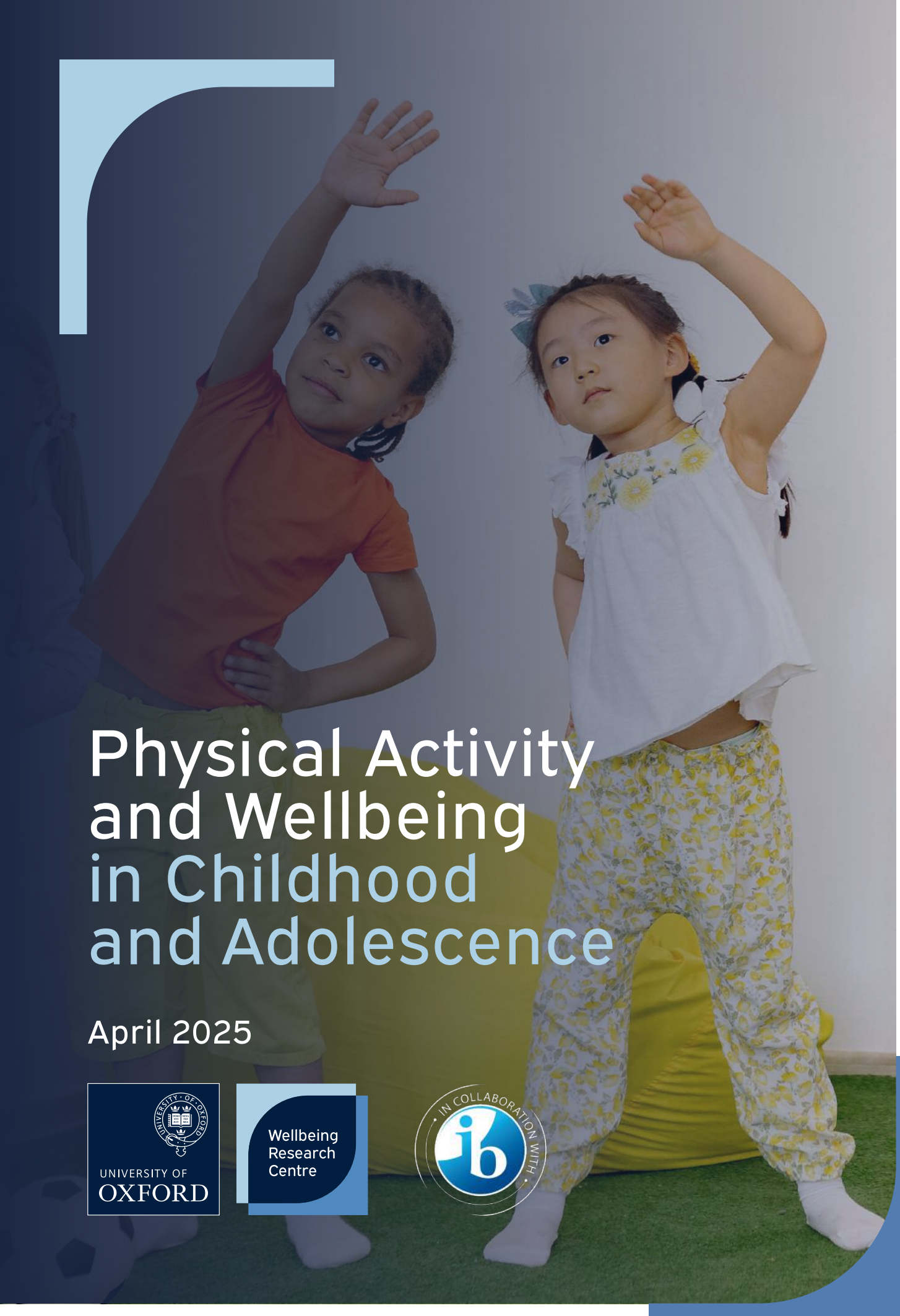

# Physical Activity and Wellbeing in Childhood and Adolescence

April 2025

UNIVERSITY OF OXFORD

Wellbeing Research Centre

IN COLLABORATION WITH ib

University of Oxford | Wellbeing Research Centre | April 2025

With special thanks to Dr. Magdalena Balica, Dr. Jennifer Merriman, Dr. Jose Marquez, and the Wellbeing Research Centre team at the University of Oxford.



The **Wellbeing Research Centre** at the University of Oxford is an interdisciplinary research group that leads globally on the empirical science of wellbeing. The Centre explores wellbeing across the lifespan, via four main research streams: measurement, cause and effect, policy and interventions, and the future of wellbeing.

Research from the Centre has been published in leading academic journals such as *Management Science*, *The Review of Economics and Statistics*, and *Psychological Science*. The Centre is one of four institutions responsible for delivering the United Nations (UN) World Happiness Report each year.

The **International Baccalaureate Organization** (**IBO**) is a global leader in international education – developing inquiring, knowledgeable, confident, and caring young people. Our programmes empower school-aged students to take ownership in their own learning and help them develop future-ready skills to make a difference and thrive in a world that changes fast.

## Cite This Report

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# Executive Summary

**Physical activity, defined by the World Health Organization (WHO) as "bodily movements which significantly increase energy expenditure", has consistently been shown to have a positive effect on wellbeing.**

Current guidelines recommend 60 minutes of daily moderate to vigorous physical activity for children and young people, though evidence finds that not enough children are achieving this.

The literature examined for this report also demonstrates physical activity's positive influence on drivers of wellbeing, such as: self-esteem; social skills; cognitive development; and academic performance.

Such benefits of physical activity are not only confined to childhood and adolescence, but also help to lay the foundations for each child to have a healthier lifestyle in adulthood.

## The Current Evidence and Next Steps in Physical Activity Research

Current research does not point towards a singular physical activity intervention. **There is no 'one-size-fits-all' solution that will work to increase physical activity in all schools.**

Rather, further research into the usefulness of different intervention strategies needs to be conducted within different school and student contexts.

In addition, a greater understanding of how to: scale up physical activity interventions; implement such interventions in a resource-efficient way; and motivate all those within the school community to engage with the intervention, is required.

The field of physical activity intervention is continually growing, and with it, our understanding of physical activity interventions for children and young people grows too. Crucially each school should explore interventions with a lens as to what might work in their unique school ecosystem, using pupil voice as a key driver for change.

## Increasing Physical Activity in Your School

Though the evidence points to physical activity interventions as being effective in increasing physical activity and improving wellbeing in children and young people, further robust research is needed in order for empirically-supported intervention recommendations to be made.

**There is no overarching finding that a specific type of physical activity intervention will lead to the best outcomes**, though the research does recommend that

> "There is no one-size-fits-all solution that will work in all schools."

physical activity should be integrated within the wider school curriculum and environment, rather than just during Physical Education classes.

For example, physical activity could be incorporated into academic classes, or for there to be physical activity resources available to students at break/recess/recreation times.

Students should also be involved in the decision-making process of choosing and designing any physical activity intervention in order to encourage student engagement; student role models such as teachers or parents may also be included in the creation and implementation of any intervention in order to help motivate students.

**It is vital that schools ensure that any intervention is appropriate for the needs of their students and the wider school community.** This requires understanding the context of the students, including but not limited to:

- age of the students
- motor abilities/functioning
- gender within the group
- school resource availability and timetabling
- community influences
- physical environment of the school

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# Introduction

**The International Baccalaureate Organization and the Wellbeing Research Centre at the University of Oxford have worked together on a series of reports focused on wellbeing in schools.**

We suggest readers first explore the foundational reports, 'Wellbeing in Education in Childhood and Adolescence' and 'Wellbeing for Schoolteachers' before reading this series of reports on wellbeing interventions.

In schools, wellbeing is often used as a catch-all term for anything that sits outside of academic attainment. This makes it difficult for schools to measure and implement changes, because the parameters are so broad and intangible.

Wellbeing science is an established area of academic research, and we employ insights from the empirical science of wellbeing to inform these reports.

In our published reports exploring the wellbeing of young people and schoolteachers, **we focus on subjective wellbeing, which refers to an individual's perception of their own wellbeing**.

In school settings, wellbeing is often misunderstood as simply the opposite of mental ill health or happiness.

However, in the 'Wellbeing in Education in Childhood and Adolescence' report, we clarify the differences between these concepts and how schools can use these definitions to decide which aspects of wellbeing to measure and impact.

Critically, the definitions we recommend in the report remove the drivers of wellbeing (like resilience, mental health, family, peers, teachers, etc.) and focus on **the three key areas of subjective wellbeing: life satisfaction; affect; and eudaimonia**. These are presented in Figure 1.

FIGURE 1: COMPONENTS OF WELLBEING

| | |
|---|---|
| LIFE SATISFACTION | This element captures young people's satisfaction with their lives, their perception, and experience. |
| AFFECT | The feelings, emotions, and states of a young person at a particular timepoint, including both positive affect (e.g., joy, happiness, pride) and negative affect (e.g., sadness, depression, anxiety). |
| EUDAIMONIA | Whether young people feel their life is worthwhile or has purpose and meaning (this can include autonomy, capabilities, competencies, and other areas of psychological functioning). |

The core outcome of the wellbeing framework for young people for this project is satisfaction with school life. We focus on the life satisfaction area of subjective wellbeing as the key outcome for the framework for practical reasons, but we also emphasise the importance of affect and eudaimonia.

These outcomes were selected as they represent the areas that schools can most influence: the framework is presented in Figure 2.

The framework has the key performance indicator or outcome variable in the centre, and all the drivers that research evidence has suggested influence this outcome surrounding it.

It is important to note that **this framework only focuses on the evidence for wellbeing** and, as such, there may be other research that schools may wish to consider, beyond the scope of these reports, which focus on other positive outcomes for young people.

**Each driver has varying degrees of influence on the wellbeing of individuals** depending on factors such as the age of the individual and their environment. For example, we know that peers are very important to the wellbeing of adolescents, but to a lesser extent for younger children. This framework gives ultimate flexibility and can be adapted over time to incorporate new insights.

In both reports we give examples of definitions that schools can use. For young people, we suggest that a school-specific definition, including all three areas, is most appropriate:

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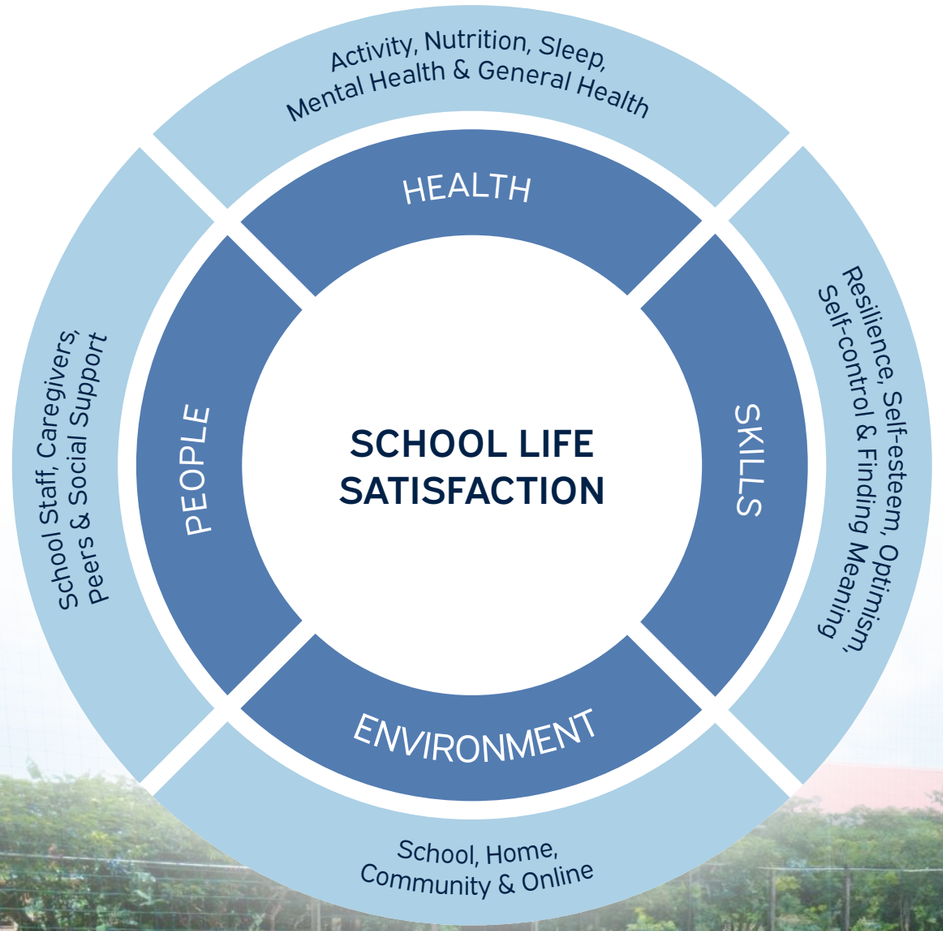
## This school promotes the wellbeing of all pupils.

We define wellbeing as our pupils being satisfied with their school lives, having positive experiences at, and feelings about, school, and believing that what they do at school gives them some purpose and meaning.

(Edited extract from the 'Wellbeing in Schools in Childhood and Adolescence' Report; Taylor et al., 2022)

FIGURE 2: THE SCHOOL LIFE SATISFACTION FRAMEWORK




# Context of Framework

**Each school is a unique ecosystem. This Pupil Wellbeing Framework has been specially designed to be flexible and adjustable to the unique context of any given school.**

The framework is **evidence-based** and includes factors that affect students' wellbeing in four categories: **health**, **people**, **environment**, and **skills**. There are currently 18 drivers listed within these four categories, but **these will likely expand over time as more research is conducted by scientists globally**. The drivers were identified from a literature review of all the factors than can drive positive or negative changes in wellbeing for young people aged 5-18 with a particular focus on wellbeing at school.

**The drivers listed will have different levels of impact on pupils depending on their age and stage, individual differences, and environmental factors that surround them, both inside and outside school.**

An essential feature of this framework lies in its ability to allow schools to concentrate on a specific driver of wellbeing. Within the pupil wellbeing report **we recommend a bottom-up process of listening to pupil and staff voice to determine which drivers are important** in individual schools.

This empowers schools to address specific domains according to their particular needs and available resources. Such an approach not only helps schools avoid feeling overwhelmed but also provides guidance on pathways they can initially explore to enhance wellbeing.

The current framework has a focus on Western cultural influences, because **the majority of the research on this topic has been conducted in Western populations**.

When we consider the diverse cultures across the globe, it becomes apparent that different elements of wellbeing may hold varying degrees of conceptual importance. Moreover, there might be additional elements crucial to specific cultures that are not encompassed within the existing definition.

As the research expands in this area of pupil wellbeing in other cultural contexts, the findings can be incorporated into the model to give a more globally holistic approach.



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## Purpose and Scope of the Focused Report

This series of mini reports is intended to provide a more nuanced understanding of wellbeing interventions for young people. Each report contains scientific research, interventions, measurement, and discussion around a specific driver of wellbeing.

Each of the topics within these reports has differing levels of scientific evidence, and one of the main aims of these reports is to summarise what we currently know about a topic and what further work needs to be done.

Ultimately, we aim for these reports to become part of a digital, evidence-based repository which schools can use to measure, monitor, and support, the wellbeing of young people and those around them.

**"Put simply; happier children make better learners."**

## The Importance of Wellbeing Interventions for Children

An in-depth discussion of this topic can be found in the report 'Wellbeing in Education in Childhood and Adolescence'. There are three important reasons why schools should seek to improve the wellbeing of their pupils, listed here.

The report emphasises that **there is value in using school time, money, and resources to improve pupil wellbeing**.

These improvements will likely not only have immediate benefits for students but will have a driving effect on other positive outcomes (individually, socially, and academically) and have a positive impact on the future lives of young people as they mature into adulthood.

**Crucially, there is seemingly no trade-off to make between wellbeing and academic performance.**

**Put simply; happier children make better learners.**

Schools can feel confident to use time and resources to improve pupil wellbeing in the knowledge that it will likely also lead to improvements in their core business of academic attainment.

1. Childhood and adolescence are important periods in their own right, and **every young person has the right to have a positive experience** in this critical formative period.

2. Higher wellbeing in childhood and adolescence is associated with other benefits for young people, such as **higher attainment, better mental health, and positive pro-social behaviour**.

3. It is important to maximise wellbeing in childhood and adolescence because of the **long-lasting impact** this has on an individual's future, including their adult levels of wellbeing and job prospects.

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# Literature Review

**physical activity**

*n. any bodily movement that involves skeletal muscle contraction and significantly increases energy expenditure*

## Defining Physical Activity

**Physical activity is defined as 'any bodily movement that involves skeletal muscle contraction and significantly increases energy expenditure'. This concept is distinct from exercise, which is considered as structured and repetitive physical activity aiming to improve health.**

In this report, we refer to relative levels of physical activity in reference to the WHO's recommendation that children and adolescents spend (at least) **60 minutes per day doing some form of moderate to vigorous physical activity**.

Sport England defines an active individual as someone who engages in at least 60 minutes of physical activity per day on average, while a fairly active person performs an average of between 30 and 59 minutes of physical activity per day, and a less active person struggles to sustain more than 30 minutes of physical activity a day.

**The difference between 'moderate' and 'vigorous' physical activity is determined by the intensity level**, with *moderate* activities raising heart rate and causing sweating, and *vigorous* activities causing difficult and fast breathing and rapid heart rate.

| less active | fairly active | active |
|---|---|---|
| <30 mins | 30-59 mins | >60 mins |

## The Current State of Physical Activity Across the World




**of children and young people globally classified as 'inactive'**

Research shows that **children and young people are not reaching sufficient levels of physical activity as set out by the WHO's recommendations.** Physical activity levels decline through adolescence and into adulthood.

According to one study which examined global trends in physical activity, **85% of children and young people globally are classified as 'inactive'** as defined by the World Health Organization.

This was found to be true across studies both where learners were asked to self-report on their activity, and where objective measurements were taken (e.g. wearing an accelerometer).

**These trends of insufficient physical activity begin at a very early age.** One systematic review of physical activity in preschool children across seven countries (USA, Scotland, Finland, Australia, Chile, Estonia, Belgium) found that only 54% were sufficiently active.

Moreover, **there is a declining trend over time**; records from both self-report and objective measurements show a decrease in physical activity – and a related increase in sedentary behaviour – meaning children and young people are now less active than ever before.

**This decline in physical activity is likely due to a combination of factors**: advances in technology; socio-economic-issues; reduced provision of physical education in schools; and a decrease in opportunities to be physically active outside of school.

The ongoing impact of the Covid-19 pandemic has also been shown to have had a further effect on lowering levels of physical activity in young people.

**Such reported trends in low and decreasing physical activity have implications not only on children and young people's physical health, but potentially also their overall wellbeing.**

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# Core Drivers of Physical Activity in Young People

Research evidence shows that there are several core drivers of physical activity for young people. Two of the drivers with the strongest evidence are motivation and social environment:

## Motivation

Motivation among children and young people is affected by elements such as: enjoyment; support from peers; parents; teachers; coaches; and feelings of competence and goal achievement.

Self-Determination Theory (SDT) has been widely used for the development of intervention strategies to improve student motivation during physical activity practice.

This theory argues that **human motivation is essentially based on three innate psychological needs: competence, autonomy, and relatedness**.

**Enjoyment has also often been found to be related to these three factor**s, in addition to being a significant determinant of children and young people's physical activity behaviours.

This suggests – and is backed by further research – that **learners are more likely to participate in physical activity when they perceive it to be enjoyable**, and that their enjoyment is linked with sustained physical activity participation.

School leaders and teachers should consider SDT and the drivers of motivation when encouraging their students to engage in physical activity. For example, teachers should:

Involve students in activities which are at an **appropriate skill level** (competence).

Provide students with **options of the physical activity** they would prefer to engage in (autonomy).

Create **inclusive activities involving all students** using equipment which is accessible (relatedness).

> "Learners are more likely to participate in physical activity when they perceive it to be enjoyable."

## Social Environment

**The social environment in which physical activity occurs – particularly in terms of social relationships with peers, teachers, coaches, and parents – is strongly linked to the wellbeing benefits experienced by learners.**

A sense of belonging and feeling connected to leaders, trainers, teachers, and teammates is an important pathway towards improved self-esteem and wellbeing.

However, **several factors can limit or even inhibit motivation and participation in physical activity**, such as inadequate teacher professional development, low teacher confidence, and curriculum outsourcing.

**There is a recognised need to provide teachers with further support in this context.**

This may take the form of physical activity-related resources that help to establish (and maintain) an environment which supports additional connections between teachers and their students, as well as among the learners themselves.



# The Link Between Physical Activity and Wellbeing

Researchers have established **a clear link between physical activity and wellbeing**, both in terms of physical health and the knock-on (positive) impact to other socio-emotional components of wellbeing in childhood and adolescence.

Multiple studies, of various scales, and undertaken in several countries, have demonstrated a positive relationship between increased physical activity and improvement in learners':

- Physical health
- Self-esteem
- Social skills (including a sense of belonging)
- Cognitive function, cognition, and memory related to academic performance.

**Children and young people who participate in physical activity are also more likely to establish healthy physical activity habits which develop into adulthood.**

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## Differences Across Populations

**Population differences are also found in physical activity, especially regarding gender, age, and – though less studied – by socio-economic status and ethnicity.**

One set of guidelines published by the World Health Organization in 2020 on physical activity and sedentary behaviour noted that there has been "no overall improvement in global levels of participation in physical activity over the last two decades, and substantial gender differences."

Furthermore, national data "**consistently show inequalities in participation by age, gender, disability, pregnancy, socio-economic status and geography**".

The research reveals certain trends that teachers may wish to consider when creating and/or implementing physical activity interventions:

The impact of physical activity on the various drivers of wellbeing changes **across life stages**.

**Girls and women across the board are less likely to engage in physical activity than boys and men**, a trend which starts early and continues throughout the lifespan.

**Socio-economic status is related to learners' levels of physical activity**, with advantaged students more likely to engage in moderate or vigorous physical activity outside of school than their disadvantaged counterparts.

**These trends, though, while important to be aware of, are not necessarily accurate in every context.**

Indeed, across all of these areas of study, researchers suggested **further investigation is required** to better understand how the effects of physical activity are presented across different populations.

## Limitations of the Research

**Several challenges and limitations emerge in the study of physical activity and wellbeing**, especially amongst research conducted with children and young people. Many of these relate to challenges that exist with defining and measuring wellbeing.

While interventions often measure the impact on physical health factors, it has been challenging historically for researchers to measure the impact on wellbeing.

The field of wellbeing science is advancing rapidly but there are still a wide range of questionnaires used internationally to measure wellbeing, while some researchers have struggled to adequately define and quantify the term.

We recommend the definition of *subjective* wellbeing as provided in the report 'Wellbeing in Education in Childhood and Adolescence':

### (subjective) wellbeing

*n. [in a school] pupils being satisfied with their lives, having positive experiences and feelings, and believing that their life has purpose and meaning*

Furthermore, while there is a large body of research supporting the positive relationship between physical activity and wellbeing in childhood and adolescence, **the evidence is not as strong or well-documented as it is for adults**.

**"There has been no overall improvement in global levels of participation in physical activity over the last two decades."**

## Physical Activity Interventions

In order to examine the effect of physical activity on specific drivers of wellbeing in childhood and adolescence, researchers have designed and studied a wide range of interventions.

The interventions highlighted in Table 1 have been selected for their high levels of evidence, though **schools should use their own judgement and protocols to deem whether any intervention is appropriate for their setting and individuals**.

Some of these considerations are listed below – for a full list, consult 'Wellbeing in Schools in Childhood and Adolescence'.

- **Community consultation and ownership is recommended for wellbeing strategies to be adopted and promoted by the school community** (parents and caregivers, pupils, staff, wider community, and other school stakeholders such as school governors). This should crucially include pupil voice and a child-focused approach.
- **Wellbeing policies and strategies should be formalised**, any program implemented should have clear guidelines (or be manualised), and staff should know which areas they are individually responsible for.
- **Interventions should have a sound theoretical base** and when interventions are delivered, school stakeholders should ensure that these essential theoretical elements are taught during the intervention and not lost through adaptation. **These interventions should also aim to be direct and specific for the desired outcome.**
- External experts can be useful for initial set up of an intervention, but for the intervention to thrive, **in-house staff must take over to ensure that it is embedded and successful in the longer-term**.
- **School stakeholders should select interventions that are the easiest to implement in their educational setting.** If an intervention is challenging to implement, it is less likely to be successful.
- Implementation of an intervention is an important factor in determining its effectiveness. **Implementation should be carefully considered by school stakeholders as a crucial element of any intervention.**

## Level of Evidence

**Some studies, by their design, deliver stronger or higher quality evidence than others.** When looking at a piece of scientific research, scientists assess several different aspects of a study to ascertain how robust the study is and how much the evidence can be generalised to different populations.

Of course, these levels of evidence must always be considered through the lens of what is possible, ethical, and contextually relevant.

When looking at the strength of a study, firstly the researcher will look at how the study was conducted and make an assessment based on the method that was used. Experimental designs, whether through studies known as systematic reviews, meta-analyses, or Randomised Controlled Trials, are typically graded as delivering the most rigorous types of scientific evidence. They are deemed more rigorous than quasi-experimental studies, observational research, and qualitative research.

**However, all levels of evidence can be useful when considered in context as part of a holistic approach.**

As part of their assessment of the method, scientists will also look at how the data was gathered, how many people took part, the characteristics of the people who took part, whether the findings of the study have been replicated and whether the study measured what it intended to. These elements are crucial in determining the strength and relevance of the evidence.

In this report we highlight some of the strengths and weaknesses of each piece of intervention research. For further information on research methods, we recommend referring to the book *Research Methods in Education* (Cohen, Manion, and Morrison, 8th Edition, 2018).

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TABLE 1: PHYSICAL ACTIVITY INTERVENTIONS

## Move for Wellbeing in Schools (MWS)

- A mix of teacher workshops and a physical activity programme consisting of:
  - Brain breaks during class
  - Guided physical play during recess
  - 4 x 90-minute Physical Education sessions
- Large study (more than 3,000 student participants, aged 10-13)
- Robust evidence level, conducted as a Randomised Control Trial (RCT)
- Wide-ranging intervention: contact within the classroom, at break time, and in PE classes
- Positive teacher and student reports on effectiveness of the intervention
- Detailed information on project delivery and roll-out simplifies repeatability
- The intervention targets students who are at risk of getting caught in a cycle of low levels of physical activity in schools
- The program is developed and adapted in a specific context (i.e., the Danish school system)

## Activity and Motivation in Physical Education (AMPED)

- Aims to maximise opportunities for students to be active during Physical Education lessons, as well as enhancing motivation towards physical activity more generally
- Targets secondary school PE teachers with multiple components including workshops, group mentoring and technology-assisted implementation
- Large study (around 1,500 student participants, aged 13-14)
- Robust evidence level, conducted as a Randomised Control Trial (RCT)
- Significant increase in moderate-to-vigorous physical activity among students
- Significant reduction in student sedentary times during PE
- Conducted in a low socioeconomic area of Western Sydney, Australia, which may make results difficult to compare with other populations

## Switch-2-Activity

- Six teacher-led classroom sessions aim to reduce student screen-time and encourage physical activity through:
  - Educating students on the benefits of physical activity
  - Providing students with the skills to self-monitor their own behaviour
  - Promoting physical activity and developing motor and social skills
- Large study (more than 1,000 student participants, aged 9-12)
- Robust evidence level, conducted as a Randomised Control Trial (RCT)
- Classroom session format simplifies repeatability
- Larger range of ages compared to other intervention studies
- Significant reduction in screen time
- Significant improvement in self-efficacy
- Greater focus on reduction in sedentary time rather than increase in physical activity
- Conducted in low socioeconomic areas of Australia, which may make results difficult to compare with other populations

## Physical Activity 4 Everyone

- Wide-ranging intervention includes adaptations to school environment, curriculum, and community partnerships over a two-year period in order to prevent decline in physical activity levels
- Large study (more than 1,100 student participants, aged 12-14)
- Robust evidence level, conducted as a Randomised Control Trial (RCT)
- Used an objective measure of physical activity
- Two-year study allows researchers to look beyond short-term effects
- Significant increase in moderate-to-vigorous physical activity after both 12 and 24 months
- The program contains multiple components which can be resource-intensive in terms of time and personnel

## Physical Activity Across the Curriculum (PAAC)

- Training provided to teachers on how to implement weekly 90-minute sessions of physical activity with students
- Very large study (almost 5,000 student participants, aged 2-3 at start of study)
- Robust evidence level, conducted as a Randomised Control Trial (RCT)
- Three-year study allows researchers to look beyond short-term effects
- Significant increase in physical activity
- Significantly improved academic outcomes
- Weekly 90-minute sessions may be more difficult to implement than other interventions

## Lifestyle Education for Activity Program (LEAP)

- Wide-ranging intervention targets both school and home components in order to change attitudes towards, and encourage participation in, physical activity
- Large study (more than 2,100 student participants, aged 13-15)
- Robust evidence level, conducted as a Randomised Control Trial (RCT)
- Targeted for adolescent girls, a group shown to have one of the lowest levels of physical activity
- Significant increase in regular vigorous physical activity
- Focus on adolescent girls may make results difficult to compare with other populations
- Findings now almost 20 years old (2005)

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# Key Findings from Physical Activity Intervention Research

While each intervention presented in Table 1 was undertaken in unique circumstances, some highlights emerged about what makes a physical activity more (or less) effective, as well as more general recommendations to be made across schools:

**1** The research often calls for an **increase of moderate-to-vigorous physical activity** throughout the school week, particularly within PE lessons, but also the **incorporation of physically active elements into other academic classes** as well.

**2** Successful physical activity interventions involve **educating both teacher and students on the importance of physical activity and health** (both mental and physical). Understanding the 'why' behind any intervention is an important factor in its success.

**3** Certain groups (e.g., girls and those with lower baseline physical activity levels) **benefit more from physical activity** interventions.

**4** **The age of learners determines which aspects of the intervention are most beneficial.** Younger children may benefit from a focus on motor skill development, but adolescents may respond better to interventions that target self-perception, enjoyment, and motivation.

**5** **The length of time for each intervention to be effective depends on the participant population and age group.** Motivation appears to drop over time, and so this should be taken into account when deciding on how long to run a specific intervention.

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# Barriers to Increasing Physical Activity

It is clear, then, that any increase in physical activity is likely to result in improvements of the drivers of wellbeing in children and young people.

But it is vital that we **consider the needs and experiences of the individuals who will ultimately be implementing any intervention**. Often, educators are under extreme time pressures and are already

> "If learners **enjoy** the activity, are **involved** in the development process, and are otherwise **motivated to engage** in physical activity, interventions will be more effective."

subject to high demands, and therefore it is important to consider the additional stress that implementing an intervention might have on their already full schedules.

This is an area of focus for further research – we know that the way in which an intervention is implemented significantly impacts its outcomes, but **challenges remain around how activities can be adopted long-term or on a larger scale**.

There is little evidence so far around the long-term effects of specific physical activity interventions, as well as the challenges of maintaining behaviour, especially after the novelty of a 'new' activity has worn off.

In general terms, **if learners enjoy the activity, are involved in the development process, and are otherwise motivated to engage in physical activity, interventions will be more effective in the longer run.**

# How to Implement a Physical Activity Intervention in Your School

**The direct involvement of student voice in the development of interventions targeting children and young people is critical in ensuring effective promotion of physical activity in schools.**

The European Heart Health Initiative offers recommendations on elements of physical activity promotion and ways in which these should take into account multiple groups within the school community, sitting both inside and outside of the school timetable and environment:

## Access

**Access to suitable environments and facilities are key determinants of wellbeing.** Young people tend to be more likely to be physically active if they spend more time outdoors – **this justifies an environmental approach to promoting physical activity**, including policy and investment for safe walking and cycling routes, access to countryside and open space, as well as community sports and facilities.

## Family

**Family knowledge and involvement in encouraging physical activity is important.** Parents may need education and support to help them effectively encourage their children's initial and continued involvement in physical activity.

## Time

Given that **after school and weekends are key times associated with physical activity for young people**, the provision of facilities and services to promote activity at these times is crucial.

## Resource

**Greater investment (time or otherwise) in quality PE is important**: qualitative research often notes strongly held negative views about PE, demonstrating how poorly delivered PE can discourage physical activity overall in life.

## Curriculum

School-based promotion of physical activity must extend far beyond the PE curriculum. **Evidence suggests that a 'whole school approach' to health and physical activity promotion is warranted.** This demands that physical activity promotion be integrated in broader efforts to promote physical and mental health in schools.

# Measuring the Impact of Physical Activity Interventions

Most studies of physical activity and wellbeing use some form of self-report assessment, of which some examples are given in Table 2. **Where possible, these largely subjective measures should be combined with some form of objective assessment** (e.g., accelerometer, heart-rate monitor, etc.).

This combination of subjective and objective measures can provide a greater understanding of the nuances in implementing an intervention and why it may be effective (or not).

Understandably, schools may not have access to objective measures, whereas self-report measures can be administered easily, quickly, and inexpensively.

**Therefore, the method of measurement used depends on the aim, setting and population involved.**

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TABLE 2: SUBJECTIVE MEASURES OF PHYSICAL ACTIVITY FOR YOUNG PEOPLE

## Health Behaviour in School-aged Children Study (HBSC)

- ✓ Short and simple survey for young people (11 to 15 years) to complete
- ✓ Validated in English, French and Spanish
- ✓ Questionnaire available to be downloaded freely
- x Borderline-to-acceptable reliability found for both moderate and vigorous physical activity across various countries

## Programme for International Student Assessment (PISA)

- ✓ Short and simple survey for young people (15 to 16 years) to complete
- ✓ Validated in English, French and Spanish
- ✓ Questionnaire available to be downloaded freely
- x Currently no peer-reviewed evidence of reliability of the assessment

## Physical Activity Questionnaire for Older Children / Adolescents (PAQ-C/A)

- ✓ Short and simple surveys for both older children and adolescents to complete
- ✓ Satisfactory level of reliability
- ✓ Validated in English, French and Spanish
- ✓ Manual available to be downloaded freely
- x Commonly employed across various countries , but mostly used in a Western context

## International Physical Activity Questionnaire short / long (IPAQ-S/L)

- ✓ Appropriate for wide range of age groups (15 to 69 years), with option of short survey
- ✓ Shown to be reliable with studies in multiple age groups
- ✓ Validated in English, French and Spanish
- ✓ Questionnaire may be used under Creative Commons license CC BY 4.0
- x Studies found IPAQ-S tended to overestimate the levels of physical activity compared to objective measures

## Youth Risk Behaviour Surveillance Study (YRBS)

- ✓ Survey aimed at teenagers (14 to 18 years)
- ✓ Validated in English and Spanish
- ✓ Questionnaire available to be downloaded freely
- x Survey taken every two years, so only able to show general trends as opposed to more detailed surveys
- x Reliability rated as moderate on the basis of multiple studies

TABLE 3: OBJECTIVE MEASURES OF PHYSICAL ACTIVITY FOR YOUNG PEOPLE

## Accelerometer

- ✓ Relatively inexpensive
- ✓ Simple to use
- ✓ Good reliability once worn for an appropriate period of time
- x Needs to be worn for between four and 12 days before results are considered reliable
- x Not able to distinguish effortful movement (e.g. climbing stairs, carrying heavy objects etc.)

## Pedometer

- ✓ Relatively inexpensive
- ✓ Simple to use
- x Not able to measure activity beyond a step count, such as speed or intensity of movement
- x Reliability dependent on device and context of use
- x Needs to be worn for a minimum of three days before results are considered reliable

## Heart Rate Monitor

- ✓ Directly measures electrical signal from the heart, indicating beats per minute
- ✓ Considered highly reliable
- ✓ Can be used from birth
- x More expensive than other objective measures
- x Not as portable or as comfortable as other objective measures
- x Elevated heart rate not necessarily indicative of physical activity

Image © Bulat Khamitov via Pexels

TABLE 4: OBSERVATIONAL MEASURES OF PHYSICAL ACTIVITY FOR YOUNG PEOPLE (TYPICALLY USED WITH YOUNG CHILDREN)

## Children's Activity Rating Scale (CARS)

- ✓ High level of reliability
- ✓ Scale available to be downloaded freely
- x Intensive schedule of observation: 10 to 12 hours between one and four times a year
- x Validated in English only

## The System for Observing Fitness Instruction Time for Preschoolers (SOFIT-P)

- ✓ High level of reliability
- ✓ Scale available to be downloaded freely
- x Complex observation coding requires specialist training for observers
- x Validated in English only

## System for Observing Play and Leisure Activity in Youth (SOPLAY)

- ✓ High level of reliability
- ✓ Scale available to be downloaded freely
- x Primarily focuses on outdoor play or leisure activities in a targeted area, and therefore might not capture indoor physical activity
- x Requires trained personnel and can be resource-intensive
- x Validated in English only

## Observational System for Recording Physical Activity in Children (ORSAC)

- ✓ High level of reliability
- ✓ Scale available to be downloaded freely
- x Requires trained observers familiar with the coding book
- x Validated in English only

## Further Reading

Taylor, L. J., De Neve, J.-E., DeBorst, L., & Khanna, D. (2022). *Wellbeing in Education in Childhood and Adolescence (Report No. 1).* International Baccalaureate Organization.

Zhou, W., Taylor, L., Boyle, L., DeBorst, L., & De Neve, J-E. (2025). *Physical Activity and Wellbeing in Childhood and Adolescence: Literature Review.* International Baccalaureate Organization.

## References

**For a full list of references used in this report and access to additional supplementary materials, visit wellbeing.hmc.ox.ac.uk/schools.**