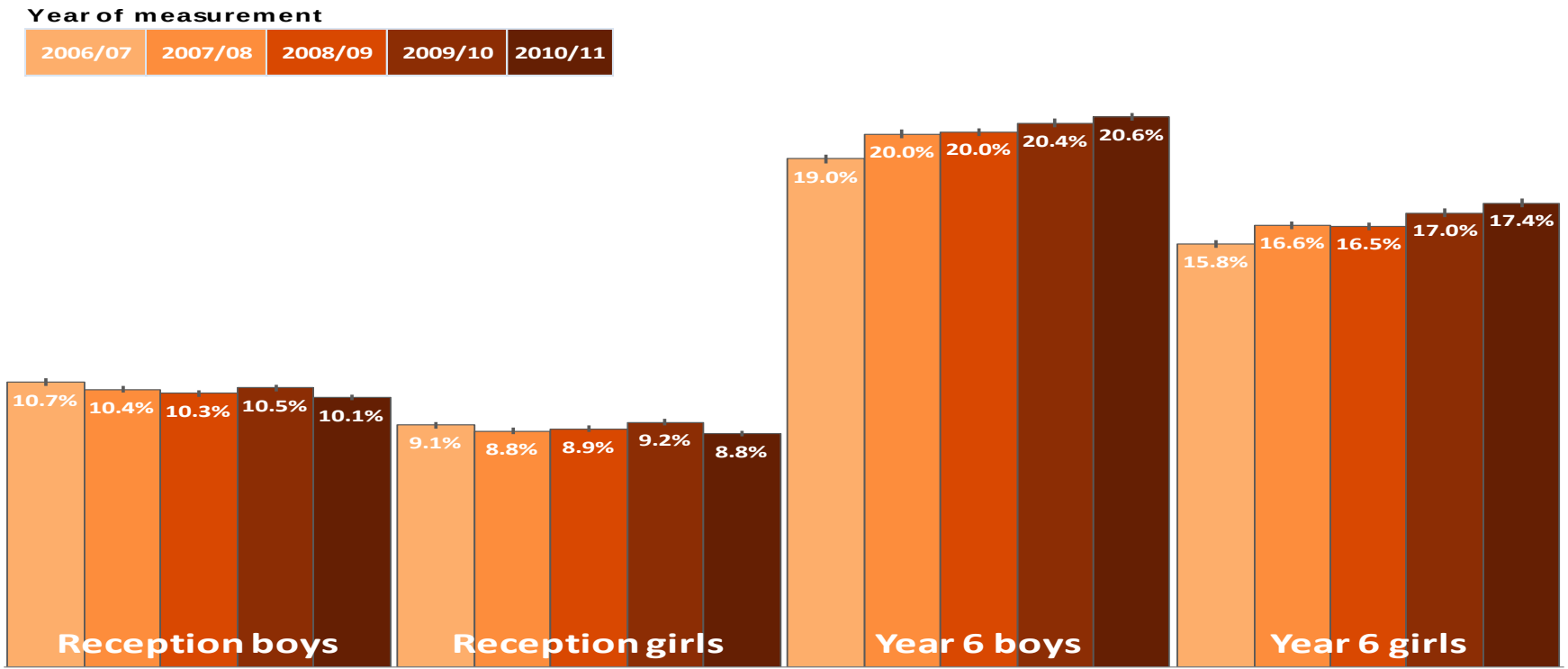
2010 Global Status Report

*WHO (2004) Global Health Risks*

# Making the Health Case For PA

- Globally, inactivity causes 3.2 million deaths every year
- Doubles risk of:
  - dying from CVD and stroke
  - developing CVD, Type II diabetes and obesity
- Increases risk of:
  - colon Cancer (40-50%), breast cancer
  - hypertension (30%), lipid disorders
  - Osteoporosis; falls in the elderly
  - stress, anxiety and depression
  - Neurological problems / dementia

# In Children, for example…
# Prevalence of obesity among children by school year and sex
National Child Measurement Programme 2006/07 – 2010/11

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Child obesity: BMI ≥ 95th centile of the UK90 growth reference

# Obesity in Children and Youth

# Why?

- being overweight during childhood is associated with increased risk of morbidity and mortality later in life.

•CVD and all-cause mortality have been reported to be elevated among adults who were overweight in childhood irrespective of adult weight.

•The major health risk factors of low PA, low physical fitness, high SB, poor diet, and excessive body weight have been found to persist from childhood through adolescence and into the adult years

Andersen, L. B. (1993). *J Intern Med,* 234:309-315.) Gunnell, D. J., et al.. (1998).*Am J Clin Nutr,* 67: 1111-1118. Griera, J. L.,. (2007). *Public Health Nutr,* 10(10A): 1194-1199.

REVIEW ARTICLE

Sports Med 2001; 31 (8): 617-627
0112-1642/01/0008-0617/$22.00/0
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# Physical Activity Guidelines for Children and Adolescents

## A Critical Review

*Jos W. R. Twisk*

Institute for Research in Extramural Medicine, Vrije Universiteit, Amsterdam, The Netherlands

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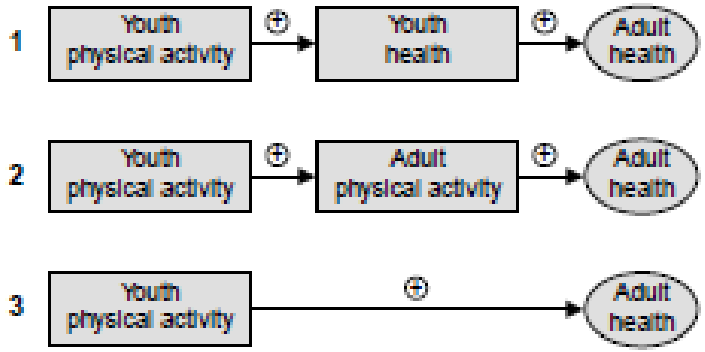


REVIEW ARTICLE

Sports Med 2006; 36 (12): 1019-1030
0112-1642/06/0012-1019/$39.95/0
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# Adolescent Physical Activity and Health

## A Systematic Review

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2 Childhood Nutrition Research Centre, Institute of Child Health, London, UK

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# Message 2

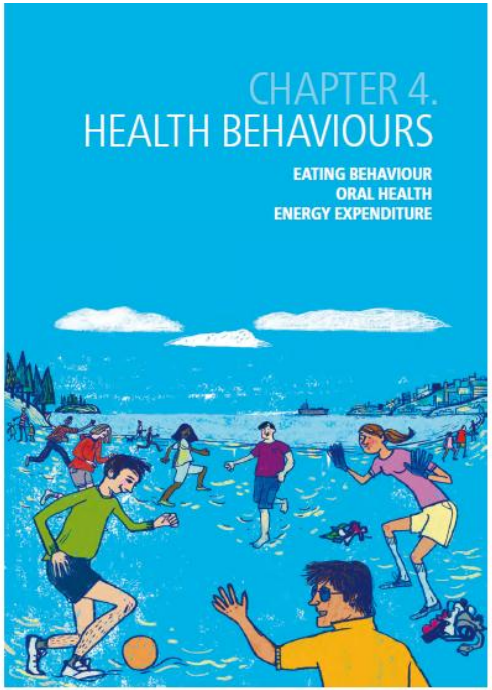
- Children and youth can obtain health benefit from engaging regularly in HEPA.

# Health Enhancing Physical Activity: Why?

How active are our children?

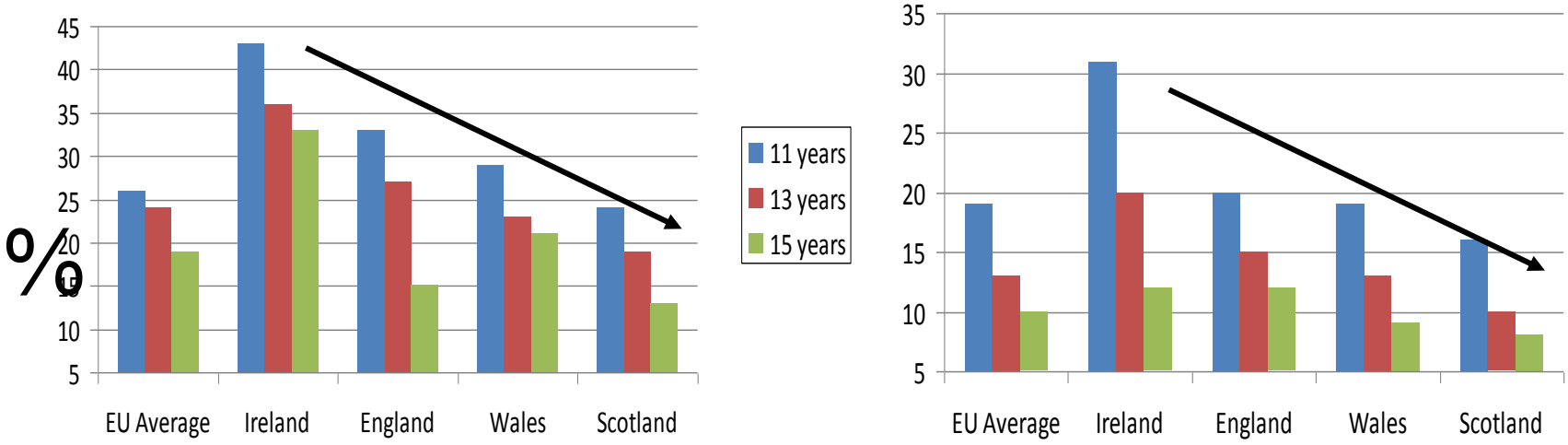
Despite all the evidence of benefit, epidemiological data indicate that on average 20% of children meet current PA recommendations.

# Health Behaviours of School-Aged Children




- WHO collaborative cross-national study.
- 1500 students in each participating country
- Random sampling (representative)
- N=200,000 young people
- 43 countries.

# HBSC (2012)

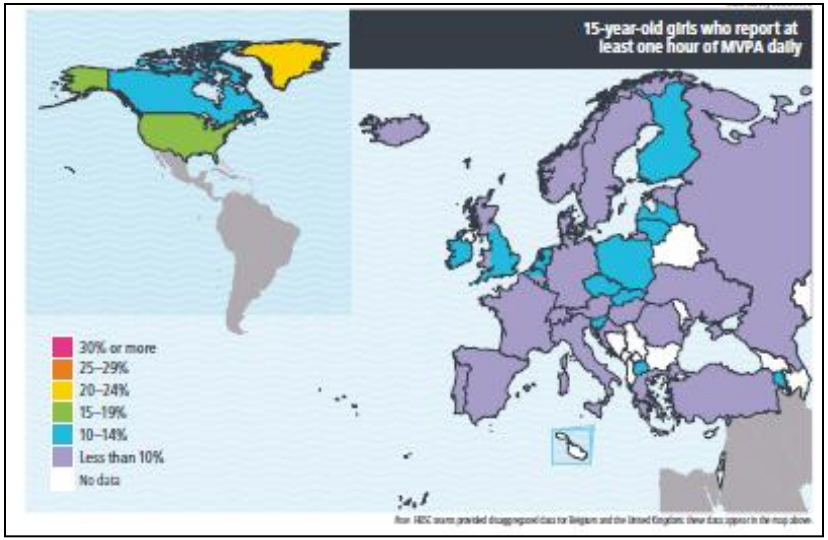


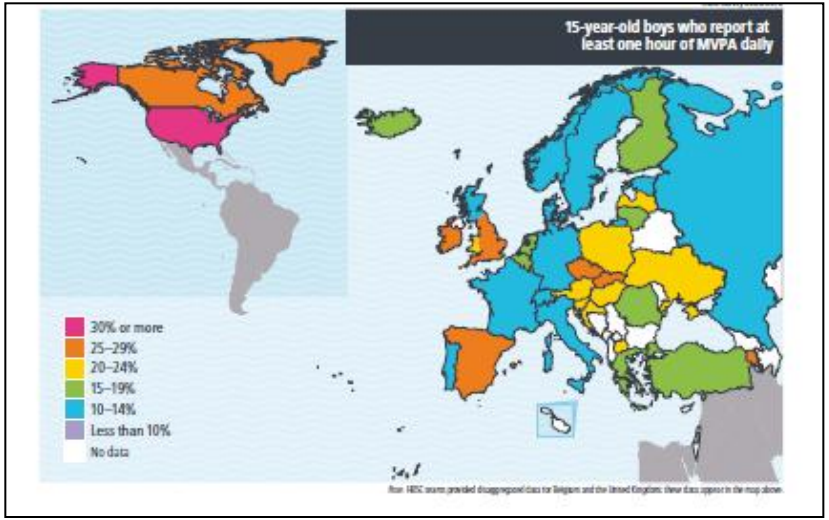

Boys

% Meeting the PA recommendations

Girls

www.hbsc.org


15-year-old girls who report at least one hour of MVPA daily
30% or more
25–29%
20–24%
15–19%
10–14%
Less than 10%
No data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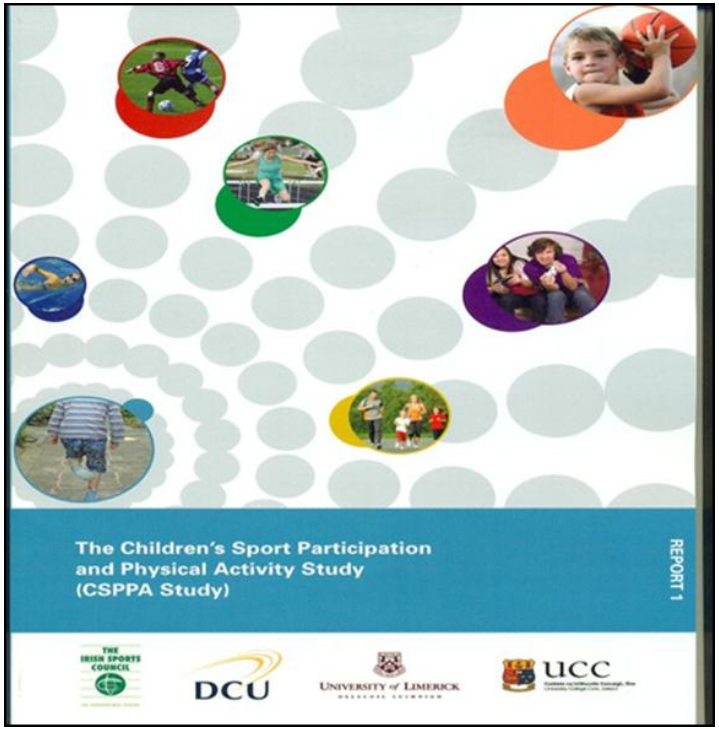
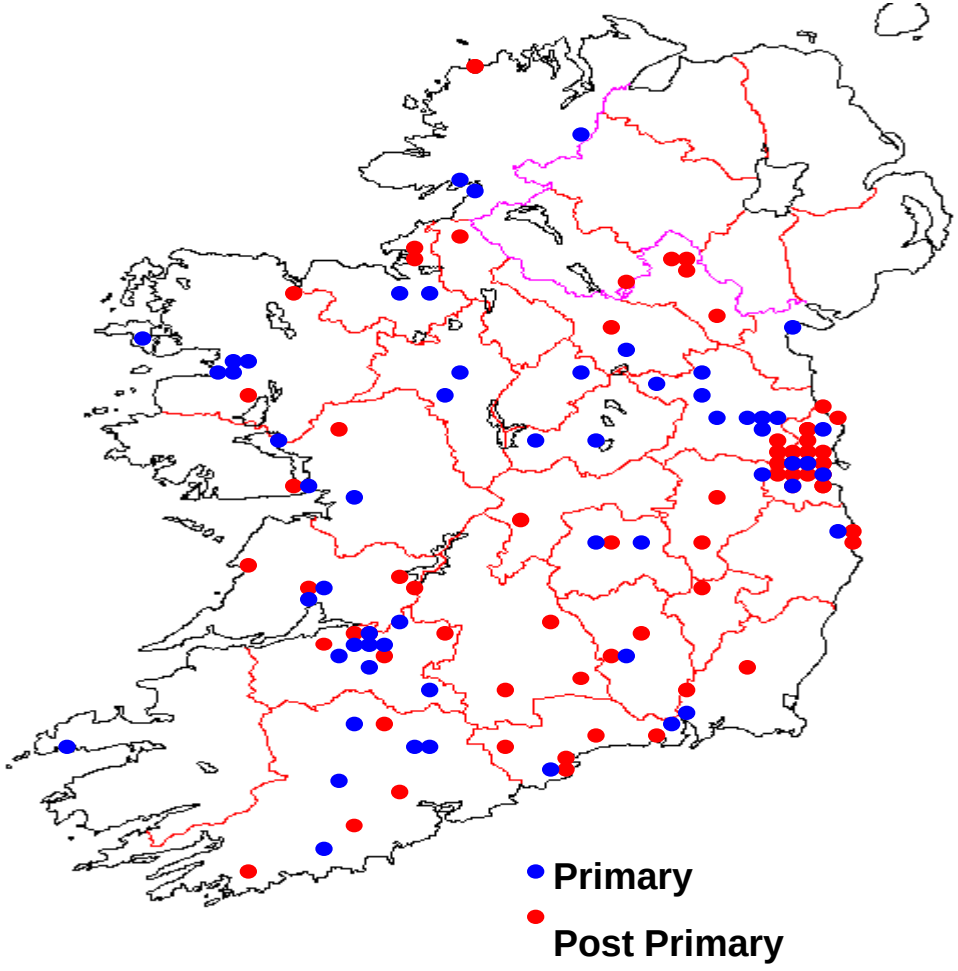
10–14%
Less than 10%
No data

www.hbsc.org

N=5397, 10-18 years, 53% female, 2010




www.irishsportscouncil.ie



# 14%

86% were insufficiently active to benefit their current and future health

# HEPA measurement

- Self-report
  - Feasible
  - Reliable
  - Valid.
- Accelerometers
- Pedometers

(CSPPA, 2010; HBSC, 2012)

**Section 1:**

**Physical activity is any body movement.**

It can be done at different levels of effort:

- **Moderate Effort** makes your heart rate and breathing rate faster than normal. You may also sweat a little. Brisk walking and jogging are good examples.
- **Vigorous Effort** makes your heart rate much faster and you have to breathe deeper and faster than normal. You will probably sweat. Playing football or tennis are good examples.
- Physical activity includes:

| | |
|---|---|
| **Exercise** | Running, dancing, etc. |
| **Sports** | Basketball, football, athletics, swimming, etc. |
| **General** | Brisk walking, washing the car, walking or cycling to school, etc. |

Please try to think carefully and be as accurate as possible with your answers. For these next two questions, add up all the time you spend in physical activity each day.

**Only include activities of either MODERATE or VIGOROUS effort.**

Q1. Over the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? Please circle one number.

0 days 1 2 3 4 5 6 7 days

Q2. Over a typical or usual week, on how many days are you physically active for a total of at least 60 minutes per day? Please circle one number.

0 days 1 2 3 4 5 6 7 days

2

# Message 3

- HEPA levels for youth are low.
- Surveillance statistics show that this is a **global problem**.
- Screening and objective measures exist.

# Health Enhancing Levels of Fitness

## What are they?

# Fitness

- “physical fitness is a state of being that reflects a person’s ability to perform specific exercises or functions, and is related to future health outcomes” (Institute of Medicine, 2009, p.1).

# Health-related components of fitness

- Body composition
- Cardiorespiratory endurance
- Musculoskeletal fitness (strength, endurance & power)
- Flexibility

# Health Enhancing Levels of Fitness

## Why?

# Why? The PA/HRF relationship

An increase in habitual physical activity can result in increased fitness, while health status affects one's fitness or ability to carry out physical activity (Bouchard and Shephard, 1994).

Based on this relationship and considering fitness as a primary outcome of physical activity, fitness testing is regarded as an effective means of monitoring the status of physical activity in population-based studies, as well as promoting lifelong physical activity, which may eventually lead to improved health status

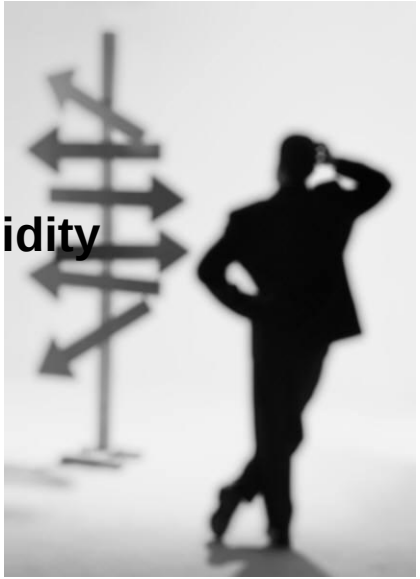
(Corbin, 2007; Tremblay and Lloyd, 2010; IOM, 2012).

# Why HELF?

**public health basis** for youth fitness testing

**Continue research aimed at improving the reliability and validity of pertinent test batteries**

**The potential of youth fitness to promote lifelong physical activity**



the **adverse effects of testing in academic settings**

**Questioning the use and educational value of youth fitness tests** and **award schemes.**

Concerns about the **proper use and misuse of tests**

# Why? A Physically educated person…

- NASPE has 6 standards (2004).
  - Standard 3. participates regularly in physical activity.
  - Standard 4. achieves and maintains a health-enhancing level of physical fitness.

  - Each of the 6 standards has assessment linked to it. Fitness measurement, is one of the assessments linked to standard 4.

# Why?

- If FTs are carried out **appropriately** and in a meaningful way, then testing could:
  - Play a valuable role in the promotion of PA and in educating your students about their HEPA and HELF.
  - Encourage positive attitudes towards HRF
  - Increase understanding of the principles underlying HRF
  - Promote a lifetime commitment to HRF

# Minimising the likelihood of…

"One in four children being unfit, overweight or obese and having elevated blood pressure".

(CSPPA, 2010)

# Message 4

"No matter what students aspire to become, they will live happier, more productive lives if they are healthy. Maintaining appropriate levels of physical fitness is vital to overall health, so the connection between maintaining personal fitness and overall health is a strong one".

(NASPE, 2010).

# Health Enhancing Levels of Fitness

## How is it assessed?

# International best practice

Batteries of Tests include…

# International Batteries of Youth Fitness Tests

- Fitnessgram and Activitygram (US)
- President's Council on Fitness, Sport and Nutrition (US)
- CAPHER: Canadian Assoc. for H, PE, and Recreation (Canada)
- EUROFIT (Europe)
- ALPHA (Europe)
- Children's Sport Participation and Physical Activity (Ireland)
- Others…

(Institute of Medicine, 2012)

# Designed to…

"provide a set of evidence-based **valid, reliable, feasible and safe** field-based fitness tests for the assessment of HRF in children and adolescents, to be used in the **public health monitoring system** in a comparable way within the EU"

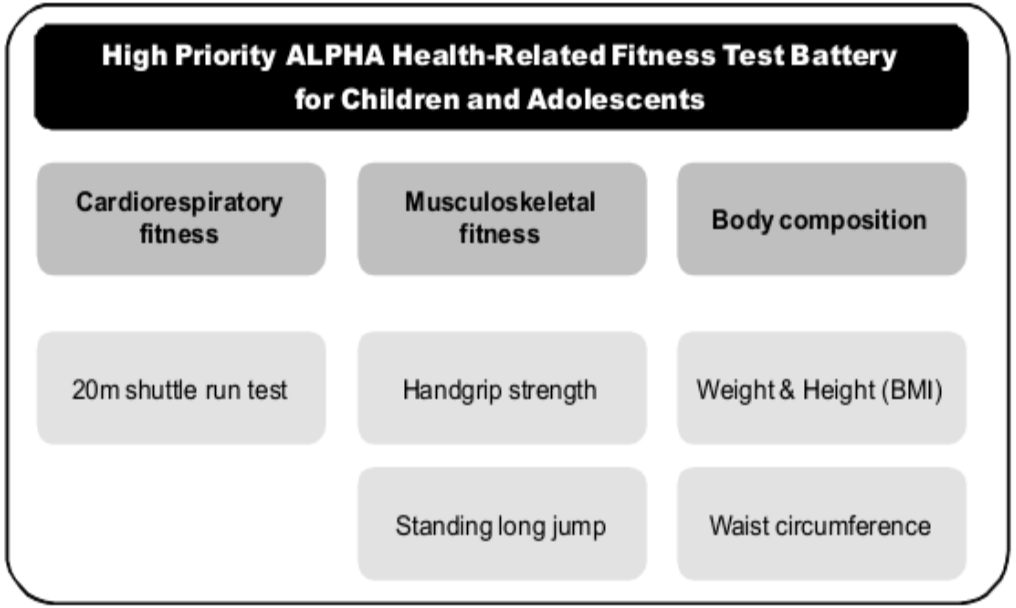
(ALPHA test manual, 2009, p.4)

# RECOMMEND (EU)

- valid, reliable, feasible and safe

- Time-efficient (2.5 hours).
- Low in cost and requirements
- Easily administered to

large class simultaneously.




(ALPHA, 2009; www.thealphaproject.net

E.U. DG SANCO funded project in the framework of the Public Health Programme, ref: 2006120

# For Example, Cardiorespiratory endurance

- Large-muscle, whole-body exercise at moderate to high intensity for an extended period of time.
- Well-established association between cardiorespiratory endurance and health outcomes in children… body weight, body composition, cardiometabolic risk factors, blood pressure, cognitive function and pulmonary function.

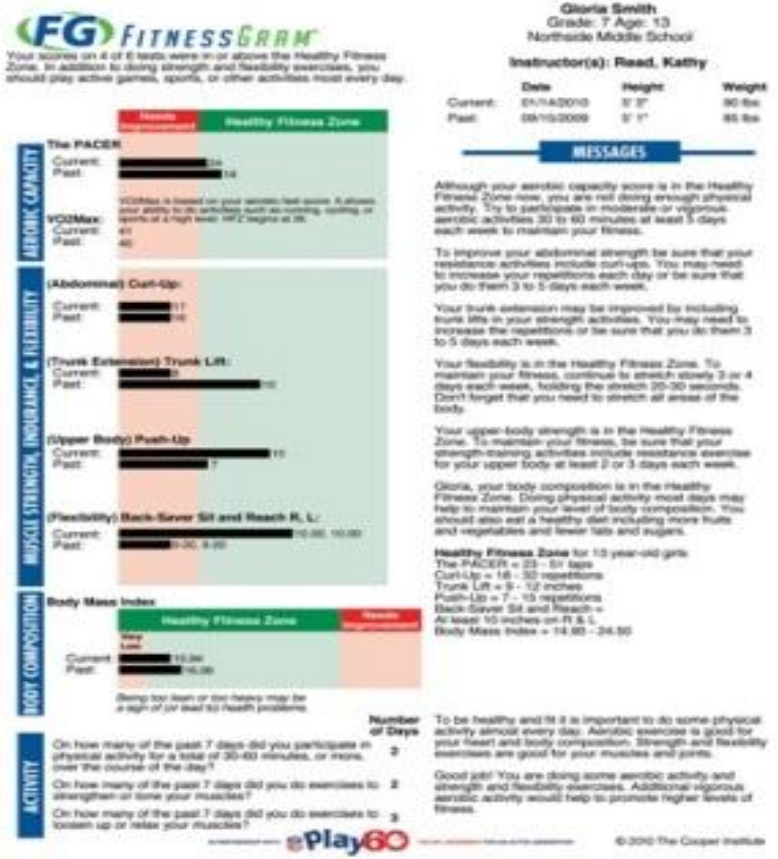
- Progressive shuttle run (beep test).
- Others
  - 9-minute run
  - 1-mile run
  - Endurance run/walk

# Criterion guidelines for interpretation of results readily available

**Cardiorespiratory fitness: 20m shuttle run test (stages)**

| | Very low | Low | Average | High | Very high |
|---|---|---|---|---|---|
| Boys | | | | | |
| 13 y | ≤ 3.0 | 3.5 - 4.5 | 5.0 - 6.0 | 6.5 - 7.5 | ≥ 8.0 |
| 14 y | ≤ 3.5 | 4.0 - 5.5 | 6.0 - 6.5 | 7.0 - 8.5 | ≥ 9.0 |
| 15 y | ≤ 4.0 | 4.5 - 5.5 | 6.0 - 7.0 | 7.5 - 8.5 | ≥ 9.0 |
| 16 y | ≤ 4.0 | 4.5. - 5.5 | 6.0 - 7.0 | 7.5 - 8.5 | ≥ 9.0 |
| 17 y | ≤ 4.5 | 5.0 - 6.0 | 6.5 - 7.5 | 8.0 - 9.0 | ≥ 9.5 |
| Girls | | | | | |
| 13 y | ≤ 2.0 | 2.5 - 2.5 | 3.0 - 3.5 | 4.0 - 4.5 | ≥ 5.0 |
| 14 y | ≤ 2.0 | 2.5 - 3.0 | 3.5 - 4.0 | 4.5 - 5.0 | ≥ 5.5 |
| 15 y | ≤ 2.0 | 2.5 - 3.0 | 3.5 - 4.0 | 4.5 - 5.0 | ≥ 5.5 |
| 16 y | ≤ 2.0 | 2.5 - 3.0 | 3.5 – 4.0 | 4.5 - 5.0 | ≥ 5.5 |
| 17 y | ≤ 2.0 | 2.5 - 3.0 | 3.5 – 4.0 | 4.5 - 5.0 | ≥ 5.5 |

Adapted from Ortega et al. Physical fitness levels among European adolescents: The HELENA study. *Br J Sports Med.* 2010 Jun 11. [Epub ahead of print].




www.alpha.net
www.fitnessgram.net

# Message 5

- Methods of assessing HELF of students exist.
- These are safe, reliable, valid and feasible within a school or education setting.
- EU standards for test selection are being set.

Appropriate and Inappropriate practices

# Guiding Principles

Appropriate practice varies by maturation stage; thus what may be suitable for primary school students may be inappropriate for adolescents (and vice versa).

Regardless of stage of maturation, some basic principles apply…

# Appropriate practices: Administration

- Use valid, reliable and objective measures, with specific scientific protocols.
- Ensure adequate professional training (pre-service and in-service).
- Allocate sufficient time for student learning (integrate into curriculum), familiarisation and practice sessions.

# Appropriate practices: Administration

- Adequate equipment, comfortable surrounding.

Make fitness assessment part of the ongoing process of helping students to understand, enjoy, improve, and maintain health enhancing levels of fitness and well-being.

Establish a positive and motivating measurement environment for students.

# Appropriate practices: Feedback/Evaluation

- Interpret and explain results carefully, recognise test limitations.
- Use results to set individual goals and develop personal improvement plans.
- Refer to criterion as opposed to normative standards and goals.
- Put in place appropriate and sensitive remedial support provided to the 'very low fit'. (in conjunction with local support structures e.g. GP, parents, LSPs, HSE).

# Unacceptable practices…

- The use of fitness test scores:
  1. for grading students.

Although physical fitness can be increased through engagement in specific types of physical activity, factors other than physical activity affect a student's fitness that are beyond the control of the student and physical education teacher. Examples include heredity, caloric consumption, access to opportunities to be physically active both within and beyond the school day, and possibly socioeconomic status.

# Unacceptable practices…

- The use of fitness test scores:
  1. for grading students.
  2. for high-stakes accountability.
  3. Evaluating teacher effectiveness.

## Something to consider…

- Supporters of physical fitness testing argue that testing motivates children to maintain or enhance their physical fitness of PA levels.
- In fact, little is known about whether fitness testing motivates children, or about children's knowledge and attitudes towards fitness tests.
- Tests… motivate… those students who do well.

# Inappropriate: Implementation of fitness tests

‘Administering fitness tests simply to obtain fitness data, without paying attention to its educational role is poor practice’

(Cale and Harris, 2009, p.66).

# Message

- Appropriate practices exist
- Inappropriate practices exist
- PE teachers should know the difference.

# Self-motivated, self-managing students…

How do I do it?

Research Quarterly for Exercise and Sport
©2009 by the American Alliance for Health,
Physical Education, Recreation and Dance
Vol. 80, No. 1, pp. 44–53

## Effects of Teacher Autonomy S
## Autonomous Motivation on Le

*Bo Shen, Nate McCaughtry, Jeffrey Martin, and*

MEASUREMENT IN PHYSICAL EDUCATI
Copyright © 2006, Lawrence Erlbaum Associ

## Development ar
## of a Measure of Au
## and Relatedness i
## Psychological Ne

Symeon P. Vlachopou
*Department of Physical Edu*
*Aristotle Universit*

Research Quarterly for Exercise and Sport
©2000 by the American Alliance for Health,
Physical Education, Recreation and Dance
Vol. 71, No. 3, pp. 267–279

## Predictors of Intrinsic Motivation Among Adolescent Students in Physical Education

*Emilio Ferrer-Caja and Maureen R. Weiss*

*motivation, and effort and persistence*
*(n = 201) and male (n = 206) high*
*nce, self-determination, goal orientations,*
*tivities. Hypothesized relationships*
*ceived competence and goal orientations*
*teaching style on intrinsic motivation.*
*the effects of learning climate on perceived*
*and persistence were task goal orienta-*

*Journal of Sport & Exercise Psychology*, 2012, 34, 457-480
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## Students' Objectively Measured Physical Activity Levels and Engagement as a Function of Between-Class and Between-Student Differences in Motivation Toward Physical Education

**Nathalie Aelterman, Maarten Vansteenkiste, Hilde**
**Lynn Van den Berghe, Jotie De Meyer, and Leen**
Ghent University

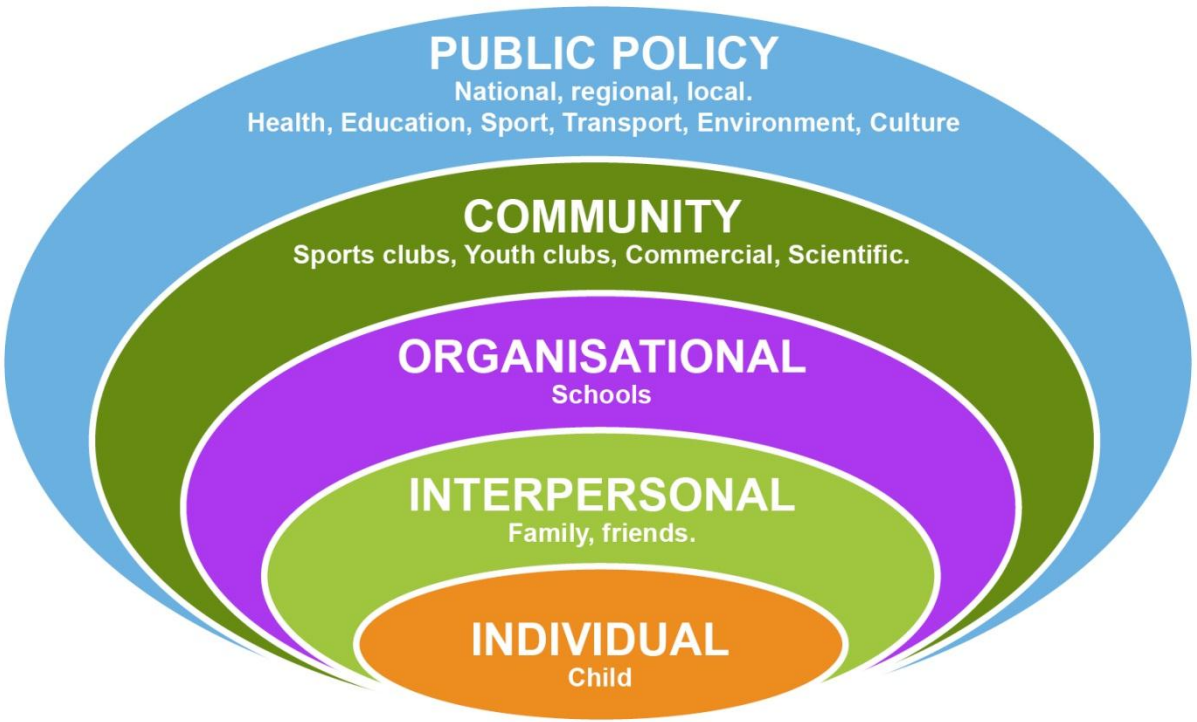
Despite evidence for the utility of self-determination theory in phy

## An examination of the relationship between enjoyment, physical education, physical activity and health in Irish adolescents

Catherine B. Woods[a]*, Deborah Tannehill[b] and Julia Walsh[c]

[a]*School of Health and Human Performance at Dublin City University, Dublin, Ireland;* [b]*Physical Education and Sport Science, University of Limerick, Limerick, Ireland;* [c]*Physical Education and Sport Studies, University College Cork, Cork, Ireland*

(*Received 20 December 2011; final version received 1 May 2012*)




# Remember the Context: Be Realistic

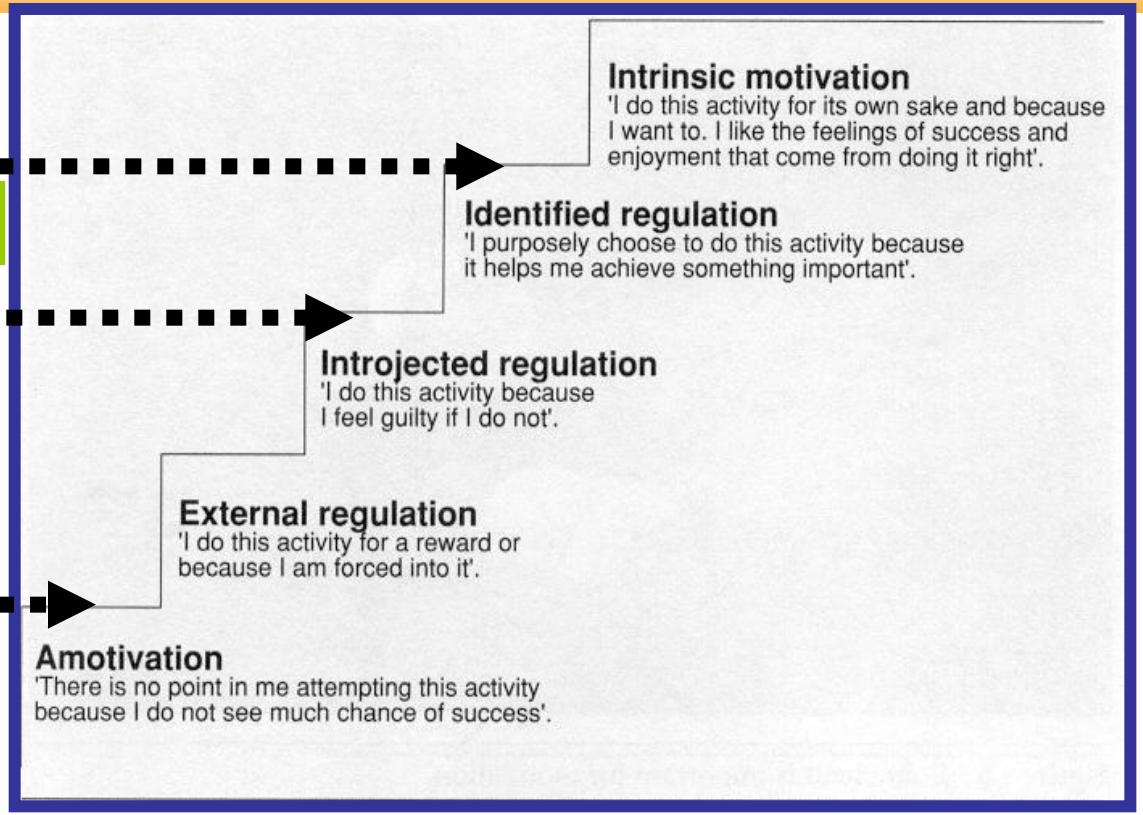
Whole of School Approaches are the most effective evidence-based approach.

# An important prerequisite for motivated behaviour is…

A desire to feel competent.

A student's PE experience will be shaped by the way in which he/she defines success and judges his/her capabilities.

# Theory of Self-Determination




**Threshold of intrinsic rewards**

**Threshold of autonomy**

**Threshold of motivation**



(Deci & Ryan, 1991; 2000, American Psychologist)

# Two approaches students may adopt to judge their ability in PE.

- Task involvement: A focus on one's own effort and improvement (self-referenced).

- Ego involvement:  A focus on comparing oneself to others (normatively referenced).

"A range of positive health, social and performance-related outcomes is linked to being task-involved whereas research has shown that a strong emphasis on ego-involved goals may lead to negative outcomes such as the tendency not to participate".

(Joan Duda, 2013, PEPAYS Research Forum)

# Motivational Climate in Your Class

- Task-involving climate: The teacher emphasises cooperation, rewards players' effort and ensure that everyone feels that they have clear and important roles to play within the class. When mistakes happen, the teacher gives guidance on how to correct the error.

- Ego-involving climate: The teacher emphasises rivalry between students, has a low tolerance for mistakes and has favourites amongst the students

Motivation – Push and Pull

# In Physical Education it is as simple as…

A — Autonomy

B — Belongingness

C — Competence

# It’s not buried treasure… our colleagues use it.

# In Physical Education it is as simple as…

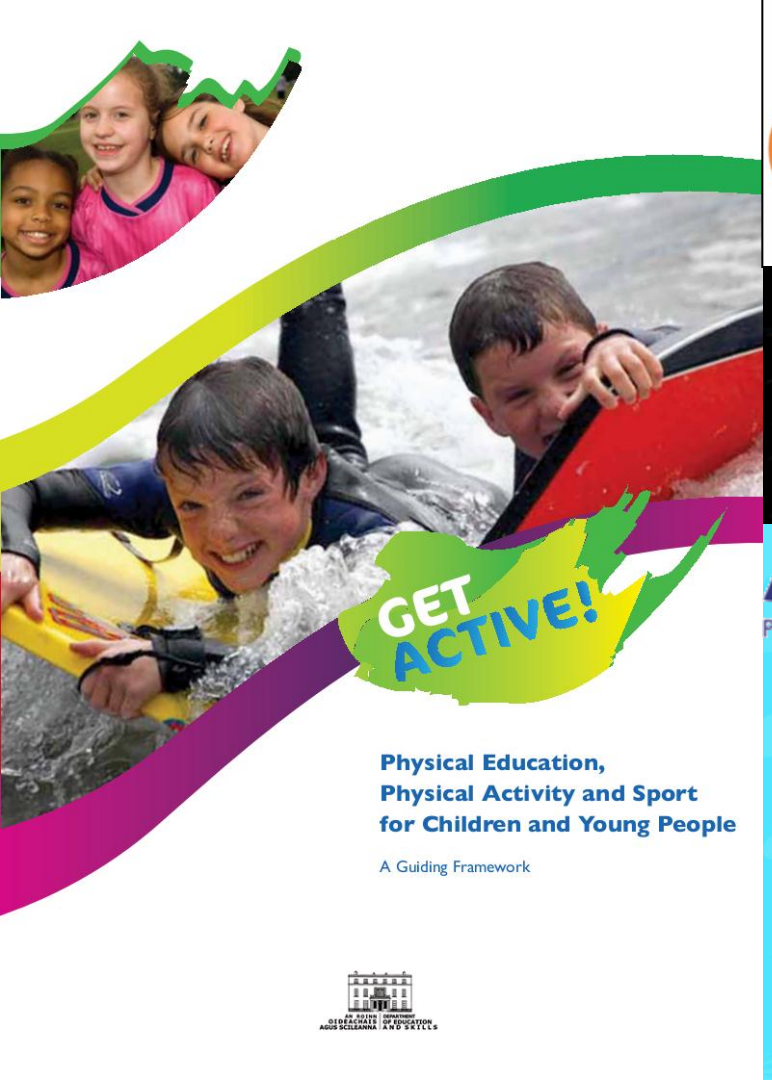
A — Autonomy

B — Belongingness

C — Competence

- Shall I lie here, watch TV, drink wine, eat popcorn?

- Battle of impulses and inhibitions "in the moment"
  - Put the popcorn out of reach?
  - Put the TV off?
  - Do what I said I'd do – go to the gym?



# Use local supports and work with stakeholders

PE PAYS
Physical Education, Physical Activity and Youth Sport

PHYSICAL EDUCATION ASSOCIATION OF IRELAND

Get Ireland Active
Promoting Physical Activity in Ireland

THE IRISH SPORTS COUNCIL
AN CHOMHAIRLE SPÓIRT

ACTIVE SCHOOL

# Evidence

# What we need is?

# Reports

**Implement**
**and share good practice**
**HEPA and HELF**

# Useful Texts

- Cale & Harris (2009) Getting the buggers fit. Continuum.
- Cooper Institute (2007) Fitnessgram/activitygram test administration manual. Human Kinetics.
- Institute of Medicine (2012) Fitness Measures and Outcomes in Youth. The National Academies Press, Washington, DC.
- References available on request.

# Questions

Thank You