

REBALANCING PHYSICAL ACTIVITY IN PHYSICAL EDUCATION

Thomas Quarmby, Jim McKenna and Matthew Hobbs

THE IMPORTANCE OF PHYSICAL ACTIVITY FOR YOUNG PEOPLE

Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure (Caspersen *et al.*, 1985). It is not restrictive to sport but incorporates other activities such as walking to school or informal play after school. Importantly, children who are more active show greater attention in class, have faster cognitive processing speed, and perform better on standardised academic tests than children who are less active (Institute of Medicine, 2013). It is advised that to improve cognitive, cardiorespiratory and muscular fitness, bone health, and cardiovascular and metabolic health, children aged 5-17 should accumulate at least 60 minutes of moderate-to-vigorous-intensity physical activity (MVPA) daily. MVPA equates to a moderate amount of effort that noticeably accelerates the heart rate, such as brisk walking, dancing or active involvement in games. Even though physical activity contributes to better health, many young people fail to achieve the target of 60 minutes per day and this decrease in physical activity is exacerbated as children age (Cooper *et al.*, 2015).

PHYSICAL EDUCATION AS AN IMPORTANT OPPORTUNITY FOR INCREASING PHYSICAL ACTIVITY

The whole school day and within that physical education (PE) are increasingly seen as important opportunities to accumulate physical activity (afPE, 2015; Meyer *et al.*, 2013). Paradoxically, even though school days including PE are more active than those that are not, PE is frequently identified as insufficiently active (Hollis *et al.*, 2015). For instance, a recent review showed that students spent 34.7 per cent of the PE lesson in MVPA; this equates to approximately 21 minutes of a one-hour PE lesson (Hollis *et al.*, 2015). Worryingly, other studies within the UK have shown activity levels to be lower. For instance, a study of only girls demonstrated that an additional 17.5 minutes of MVPA per 60-minute PE lesson would be needed for PE to become *sufficiently* active (Hobbs *et al.*, 2014).

OBJECTIVES FOR SUFFICIENT PHYSICAL ACTIVITY IN PE

To increase the amount of activity within PE, two objectives have been produced within the USA and UK by The US Department for Health and Human Services (HHS) and the Association for Physical Education (afPE) respectively. They aim to highlight the importance of

increasing physical activity in PE and define what *sufficient* physical activity in PE is. Consequently, research and policy now commonly use these two objectives to ascertain if PE is active enough (Table 1). However, our recent article in The British Journal of Sports Medicine (Hobbs *et al.*, 2017) highlights how the evidence underpinning current objectives is problematic. The afPE objective fails to cite evidence that informs the recommended duration and intensity of physical activity in PE. Furthermore, the HHS objective is based on a combination of evidence – all of it low quality: self-reported time spent playing sport, expert advice, interpretations drawn from behavioural theory, and a selection of exemplary practice. Given that both objectives are underpinned by low quality evidence at best, it is therefore worth asking what sufficient physical activity within PE may be.

TABLE 1: A summary of objectives to increase activity within PE

ORGANISATION	OBJECTIVE FOR 'SUFFICIENT' PA
Association for Physical Education (afPE)	Students should be <i>actively moving</i> for at least 50-80% of the available learning time.
The US Department of Health and Human Services (HHS)	Students should engage in MVPA for >50% of the time they spend in PE class.

We suggest that current objectives for physical activity in PE need refining as they are underpinned by low-quality evidence and contain unacknowledged differences in physical activity intensity and duration. Despite assumptions of their equivalence, both objectives contain profound differences in what is classified as sufficient physical activity. Worryingly, a plethora of research, including our own (Hobbs *et al.*, 2014), has failed to recognise and/or acknowledge the important differences between objectives. This issue is best illustrated by a recent meta-analysis, which concluded that levels of moderate to vigorous physical activity within PE met neither the HHS nor the afPE objectives for >50% of PE in MVPA. However, Table 1 clearly shows how only HHS specified a threshold of MVPA intensity. In reality, the afPE objective refers to any type of active movement, which includes light physical activity such as slow walking or standing. Research must now move beyond considering levels of MVPA in isolation. Future research may be warranted to develop an appreciation of how much objectively measured MVPA can be achieved within a typical PE lesson, while meeting the other multifaceted aims of PE, for instance, the need to develop physical literacy.

A NEED TO BALANCE PHYSICAL ACTIVITY AND OTHER OUTCOMES OF PE

As we move towards research-informed practice, it is essential that objectives for physical activity in PE are appropriate. The uncompromising pursuit of these objectives by research and policy is concerning, as it may cause teachers to focus on levels of physical activity, at the expense of fostering an enjoyment of physical activity or developing physical literacy. This pursuit has already led to unsubstantiated calls by Ofsted (within the UK) for teachers to engage pupils in sustained periods of high-intensity physical activity. However, adherence literature demonstrates how sustained, high-intensity physical activity can reduce subsequent motivation for being active. An over-diligent pursuit of these objectives by research and policy may result in teachers prioritising fitness-based activities over others, such as those that develop physical literacy. However, an emphasis on fitness-testing presents dangers with regard to individualistic, body-centred pedagogies (Alfrey and Gard, 2014) and it is unclear what, if anything, students learn from the process (Hopple and Graham, 1995). This is despite increased fundamental movement skill competency, a key component of physical literacy, predicting increased adolescent physical activity.

CHALLENGES AND SOLUTIONS FOR PRACTICE WITHIN PE

A contextualised example highlights the difficulties a teacher may face when trying to achieve the multifaceted outcomes of PE. Imagine this common lesson scenario: the teacher asks pupils to consider how to penetrate effectively a defence in an invasion game. In addition to being 'active enough', children must consider a tactical appreciation of the task, communicate with teammates, allocate roles and responsibilities, and review their success. In this example, the teacher is pursuing an appropriately wide range of learner experiences.

Moreover, PE should contribute to learning across the physical, social, cognitive and affective domains and, as such, there are several other examples of where PE might not be expected meet these targets. For instance, during the first week of a Sport Education unit when teachers and students explore the rules, etiquette and strategies of the sport and where students split into teams and determine roles. Similarly, during Cooperative Learning when students are organised into jigsaw groups, then expert groups, and asked to work together to learn a new skill before sharing this with others. These examples are reflective of several pedagogical models whereby the focus is on learning skills, developing knowledge and exploring activities collaboratively, not necessarily on meeting activity targets.

In some PE lessons, students may also be learning about the human body, the bones and muscles, and how the heart and lungs work. This is essential for educating students about the benefits of physical activity but would not necessarily be done at a particular intensity. This is not to say, however, that it would not be active. Importantly, PE must provide students with knowledge, skills, competencies and confidence to enjoy and benefit from lifelong physical activity and yet an uncompromising pursuit of time spent in MVPA may be detrimental to this.

LOOKING BEYOND PE AS A 'SILVER BULLET' TO SOLVE THE INACTIVITY CRISIS

While PE may reasonably be expected to make a substantial contribution to children's daily physical activity, this must not sacrifice other important PE outcomes. Given their long-term value, these other markers of PE quality—such as the enjoyment of being active or the development of physical literacy—need to be afforded renewed priority, perhaps by explicit integration into future objectives. To support the development of objectively determined physical activity objectives, in tandem with achieving the multifaceted requirements of PE, it is essential that education makes a full contribution to these public health debates. Acknowledging

that interventions within PE generate only small increases in physical activity, it is now time to look beyond PE as a 'silver bullet' for resolving the inactivity crisis, towards all segments of the school day. Importantly, what is at stake is not just achieving physical activity in PE, but encouraging lifelong participation in physical activity and the long-term health of children. ■

Thomas Quarmby is a Senior Lecturer in Physical Education and Sport Pedagogy in the Carnegie School of Sport at Leeds Beckett University. **Jim McKenna PhD**, is Professor of Physical Activity and Health and Head of the Active Lifestyles research centre at Leeds Beckett University. **Matthew Hobbs** is Lecturer in Physical Activity, Exercise and Health at Leeds Trinity University and PhD Candidate at Leeds Beckett University.

The Association for Physical Education Response

The Association for Physical Education (afPE) completely agrees with the authors that there should not be 'an uncompromising' pursuit of time spent in MVPA at the expense of important learning objectives, such as pupils developing knowledge, understanding, competencies and confidence to enjoy and benefit from physical activity. This is why the afPE recommendation does not specify a particular intensity and there is a range (50-80 per cent) of 'active' time to ensure flexibility for important PE outcomes to be achieved. afPE also agrees that PE should not be seen as a 'silver bullet' to resolving inactivity or obesity issues and has always encouraged whole school approaches to the promotion of active lifestyles. afPE does recognise, however, that activity levels in PE could be increased (but not at the expense of important learning objectives and certainly without resorting to dreary drills!) and this can usually be achieved through effective planning and efficient management and organisation of pupils and resources. For example, involving pupils in small group activities rather than them queuing to take turns.

The afPE recommendation of 50-80 per cent of active time is a professional judgement made by experts in the field of physical education, physical activity and public health. It is based on research which indicates that activity levels in PE lessons tend to be on the low side (27-38 per cent, depending on the activity) and that only a minority of children meet the one hour a day MVPA recommendation. This suggests that activity levels in PE could be higher and that PE can do more to contribute to the physical activity for health recommendation. The afPE-recommended range of 50-80 per cent represents an increase from the research findings but also recognises that activity levels within PE lessons are dependent on the lesson objectives and the activity itself.

To read afPE's Health Position Paper in full, visit:

<http://www.afpe.org.uk/physical-education/afpe-health-position-paper/>

REFERENCES

- Alfrey, L. & Gard, M. (2014). A crack where the light gets in: a study of Health and Physical Education teachers' perspectives on fitness testing as a context for learning about health. *Asia-Pacific Journal of Health, Sport and Physical Education*, 5 (1), p.3-18.
- Association for Physical Education (afPE). (2015). *Health position paper*. Worcester: Association for Physical Education.
- Caspersen, C.J., Powell, K.E. & Christenson, G.M. (1985). Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. *Public Health Reports*, 100 (2), 126-131.
- Cooper A.R., Goodman A., Page A.S., Sherar L.B., Eslinger D.W., van Sluijs E.M., Andersen L.B., Anderssen S., Cardon G., Davey R., Froberg, K., Hallal P., Janz K.F., Kordas K., Kremler S., Pate R.R., Puder J.J., Reilly J.J., Salmon J., Sardinha L.B., Timperio A., Ekelund U. (2015) Objectively measured physical activity and sedentary time in youth: the International children's accelerometry database (ICAD). *Int J Behav Nutr Phys Act* 12, p.113.
- Hobbs, M., Daly-Smith, A., McKenna, J., Quarmby, T., Morley, D. (2017) Reconsidering current objectives for physical activity within physical education. *British Journal of Sports Medicine*. <http://dx.doi.org/10.1136/bjsports-2016-097328>.
- Hobbs, M., Daly-Smith, A., Morley, D., McKenna, J. (2014) A case study objectively assessing female physical activity levels within the National Curriculum for Physical Education. *European Physical Education Review*. 21 (5), pp.149-161.
- Hollis, J.L., Williams, A.J., Sutherland, R. *et al.* (2016) A systematic review and meta-analysis of moderate-to-vigorous physical activity levels in elementary school physical education lessons. *Preventive Medicine*, 86, pp.34-54.
- Hopple, C. & Graham, G. (1995) What children think, feel and know about physical fitness testing. *Journal of Teaching in Physical Education*, 14(4): 408-417.
- Institute of Medicine. 2013. *Educating the Student Body: Taking Physical Activity and Physical Education to School*. Washington, DC: The National Academies Press.
- Meyer, U., Roth, R., Zahner, L., Gerber, M., Puder J.J., Hebestreit, H., Kriemler, S. (2013). Contribution of physical education to overall physical activity. *Scandinavian Journal of Medicine & Science in Sports*, 23, pp.600-606.