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Monitoring Health, Activity and Fitness in Physical Education:

Its Current and Future State of Health

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Abstract

Various government policies, strategies and responses in England over the years have highlighted schools and physical education to be instrumental in addressing health and the focus on health has been strengthened within subsequent revisions of the National Curriculum. Whilst this might seem encouraging, concerns have been expressed that such policies and governmental regulation increasingly bear features of a 'performative culture' and that these have led to increasingly widespread health surveillance in schools. Linked to this are long standing concerns over the way in which health is addressed in schools and physical education, as well as over some of the monitoring measures and practices employed within the curriculum. Despite this, little is known about monitoring practices in physical education. This paper therefore presents findings of a study which aimed to i) determine the nature, prevalence and purpose of monitoring health, physical activity and physical fitness within the physical education curriculum, and ii) establish

physical education teachers' views of and approaches to monitoring. The study comprised two phases. The first phase involved a survey completed by heads of physical education in 110 secondary schools from across England, and the second semi-structured interviews with 18 of those from the original sample. The findings revealed monitoring, and in particular fitness monitoring, to be a common feature within the physical education curriculum in many schools. However, a number of issues and limitations associated with monitoring and some of the schools' monitoring practices were identified, and the individualistic nature and performative culture reflected in and reinforced through monitoring were acknowledged as potentially problematic. It was thus suggested that if the findings are typical, then monitoring practice is currently not in a good state of health. The paper concludes proposing a way forward for monitoring within physical education in the form of some recommendations for practice.

Introduction

Given the growing concerns over young people's health, physical activity and physical fitness levels in recent years, it is perhaps not surprising that the role of schools and physical education in promoting health has been increasingly

recognized (Shephard & Trudeau, 2000; Cale & Harris, 2005; Stratton, Fairclough & Ridgers, 2008; Webb, Quennerstedt & Öhman, 2008). More specifically, contributing to public health via promoting health-enhancing lifestyles and increasing physical activity has been viewed as one, if not the most, important objective of physical education (Shephard & Trudeau; 2000; Green, 2002; Fox, Cooper & McKenna, 2004; Fairclough & Stratton, 2005).

According to Cale & Harris (2011), in England this is evidenced by various government policies, strategies and responses over the years which have highlighted schools to be instrumental in addressing health and explicitly included physical education in this regard. These include for example, 'Choosing Health' (Department of Health (DoH), 2004), 'Healthy Weight, Healthy Lives' (DoH & Department for Children, Schools and Families (DfCSF), 2008), 'Healthy Lives, Healthy People' (DoH, 2010a), and the Annual Report of the Chief Medical Officer (DoH, 2010b). In addition, the focus on health has been strengthened within subsequent revisions of the National Curriculum (Fox & Harris 2003; Cale & Harris, 2005) with 'healthy, active lifestyles' now featuring prominently within the current secondary National Curriculum for Physical Education (NCPE) (Qualifications and Curriculum Authority, 2007).

Whilst the above might seem encouraging on the surface, concerns have been expressed that such policies and governmental regulation ‘increasingly bear features of a ‘performative culture’ celebrating comparison, measurement, assessment and accountability’ (Evans, 2007, p. 12) and that these have led to increasingly widespread health surveillance in schools (Evans, 2007; Webb & Quennerstedt, 2010; Evans & Rich, 2011), i.e., monitoring and collecting information about and on children’s health and bodies. Broadly, performativity refers to ‘a technology, a culture and a mode of regulation that employs judgments, comparisons and displays as a means of control, attrition and change...’ (and where) ‘the performance of individuals, subjects or organizations serve as measures of productivity or output, or displays of ‘quality’, or ‘moments’ of promotion or inspection’ (Ball, 2004, p.4-5).

Examples in this context include the introduction and the continued support by the previous and current government respectively for the National Child Measurement Programme in primary schools in England (DoH, 2010a), plus the 2010 Chief Medical Officer’s Report recommendation that comprehensive physical fitness testing should be piloted in secondary schools (DoH, 2010b).

Yet arguably, and in recognition of schools’ growing responsibility for young

people's health, it is suggested schools are pressed to engage in health issues rather simplistically and narrowly (Evans, 2007; Evans et al., 2008) and to even promote practices which are potentially harmful to the health of young people (Evans, Rich & Davies, 2004; Wright & Dean, 2007; Evans et al., 2008; Evans & Rich, 2011). Indeed, various authors have considered the negative consequences of health surveillance on the lives and bodies of young people (Azzarito, 2007; Evans et al., 2008; Rich, 2010). Despite this however, Rich (2010) notes how little is known about how children, teachers and others experience the existing networks of surveillance.

The recent critiques of schools' impact on the health of young people noted above are related to longer standing concerns over the way in which health is addressed in schools and physical education (Almond & Harris, 1997; Harris, 2000, Fox & Harris, 2003; Trost, 2006). A number of researchers have found physical education teachers' knowledge and understanding of health and/or health promotion to be narrow, limited and even flawed (Cale, 2000; Armour & Yelling, 2004; Castelli & Williams, 2007; Armour & Harris, 2008; Kulinna et al., 2008; Harris, 2010; Alfrey, Cale & Webb, 2012) and for them to often adopt a 'sport', 'performance' and 'fitness' focus to the delivery of health that is

dominated by a 'fitness for performance' discourse and practices such as fitness testing (Green & Thurston, 2002; Leggett, 2008; Harris, 2010; Alfrey, Cale & Webb, 2012). Such a focus provides further evidence of a culture of performativity.

The above might explain the continued popularity of fitness testing within schools, with it being common and even compulsory practice within many physical education programmes (Harris, 1995; Cale, 2000; Keating, 2003; Liu, 2008; Keating & Silverman, 2009). In addition though, it seems the surveillance measures schools employ extend well beyond fitness testing.

Examples that are cited in the literature include weighing and measuring children, taking skinfold measurements, using heart rate monitors or pedometers, inspecting children's lunch boxes, fingerprint monitoring, and implementing health report cards (Wright & Dean, 2007; Evans et al., 2008; Cale & Harris, 2009a; Rich, 2010).

Whilst some monitoring measures and practices might serve some useful purposes, and proponents of monitoring would claim unreservedly that they do, they can equally be problematic and have been criticized on a number of

grounds. With respect to fitness testing, claims have been made that it promotes healthy lifestyles and physical activity, motivates young people to maintain or enhance their physical fitness or physical activity levels, facilitates skills such as goal setting, self-monitoring and self-testing, and that it promotes positive attitudes, and enhances cognitive and affective learning (The Australian Council for Health, Physical Education and Recreation (ACHPER), 2004; Whitehead, Pemberton & Corbin, 1990; Pate, 1994). Similarly, reasons reported for monitoring physical activity within the curriculum include to promote active, healthy lifestyles, establish how active young people are, determine whether they are meeting current physical activity guidelines, and to help meet the requirements of the NCPE (Pangrazi, 2000; Cale & Harris, 2002; Corbin, 2002).

Opponents, on the other hand, argue that such practices encourage and promote 'unprecedented levels of surveillance of young people' (Evans, 2007, p.13). Certainly controversy has surrounded the fitness testing of young people for a number of years and various issues have been debated and concerns expressed over the use of fitness tests with this group (see more recently for example, Keating, 2003; Cale & Harris, 2005; 2009b; Cale, Harris

& Chen, 2007; Wrench & Garrett, 2008; Liu, 2008; Lloyd, Colley & Tremblay, 2010). According to Cale and Harris (2009b), issues debated most frequently relate to concerns with respect to the type, validity, and reliability of fitness tests and to the ethics and value or purpose of testing. Indeed, for many young people, it has been suggested that fitness testing can be counterproductive to the promotion of physical activity and turn off those most in need of encouragement in that it can be unpleasant, uncomfortable and embarrassing and because scores can be meaningless, misleading and unfair (Cale & Harris, 2009b; Naughton, Carlson & Greene, 2006). As a result, questions have been raised as to whether fitness tests do actually serve the purposes for which they are intended (Cale & Harris, 2009b; Stewart Stanec, 2009). By the same token, it is contended that, if appropriately employed, fitness testing can be valuable and warranted (Rowland, 2007; Silverman, Keating & Phillips, 2008; Lloyd, Colley & Tremblay, 2010) and there is no reason why it cannot play a role in supporting healthy lifestyles and physical activity (Cale & Harris, 2005).

Given that the monitoring of young people within schools and physical education has faced some criticism in recent years, and the issues and

concerns over the use of fitness testing with young people, this raises questions regarding what, how much, for what reasons, and in what ways, monitoring is being conducted in schools and specifically physical education.. To date however, limited research has been conducted on monitoring in the school context and little is known about monitoring practices within physical education. This paper therefore presents findings of a study which aimed to i) determine the nature, prevalence and purpose of monitoring health, physical activity and physical fitness within the physical education curriculum, and ii) establish physical education teachers' views of and approaches to monitoring. The findings are then critically discussed before a way forward for monitoring health within physical education is proposed in the form of recommendations for practice.

Methodology

The study comprised two phases. The first involved a large-scale survey whilst the second semi-structured interviews.

Survey

The sample for the survey comprised Heads of Physical Education (HoPEs)

from secondary schools from across England. A proportionate, stratified sampling procedure was adopted to select the schools from which the HoPEs were drawn, with the variables used to stratify the sample being the type of school and the size of the Local Authority in which the schools were located. In total, 289 state secondary schools were selected to be involved in the study. Having selected the schools, questionnaires were sent to the Headteachers and HoPEs within each. HoPEs were purposely selected to complete the questionnaire as they are responsible for the design and delivery of the physical education curriculum in their schools.

The survey was designed to gather data on the physical education department's practices and approaches relating to monitoring health, activity and fitness and the HoPEs' views on monitoring in the curriculum. The questionnaire comprised different sections which focused on health, physical activity and physical fitness in turn, and the forms were coded for follow-up purposes. After follow up, a final response rate of 38.4% (n = 110 schools) was achieved. The quantitative data from the returned questionnaires were entered into SPSS 16.0 (Statistical Package for the Social Sciences) for analysis and descriptive statistics were employed.

Interviews

For phase two of the research, a purposive sample of HoPEs was drawn from the original survey sample. Based on the findings of the survey, 40 schools were selected according to i) the nature and extent of their monitoring of health, activity and fitness (to include a mix and some that were heavily, moderately and only minimally engaged in monitoring), and ii) their geographical spread. Letters were again sent to the Headteachers and the HoPEs of the schools inviting the HoPEs to be involved in the interviews and eighteen responded positively.

Whilst the interviews and questions differed according to each school's monitoring practices, common issues were explored including the HoPEs' experiences, views, attitudes and choices concerning monitoring, as well as any general issues or concerns they had. The interviews were conducted in a suitably quiet room, recorded with the consent of the interviewees, and lasted between 30-50 minutes. Afterwards, the data were transcribed and the transcripts were electronically mailed to each HoPE asking them to check them for accuracy. The data were then coded and categorised into

emerging themes (Ritchie & Lewis 2003).

Results

The Prevalence and Nature of Monitoring within the PE Curriculum

Nearly 40% of schools (39%) were reported to monitor pupils' health, over 60% (61.9%) pupils' physical activity, and most (89.0%) physical fitness within the physical education curriculum. Over a quarter (28.8%) monitored all three components whereas a small minority (3.4%) did not monitor any. Overall, among those schools involved in monitoring, fitness monitoring was given the greatest emphasis (53.4%), activity monitoring was afforded the next (21.2%) and health the least (5.1%). Furthermore, monitoring health, activity and fitness were compulsory components of the curriculum in 28%, 41% and 56% of schools respectively and were monitored two or more times a year in 37%, 65.8% and 46.7% of schools respectively.

Amongst the schools that monitored health, nearly all (95.8%) monitored pupils' cardiovascular health and over half monitored pupils' weight (54.0%) or body composition (58.7%) via simple anthropometric measures. Fewer schools monitored blood pressure (28.2%) and mental health (20%). The

class register, in which teachers recorded whether pupils had participated or not, was reported to be the most commonly employed method of monitoring physical activity (72.6%), followed by observation (67.1%). Other methods employed included questionnaires (36.9%), heart rate monitoring (34.2%), activity diaries (20.5%) and pedometers (4.1%).

In terms of monitoring fitness, most schools monitored health-related and skill-related components via a variety of tests. The health-related components most commonly monitored included aerobic capacity (98.0%), muscular strength/endurance (91.4%), and flexibility (91.4%), and over one third of schools (36.2%) also monitored body composition. The multistage fitness test was the most frequently cited test (95.2%) but other common ones included the sit and reach (91.4%), sit up/curl up (82.9%), and time/distance run (80.9%). Skinfold measurements were also taken in approximately 30% of schools.

Physical Education Teachers' Views of Monitoring within the Curriculum

The survey revealed mixed views concerning the responsibility of schools for monitoring pupils' health, activity and fitness. Over 40% (40.7%) agreed that

schools do have a responsibility, whilst 26.3% disagreed and a third (33.1%) were uncertain. Further, it became evident from the interviews that most HoPEs considered that the responsibility for monitoring health, activity and fitness should lie not only with the physical education department but with the entire school, as well as with parents, health professionals and society as a whole. For example, advocating a whole school approach, one HoPE explained:

I think it has to be a whole school approach... We use PSHE (Personal, Social and Health Education) sessions, rather than just PE sessions, because a lot of kids do still associate PE with playing games. So I think it's the whole school and it would be a lot easier. (Male HoPE)

Just one HoPE was not sure that monitoring pupils' health, physical activity or fitness should necessarily be part of a school's responsibility, stating:

I think it needs to be monitored... Whose job is that? I'm not sure that it fits in with the school curriculum... I don't think the school actually has a responsibility to do that. (Female HoPE)

Differences of opinion were also evident amongst the HoPEs with regard to the desirability and importance of monitoring within the curriculum. Over half of the HoPEs surveyed felt it was desirable to monitor young people's health within the curriculum and the majority (57.6%) also felt that monitoring health should be an important component of any PE programme. Over three quarters (78.8%) also valued monitoring physical activity within the curriculum with most (57.6%) feeling this to be more important than monitoring fitness. Despite this, three quarters (75.4%) considered monitoring physical activity within the curriculum to be problematic.

The majority of HoPEs also appeared to value fitness monitoring with 76.3% agreeing that it could be effective in promoting physical activity and fitness. Over a fifth (21.2%) however, felt that too much time was spent on monitoring fitness within the curriculum, whilst approximately half (49.2%) felt even more emphasis should be placed on it.

The HoPEs were furthermore asked their views about the purposes of monitoring health, activity and fitness and, as applicable, to give reasons as to

why they felt monitoring should be included in the curriculum. Many of the reasons they identified were similar for health, activity and fitness and included: to address concerns over pupils' health, activity or fitness; to improve pupils' health, activity, or fitness; to promote health, physical activity or fitness; to promote pupils' knowledge and understanding of health, physical activity and fitness, of their own health, activity and fitness, and of the importance of a healthy, active lifestyle or fitness; to motivate or assist with target setting; for diagnostic reasons; and to grade/assess pupils.

These varied reasons for monitoring were reflected by a number of the HoPEs in the interviews as follows:

I think students' health is on a downward trend. It would be important for students to know that their health is suffering, and that there is something that they can do about it. (Female HoPE)

They certainly aren't doing as much exercise as they should be. (Male HoPE)

The pupils can look at it. They can know what their scores were previously.

They can then be given target scores to achieve next time... (Male HoPE)

We can get them on to the way of knowing how they should look after their bodies and how they should eat healthily and exercise regularly. If we get that in to them then with that they should have a longer, happier, healthier life. (Female HoPE)

One HoPE however, expressed reservations about the purpose and value of monitoring stating:

To be honest, I don't think pupils realize what's going on.... The monitoring for them is just such a part of the curriculum that goes on that they get used to it. It just happens to them constantly. (Male HoPE)

The HoPEs who were interviewed generally felt that there was insufficient guidance available on monitoring children's health, physical activity and fitness and when asked if they had received any relevant continuing professional development, nearly all answered 'no'. In particular, they felt that they needed more and clearer guidance on how to incorporate monitoring into the

curriculum and how to relate it to National Curriculum requirements. One HoPE was of the following view:

...I think we need more clear guidance, a bigger National Curriculum focus... I think we need more formal guidance, some sort of national programme to raise the issues to a higher level and give it more status, more credibility... with a common structure across all the schools. I think that would help. (Male HoPE)

Finally, it became evident from the interview data that there was some degree of confusion, with respect to the concepts of health, activity and fitness, and of health, activity and fitness monitoring. Some HoPEs used the terms interchangeably and mistakenly thought that children's health, activity and fitness and the monitoring of these were all closely inter-linked, a misunderstanding that will be explained later in the discussion with reference to relevant literature. For example, when asked how he used fitness testing information, one HoPE responded:

If you can give them information on how fit they are... then they're more

apt to take part in activity when they leave school...

And went on to explain:

Because the more active the children are, the better their fitness level is going to be. (Male HoPE)

Physical Education Teachers' Views of Pupils' Responses to Monitoring within the Curriculum

The majority of HoPEs perceived pupils' responses to monitoring in the curriculum to be mainly positive or neutral with on average 56%, 66% and 73.5% feeling pupils responded positively to health, activity and fitness monitoring respectively. The perceived positive pupil responses to monitoring fitness were illustrated by the following comments during the interviews:

The pupils have their levels recorded and the next time they come to do it they're always interested to see if they can beat their previous one. They like to have their scores up on the wall so that they can compare themselves against everybody else. (Male HoPE)

I think on the whole fitness monitoring has proved to be quite positive.

Generally they like to look at their progress, and over the year they do three or four tests and then they can see if they've improved. So they usually quite enjoy it on the whole. (Male HoPE)

To the contrary though, some HoPEs acknowledged how monitoring could be a negative experience for some pupils and namely the inactive, unfit, overweight and/or those not good at sport, as exemplified by the following quotation:

...It's not particularly positive for those who aren't achieving good scores...because they'll see others succeeding and they're not... If they learn that they are unfit, overweight, can't do PE, then it's very negative. (Male HoPE)

Some interviewees identified the multistage fitness test specifically as a test that had a negative effect on pupils. For example, one HoPE reported:

The multistage fitness test is quite hard. I don't think the kids like doing

that. Some do because some are really good at it, but most of them don't.

(Male HoPE; 3.5 years teaching experience)

In addition, differences were reported in the response to health and fitness monitoring between boys and girls. Only 40% of the HoPEs considered girls responded positively to monitoring health and fitness (compared with 65% and 89.7% for boys), whilst nearly a quarter (23.3%) believed they responded negatively.

Discussion

The findings revealed monitoring health, physical activity and physical fitness to be prevalent in a number of schools, with over a quarter monitoring all three components and the majority monitoring activity and fitness within the physical education curriculum. Fitness testing was given the greatest emphasis and was the most widely practised, with approximately 90% and 56% of schools involved in fitness testing or compulsory testing respectively. This finding concurs with previous studies that have reported testing to be commonplace within the secondary physical education curriculum (Harris, 1995; Cale, 2000; Keating, 2003).

It could thus be argued that the culture of performativity highlighted by authors such as Evans (2007), Evans & Rich (2011) and Webb & Quennerstedt (2010) was clearly reflected and being reinforced within physical education and physical education teachers' practices within these schools. This point will be examined further later. In addition, the findings seem to confirm previous claims that 'performance', 'fitness' and a 'fitness for performance' discourse dominate the delivery of health (Green & Thurston, 2002; Leggett, 2008; Harris, 2010; Alfrey, Cale & Webb, 2012) and it has been suggested that this is as a result of the sporting and fitness ideologies which dominate and permeate physical education teachers' philosophies (Green 2003; Alfrey, Cale & Webb, 2012).

A number of reasons have been proposed to account for the prominence of fitness testing in physical education which may be relevant here. For example, it has been claimed that fitness testing may be a response to general concern over young people's physical fitness, that the interest in fitness (and performance) is reinforced by the requirements of the NCPE, that fitness tests are easy to implement, provide seemingly objective data on children's

capabilities, and that they are a 'passed down' tradition (Cale & Harris, 2005).

Physical fitness and fitness testing also feature in the syllabi of many accredited courses. As a result, it could be argued teachers are familiar with and feel relatively comfortable and confident conducting fitness testing and consequently continue to rely unquestionably on it.

While the prominence of fitness testing within the curriculum may not necessarily be a problem per se, an over emphasis or dominance of it at the expense of time spent promoting and exposing young people to a range of more useful activity promoting activities, may be. Concerns have been expressed over testing often dominating or being conducted in isolation and constituting an entire fitness education programme (Pate, 1991; Cale & Harris, 2002; Lloyd, Colley & Tremblay, 2010), and over the amount of curriculum time spent on testing without necessarily positively influencing young people's activity levels or their attitudes towards physical activity (Harris & Cale, 1997; Cale & Harris, 2002). With respect to the time spent on testing in this study, despite it being given more attention than other forms of monitoring, still approximately half of schools felt it should be afforded even more emphasis. This however, is contrary to the calls by some for more attention to be afforded to the process and process-oriented

issues of 'health' and 'physical activity' behaviour within physical education than to the product and product-related issues of 'fitness' and 'performance' (Cale & Harris, 2002). On this point, Keating (2003) identifies three facts that cast doubt on the role of fitness testing, a) children have failed to show improvements in fitness and have become less physically active; b) the percentage of overweight youth has increased substantially; and c) the proportion of inactive adults has also increased dramatically.

The HoPEs in this study identified a number of purposes for monitoring which broadly concur with those cited in the literature and identified earlier. In particular, over three quarters agreed that fitness testing could be effective in promoting physical activity, which may again explain the attention afforded to fitness. However, some have questioned whether fitness tests do actually serve this purpose (for example, Keating, 2003; Naughton, Carlson & Greene, 2006; Rice, 2007; Cale & Harris, 2009b). Cale & Harris (2009b) noted how there is little evidence to support such a claim and to the contrary, and as highlighted earlier, how fitness testing can be counterproductive and a negative and meaningless experience for many young people. Similarly, Rice (2007) warns that fitness tests may contribute to or underpin diminishing

interest in physical education and physical activity whilst Naughton, Carlson & Greene (2006) equally expressed concerns claiming that fitness testing appears to be the antithesis of health promotion practices.

Linked to the notion that fitness testing can be negative and meaningless for many youngsters, it was worrying to discover some questionable monitoring practice in this study, particularly though not exclusively, with respect to fitness. For example, maximal fitness tests were employed in most schools (most notably the multistage fitness test) and over half monitored pupils' weight or body composition via measures including skinfold measurements.

The appropriateness of maximal tests such as the multistage fitness test and weighing and measuring children within the curriculum has been questioned. The former test has been developed for use with elite, adult populations which raises questions over its accuracy in predicting children's aerobic fitness (Winsley, 2003) and risks associated with using the test with young people have also been identified (Eve & Williams, 2000; Association for Physical Education, 2008). Indeed, specific concerns regarding the misuse of and public display associated with this and other tests have been highlighted within

the literature (Pangrazi, 2006; Cale & Harris, 2009b; Wrench & Garrett, 2008) and similar concerns were also aired by some of the HoPEs interviewed in this study.

In terms of weighing and measuring, it is argued that it is not necessary to measure any individual to tell them something that they already know, and more importantly, no child needs to be measured to be helped to enjoy being physically active (Cale & Harris, 2009a). It has also been claimed that such practices are limited to and driven by the unreflective rhetoric of health and obesity discourses and not only encourage and promote 'unprecedented levels of surveillance of young people' (Evans, 2007, p.13) as noted earlier, but represent practices of 'humiliation, disregard and disrespect' (Wright & Dean, 2007, p. 79), 'give permission on a daily basis for ridicule and harassment' (Gard & Wright, 2001, p. 546) and potentially stigmatize children and in particular the overweight and obese (O'Dea, 2005).

In a recent critique of physical education's role in addressing childhood obesity, Cale & Harris (2011) highlight how the practice of weighing and measuring and the responses it typically invokes, such as a pre-occupation with one's weight,

body and diet, may only serve to contribute a mental health problem to a physical health issue and suggest that serious consideration be given to the potential damage it can do to a young person's self-esteem, body image and psychological health. Similarly, Evans (2007) cautions how teaching that is centred on diet and weight concerns can have a damaging impact on the attitudes and relationships children form towards food and health. Not surprisingly then, concerns have also been raised over the potential contribution such practices and the associated discourse around weight management makes to disordered eating (Evans, Rich & Davies, 2004; Evans, et al., 2008; Hasle, Honey & Boughtwood, 2007; Rich, 2010). Evidently there is a need for a critical, cautious and sensitive approach to the type, nature and method of monitoring in schools.

Other questionable practices reported in this study included the use of monitoring to grade or reward pupils, plus the public posting of fitness test scores allowing pupils to compare their performances. The potentially negative consequences of using monitoring to grade pupils in physical education and/or as a criteria for rewards have been highlighted with suggestions that it could lead to a loss of interest in the subject or physical activity, teaching to the test, cheating on tests,

or undermining the confidence of some students (Corbin & Lindsey, 2002; Corbin, Pangrazi & Welk, 1995). On this issue, Armstrong and Welsman (1997) advise that rather than testing young people's fitness for classification purposes, teachers would be better employed by addressing young people's sedentary lifestyles.

Similarly, displaying fitness test scores in order that comparisons can be made is likely to undermine the confidence as well as embarrass some young people. Given the many factors that influence fitness test performance and test scores, and most notably the influence of heredity or genetic potential, physical growth, biological maturation and behavioural development (Pangrazi, 2000; United States Department of Health and Human Service, 2008), this also seems inappropriate. Allowing for comparisons in this way also firmly reinforces the focus on 'fitness' and 'performance' and again the culture of performativity and competition inherent within much physical education practice.

Another important consideration with regards to the appropriateness and acceptability of monitoring must be young people's responses to it.

Although a number of HoPEs felt pupils responded positively to monitoring

within the curriculum, still a sizeable proportion did not and over a quarter felt girls responded negatively to fitness testing. As reported earlier, during the interviews some of the HoPEs highlighted concerns with the multistage fitness test and acknowledged how monitoring could be a negative and de-motivating experience for those who are inactive, unfit, overweight and/or not good at sport, whilst one HoPE felt that pupils lacked understanding of monitoring suggesting they didn't 'realize what's going on'. Similar concerns have been found in the literature. Silverman, Keating and Phillips (2008) for example, have reported students to dislike fitness testing and to find it competitive or boring, whilst a study by Millslagle and Keyes (cited in Keating, Silverman & Kulinna, 2002), revealed fitness testing to be the main reason for students' negative attitudes towards physical education. Meanwhile, Wrench and Garrett (2008) investigated the experiences of fitness testing of health and physical education university students and found testing to evoke strong feelings and emotions that spanned from joy through to abhorrence, with students either strongly liking or disliking it. More specifically, and with respect to the 1 mile run, Hopple and Graham (1995) revealed that many children viewed the test as a painful, negative experience and generally showed little or no understanding of why they were being asked to complete it.

Likewise, studies that have investigated the motivational effects of testing on young people (for example, Whitehead and Corbin 1991; Goudas, Biddle & Fox, 1994; Adams 1996) have revealed variable results and it has been concluded that motivational enhancement from testing cannot be taken for granted (Goudas, Biddle & Fox, 1994). Given this, the continued strong emphasis on fitness testing and compulsory fitness testing, as well as on some particular tests, is a concern.

Despite the prevalence of monitoring in this study and the expectations and pressures on schools to promote health in recent years (Cale & Harris, 2009b; 2011), it was interesting to find that over a third of the HoPEs were uncertain and over a quarter disagreed that schools have a responsibility for monitoring pupils' health, activity and fitness. It was furthermore evident from the interviews that many viewed monitoring to be a shared responsibility involving the whole school, parents, and health professionals. This former finding seems to refute the government policies and strategies identified earlier and which have highlighted this to be the case (for example, DoH, 2004; 2010a; DoH & DfCSF, 2008). Physical education's responsibilities in this regard have also been contested by others who have expressed concerns over

government policies on health education and schools' and physical education's uncritically accepted role within it (for example, Gard & Wright, 2001; Evans, 2007; Wright & Dean, 2007; Evans et al., 2008; Evans & Rich, 2011).

Whilst Cale and Harris (2011) are of the view that physical education does have a role to play in public health, they also warn that it is important to be realistic about what it can achieve given that it has a range of objectives besides. They contend that its responsibility and role with respect to health should be to stimulate interest, enjoyment, knowledge, competence and expertise in physical activity for lifelong participation, and that this be achieved by providing young people with high quality teaching and positive, meaningful and relevant physical activity and physical education experiences (Cale & Harris, 2011). Given some of the findings reported here, whether monitoring practices necessarily contribute to achieving this seems debatable.

Other issues that emerged during the interviews were the lack of guidance and professional development the HoPEs reported to have with respect to monitoring. Virtually none of the HoPEs interviewed had engaged in any

relevant professional development. This corresponds to findings and concerns expressed in the literature that health tends to be generally absent from physical education teachers' professional development profiles (Cale, 2000; Armour & Yelling, 2004; Castelli & Williams, 2007; Armour & Harris, 2008; Kulinna et al., 2008; Harris, 2010; Alfrey, Cale & Webb, 2012). With respect to fitness testing, Pate (1991) noted how, despite its popularity, there is little scientific evidence to guide us in deciding how best to incorporate testing into physical education whilst others have suggested insufficient attention has been given to fitness testing within pre-service and/or in-service teacher education programmes (McKenzie & Sallis, 1996; Keating, Silverman & Kulinna, 2002; Silverman, Keating & Phillips, 2008). Disappointingly, it seems that this is still the case, at least in the UK. Practical recommendations or guidelines for teachers concerning the implementation of fitness testing with young people have been published in recent years (for example, Harris, 2000; Cale & Harris, 2005; 2009a; Silverman, Keating & Phillips, 2008) but these have been based more on sound curriculum practice than on scientific evidence. Interestingly, the teachers in this study also did not appear to be aware of their existence. Furthermore, and to date, no equivalent recommendations exist for monitoring health and physical activity.

If monitoring is to have a role and be appropriately implemented within the physical education curriculum, it is suggested teachers need guidance, support and training in its implementation and in particular in how to use monitoring to achieve cognitive, affective and behavioural objectives.

The lack of guidance and professional development may also in part explain why, despite most HoPEs considering monitoring physical activity to be important and even more important than monitoring fitness, the majority also viewed it to be problematic. This may have led therefore, to the mismatch between the HoPEs' rhetoric and their practice, with physical activity monitoring being less prevalent. That said, those who did monitor physical activity did so via a variety of relatively simple and seemingly unproblematic methods that are considered to be appropriate for use with young people in schools, easy to use, and to have educational value (Cale, 1998; Welk & Wood, 2000; Cale & Harris, 2005). Given such methods are available, and if promoting health-enhancing lifestyles and increasing physical activity is a key objective of physical education, then as advocated by Welk & Wood (2000) and Cale & Harris, (2005), it would seem logical to place greater emphasis on monitoring physical activity within the curriculum.

The same might also be said for health monitoring. Again, most HoPEs reported this to be important but fewer still (approximately 40%) monitored it in practice. Further the measures employed were rather narrow focusing primarily on cardiovascular health, plus once again on weight and body composition. Whilst it is clearly inappropriate for teachers to take clinical health measures, a broader and more holistic approach involving monitoring general health behaviours via means of a simple questionnaire, could be educational and have potential benefits.

Additionally, given the HoPEs' reported lack of guidance and professional development it is perhaps not surprising to have discovered some confusion and misunderstandings amongst them. It was evident from the interviews that some HoPEs failed to understand the differences and inter-relationships between health, physical activity and physical fitness and how these might be monitored. As the earlier quotations illustrate, some believed there was a link between educating young people about their fitness and their behavior, whilst others thought there was a direct link between an individual's activity and fitness level. Over three quarters of the HoPEs in the survey also believed

unquestionably that fitness testing could promote physical activity and fitness.

Similar misunderstandings have been reported amongst current or prospective physical education teachers in the literature concerning the purpose of fitness testing (Keating, Silverman & Kulinna, 2002) and the key concepts and factors that impact on fitness and health (Wrench & Garrett, 2008).

There is, however, little empirical support for the above assumptions. With regards to the former, it should not be assumed that fitness testing will automatically increase physical activity levels or develop understanding of physical fitness and physical activity (Keating, 2003; McKenzie & Kahan, 2004). Concerning the latter, it is known that children's physical activity levels and aerobic fitness are independent variables that should not be interpreted as directly relational or interdependent and that a child's activity level cannot be judged from his or her fitness level (Corbin, 2002; Winsley & Armstrong, 2005; Welk, Eisenmann & Dollman, 2006). Furthermore, whilst evidence is emerging that both physical activity and fitness are related to health (Lloyd, Colley & Tremblay, 2010), there is currently little or no evidence that young people who improve their fitness test scores also improve their overall health or health-related behaviours (Armstrong & Welsman, 1997; Freedson, Cureton & Heath, 2000). Indeed, Gard and Wright (2001) note how physical education has been criticized for the way in which it uncritically supports the triplex of: exercise = fitness = health.

Linked to this, it seems that some HOPEs', motives for monitoring were based on concerns over young people's health, activity and/or fitness and further assumptions that these were on a downward trend. Again though, there is little definitive evidence that this is the case. Following a comprehensive review of the literature, Cale & Harris (2005) established that there was no firm or convincing evidence to support such notions. Indeed, a number of authors have warned over the great deal of uncertainty in biomedical research concerning children's physical activity and health and the relationships between them (for example, Gard & Wright, 2001; Evans, 2003; Evans et al., 2008), yet how despite this, 'the field of physical education continues to operate as if certainly existed' (Gard & Wright, 2001, p. 539). If the schools' practices were based on and being driven by such assumptions, then it would seem that their efforts were rather misplaced.

Also according to Gard and Wright (2001), another criticism leveled at physical education and of relevance to monitoring is how the subject is embedded in a discourse of 'healthism'. The limitations of healthism are that it holds individuals responsible for their health or behaviour (and thereby also their fitness), assumes (simplistically) they have the control and capacity to make

decisions, and fails to acknowledge the influence of other important factors in the physical and social environment (Evans & Davies, 2004; Cale & Harris, 2009b). Consequently, it tends to lead to a narrow approach to health education and the promotion of physical activity in which teachers simply encourage pupils to make healthy choices regarding their lifestyles and behaviours.

The above represents a potentially convincing argument against monitoring within the physical education curriculum in that it represents an individualistic approach which targets the individual and individual behavior change.

Interestingly, discursive practices of healthism were evident in the statements made by prospective physical education teachers in the study by Wrench and Garrett (2008) as well as in this study during the interviews. For example, comments by the HoPEs included references to encouraging children to take 'individual responsibility' for their own actions or for monitoring their progress, and encouraging them to 'make sensible decisions'. However, and as noted by Cale and Harris (2009b), young people often have little control over, or decision making opportunities with respect to their lifestyles and behaviours and other factors are arguably more influential. More specifically, Silverman,

Keating and Phillips (2008) point out how children, unlike adults, do not decide whether to participate in fitness testing, or in most cases, how to use the results of the assessment. Indeed, it has been acknowledged how the focus within the physical education curriculum to date has tended primarily to be limited to individualistic efforts to influence physical activity, with little attention paid to the effects of environmental factors on young people (Richter et al., 2000; Wechsler et al., 2000). It could be argued that monitoring health, activity and fitness represents just another such curriculum 'effort' and, from the evidence presented here which reveals a strong emphasis on testing fitness, a particularly restrictive one at that.

Added and related to the above, it could be contested that monitoring both influences and is influenced by the culture of performativity and hence surveillance which pervades schools more broadly. For example, this is expressed in the accountability, competition and comparison schools are increasingly faced with these days through performance targets, test scores and league tables which, according to Evans et al., (2008, p. 389), constantly demand teachers and pupils to display evidence of and a willingness to work on themselves or their institutions to achieve by meeting criteria and standards

over which they have little or no control. Webb & Quennerstedt (2010, p. 787-788) note how in 'physical education, the distinctive physical context brings its own unique forms of additional performativity pressures.' Specific criticisms which have been leveled at such a culture with respect to physical education and health are that it: reduces health to that which can be measured and evidenced; sees the body as something to be worked on and managed, regulated, measured and compared; puts individuals under constant pressure to evaluate and judge their bodies against unattainable social ideals, of being routinely evaluated, judged and on display, and to constantly work on themselves to meet set criteria and standards of health over which they have little or no control; and lends itself to alienation as individuals are constantly required to make themselves different and distinct (for example, healthier, more active) (Evans, 2007; Evans et al., 2008; Evans & Rich, 2011). As noted earlier, various authors have also considered the negative consequences of the above on the lives and bodies of young people (Azzarito, 2007; Evans, 2007; Evans et al., 2008; Rich, 2010; Evans & Rich, 2011) suggesting that the effects can be profound.

Others however, claim to the contrary that monitoring does have merits and is warranted. With respect to fitness testing for example, Silverman, Keating & Phillips (2008) are of the view that it can be used in positive ways that will enhance the educational experience and attitudes of children, whilst Lloyd, Colley and Tremblay (2010) advise that the fear of assessment should not out-weigh the potential benefits of the information received and the pedagogical value of assessment to students. It has also been suggested that if physical activity and fitness are not measured they will be perceived as unimportant (Morrow, 2005), and that rather than being critical of school-based monitoring or testing, we should take a look at those implementing tests (Rowland, 2007).

Taking the above into account, it is claimed that if conducted inappropriately, uncritically and in isolation, then monitoring provides a narrow and potentially problematic framework for the promotion of health and physical activity.

However, if appropriately employed as just one component of a broad and holistic health education programme within physical education, then there is no reason why it should not be included and become a valuable feature of the curriculum. Such a programme should recognize and explore with young

people the range of influences on their health, physical activity and physical fitness (including personal, social and environmental), the barriers they face to leading a healthy, active lifestyle and possible strategies or measures to overcome these, as well as aim to develop young people's knowledge and understanding of health, activity and fitness, and the skills important and relevant to them leading a healthy, active lifestyle.

Conclusion and Recommendations

The findings from this study have revealed monitoring, and in particular fitness monitoring, to be a common feature within the physical education curriculum in many schools. The key reasons HoPEs gave for monitoring reflect those reported in the literature and, amongst others, included to promote health, physical activity and physical fitness, and to motivate pupils and develop their knowledge and understanding of health, activity and fitness. At the same time though, a number of issues and limitations associated with monitoring and some monitoring practices were identified, some questionable practice was highlighted, and the individualistic nature and performative culture reflected in and reinforced through monitoring were acknowledged as potentially problematic.

If the dominance of fitness testing and some of the questionable practices revealed in this study are typical, and if monitoring is conducted uncritically and in isolation, then it is suggested that monitoring practice is currently not in a good state of health and is unlikely to lead to the goals outlined above. To the contrary, it may be counterproductive to these. However, if appropriately employed, subjected to informed critique, educational and incorporated as just one component of a broad, balanced and holistic programme, then there is no reason why monitoring cannot make a valuable contribution to the physical education curriculum and play a positive role in supporting healthy lifestyles and physical activity. To achieve this though, it seems that teachers need specific guidance and support in the implementation of monitoring within the curriculum and in how to use it to achieve cognitive, affective and behavioural objectives.

As noted earlier, practical recommendations or guidelines for teachers concerning the implementation of fitness testing with young people have been published in recent years but no equivalent ones have been developed for monitoring health or physical activity. The following recommendations (see table 1) therefore aim to address this gap and provide such guidance in an effort to improve the future state of health of monitoring within the physical education

curriculum. The recommendations are made taking into account the preceding discussion and the considerations outlined here as well as in the literature and they have also been informed by, adapted, and developed from previous recommendations (for example, Evans, 2007; Evans et al., 2008; Cale & Harris, 2009a; Cale & Harris, 2011). Broadly, the recommendations are concerned with the key principles, messages, attitudes, beliefs, values and philosophy teachers should strive to adopt in their approach to monitoring health, activity and fitness, plus the specific content, organization and delivery of monitoring practices.

Where feasible, these are supported by practical examples in an attempt to illustrate what 'appropriate' monitoring practice might look like in practice.

Table 1. Health, Physical Activity and Physical Fitness Monitoring Recommendations for Physical Education Teachers

Adopt a broad and holistic approach to health, health education and promotion within physical education which goes well beyond monitoring health, activity and fitness. Also encourage your department and physical education colleagues to work alongside other subjects and subject staff with a responsibility for health education (e.g. personal, social and health education; science; food technology) to ensure a holistic as well as a consistent approach to practices and messages.

Adopt a critical attitude towards 'performativity' and health 'surveillance' and raise young people's awareness of, and involve them in discussion concerning the potential issues.

Examine your own philosophies, the extent to which they are dominated by sporting and fitness ideologies, and the influence they may have on your practice, including monitoring practice (e.g. in terms of the types of monitoring incorporated, the method/mode of delivery, and the associated information and messages given).

Do not allow monitoring to dominate or be conducted in isolation but ensure it is fully and appropriately integrated into the physical education curriculum alongside coverage of a broad range of relevant health-related content (e.g. safety and safe practice; health benefits and effects of physical activity; health and physical activity promotion). In addition, adopt a broad and process-oriented approach to monitoring which focuses also on monitoring health and activity. As behaviours, these can be more readily influenced than fitness.

Use monitoring to promote health-related learning and young people's health, activity and fitness. Focus on the process of monitoring and the associated learning (e.g. how and why health, activity and fitness might be monitored; the strengths and limitations of different measures) more than on the outcomes (i.e. the monitoring results/scores).

Carefully consider the health information and messages you give alongside monitoring, including the validity of these, how they may be received, interpreted and made sense of, and how they may make young people feel about themselves and their bodies.

Select monitoring methods and procedures carefully and sensitively and consider whether any should be optional rather than compulsory. Avoid those which highlight and focus on size and weight and which might dishearten, stigmatise or cause embarrassment and humiliation to any young people. For example, weighing and measuring to calculate BMI, using skinfold calipers. Weight and body composition can be addressed but they should be dealt with sensitively and actual measurement of either should not be forced upon youngsters.

Interpret any monitoring results carefully and consider how you communicate and explain the results and the judgments and comments you make as a result. Help young people through review and reflection to recognise and understand the limitations of the scores.

Be wary of implementing test re-test monitoring procedures (e.g. monitoring at the beginning and again at the end of a unit of work, school year to identify changes) and only do so with caution. Programmes/units are often too short (6-8 weeks) to see any measurable changes and failure to do so could have a de-motivating effect. The practice can also be time consuming and detract from learning time.

Make monitoring practices and procedures inclusive and developmentally appropriate (e.g. choose measures carefully; offer choices of varying degrees of difficulty) as well as student centred and individualized (e.g. allow the students to work independently and direct practices; provide young people with personalized baseline scores and feedback from which to improve). Minimise the potential public and comparative nature of monitoring and focus on personal improvement over time, not comparisons with others.

Make monitoring a positive, meaningful and relevant experience. Help young people to understand and learn to deal with their individuality, strengths and weaknesses in the areas of health, activity and fitness and to feel good about themselves regardless of their ability, health, activity or fitness status, size or

weight in order to build their competence, confidence and sense of control. Monitoring should never be administered at the expense of lowering an individual's self-concept or confidence.

To achieve the above, move beyond 'traditional' monitoring methods and in particular fitness testing. For example, to include health and activity monitoring via the use of simple questionnaires, activity diaries, pedometers or heart rate monitors, monitoring options/choices, home tasks, use of fun and varied resources and equipment, self and partner/peer (versus whole group) monitoring, promotion and development of goal setting skills, and identification of barriers to health, activity and fitness and strategies for overcoming these.

Recognise home influences on young people's health, activity and fitness levels in feedback/evaluation and encourage parents/guardians (e.g. via letters home; newsletters; invitations to events) to show interest in and support their children's health, physical activity and physical fitness.

Identify youngsters with very low activity and/or fitness levels and provide them with appropriate and sensitive personalized support, encouragement, guidance and targets. This might involve suggestions for activities/exercises they can undertake in their leisure time, at home or in the local community, communication with parents, or in extreme circumstances, referral to their GP.

Focus efforts beyond the individual to consider the school and physical education environments as a whole (e.g. the school grounds; sports/physical activity facilities; canteen; changing rooms) and how conducive these are to the promotion of health, activity and fitness.

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