



Data in the Sport & Physical Activity Sector

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“The most valuable commodity I know of is information.”

- Gordon Gekko, Wall Street

The sports and physical activity sector has changed significantly over the last two decades. Its influence, financial standing and importance within the fabric of the nation have greatly increased. Sport and physical activity stretch across all sectors of our society and are used as policy tools seen as key to the delivery of government objectives across education, social behaviour and, most significantly, health.



This has led to a significant shift in the sector’s attitude to collection, analysis and use of data.

Just a few years ago, there was a dearth of useful data in the sector. As recently as 2002, Game Plan, the then government’s strategy for delivering sport and physical objectives, stated:

“...throughout the sport and physical activity sector, the quality and availability of data on facilities, participation, long term trends, behavioural and other factors is very poor. This does not invalidate the case for action, but weakens the ability to make decisions fully based on evidence”.

In 2005, the Review of National Sport Effort and Resources recommended an increase in the amount of robust measurement and research systems. Raising the Bar (2005) went further, stating:

“whilst there is recognition within some sectors of government that sport can play a significant role...the qualitative and quantitative evidence needs to be researched and developed further”.

“Data! data! data! I can't make bricks without clay”

- Arthur Conan Doyle

Some years on, the situation is considerably improved. The sector has established systems which provide useful data on participation. The Active People Survey (APS), begun in 2005, now provides an annual overview of participation in NGB sport and active recreation. It enables analysis of the findings by a broad range of demographic information, such as gender, social class, and ethnicity. It also incorporates other data such as volunteering, club membership, and receipt of tuition or coaching.

At the same time, the growing concerns around obesity have led to the health sector setting up their own systems to monitor health development. The National Child Measurement Programme (NCMP) measures the height and weight of school children in Reception Year and in Year 6. Set up as part of the Governments strategy to tackle obesity, the data is used to calculate BMI to inform local planning and delivery and provides a useful surveillance of trends analysis in child growth patterns and weight status.

This, for a time, complemented the School Sports Survey, which ran until 2010, and which measured how much PE was being offered within curriculum time.

The Health Survey for England (HSE) is a series of annual surveys, commissioned by the Health & Social Care Information Centre. It interviews members of the public on core topics such as general health, height, weight and blood pressure, use of health services, and indicators such as smoking and drinking. Each year the survey focuses on a particular topic such as cardiovascular disease; in both 2008 and 2012 this topic was physical activity.

As a result, there is significantly more useful data, both on activity participation and general health.

However, there are challenges around the collection and interpretation of the data which can potentially limit its practical and strategic usefulness.

“Huge volumes of data may be compelling at first glance, but without an interpretive structure they are meaningless.”

- Tom Boellstorff

The first challenge is in ensuring consistency across the different data collection methods and in the metrics used.

For example, the APS survey measures participation in conventional competitive sports and other selected active recreations, such as mountaineering and orienteering. However, it does not measure general physical activity – for example, until recently it did not include recreational

walking or recreational cycling. As a measure for how *generally* active the population is, it is therefore extremely limited.

Meanwhile, the HSE data includes figures on participation in a broader range of non-sport activities such as housework, DIY and occupational activities, which are not included in APS.

Similarly, the School Sports Survey, as it was, measured how much PE was being offered within curriculum time. It did not measure activity outside school and provided no data on health and fitness levels.

This inconsistency can exist even within the same system. For example, the APS5 survey collected information on physical activity that was conducted in 30 minute blocks – however, APS6 collected information on physical activity conducted in 10 min blocks. Not only did that risk APS 6 showing much higher levels of physical activity than APS5, but it also meant that it was impossible to compare APS6 directly with APS5.

The second challenge the industry faces is the lack of long term continuity in the ongoing application and delivery of such surveys. For example, the School Sports Survey measured the proportion of pupils receiving two hours of curriculum PE and the proportion participating in at least three hours of “high quality” PE a week.

However, The School Sports Survey was scrapped in 2010 and since then there has no national PE / school sport survey providing schools – or the government - with a set of basic indicators to compare provision. This has meant that whilst data did exist, there has now been no data for four years – which makes it impossible to measure any improvement or decline, or observe potential trends in participation.

A third challenge relates to accuracy. For example, the HSE relies on self- assessment of physical activity, which often bears little resemblance to actual physical activity patterns. In the 2008 HSE, physical activity was measured by means of a questionnaire. 39% of men and 29% of women reported that they met the recommended minimum level of physical activity. However, when accelerometers were used on a group to measure their physical activity objectively, the real percentages were actually 6% and 4%.

Within children, the HSE 2008 found that of the 60% of children who said they were sufficiently active, only 10% truly achieved the minimum requirements. Of the 40% who reported being inactive, 8% *did* actually do enough physical activity.

A fourth challenge is that the issue of sport and physical activity is spread across a number of sectors, including education, health and leisure. In addition, there are many different types of organization involved, from sports specific governing bodies, whose priority is their own sport and their members, to charitable organisations who are using sport to achieve social and economic objectives. At the same time, the remit is spread across government departments from DCMS and DoH to DCLG and the Treasury.

The different sectors involved not only have their own priorities and objectives, but, as we have seen, their own data. If this data does not correspond, this will not only lead to confusion as to the nature of the problem, but can also result in bodies seeking separate, rather than joint, solutions to the problem.

“You can have data without information, but you cannot have information without data”.

- Daniel Keys Moran

One of the most significant challenges for the current data is in its use as a measure of the nation’s health.

There is no doubt that the UK is facing severe public health problems. The growing health costs for treatments for obesity, diabetes and heart disease will significantly impact upon the NHS in the next decade and beyond.

Inactivity is at the root of a number of the population’s health problems. It is the fourth largest cause of disease and disability in the UK, and it has been estimated to directly contribute to one in every six deaths. Those who are completely inactive are at a much greater risk of a wide range of chronic diseases, such as diabetes, heart disease, cancers, obesity and mental health conditions, including dementia.

Physical activity in itself could act as both the prevention and cure for a number of these problems. Furthermore, UKActive research has shown that if everyone in England achieved the recommended amount of physical activity, 37,000 lives would be saved every year.

Dr Nick Cavill, of the British Heart Foundation, summed this up succinctly: “If exercise were a pill, it would be one of the most cost-effective drugs ever invented,”

However, if it is to be regarded as such, it should ideally be prescribed and monitored in the same way as other medicine.

Thus a doctor will prescribe a medicine and then record ***the effects of that medicine***. For example, statins are aimed at reducing cholesterol levels. To assess the dosage required and test their effectiveness, doctors measure cholesterol levels to see if they have declined.

However, the current data does not accurately measure the ***effects*** of the treatment i.e. the extent to which our health is improving as a result of undertaking physical activity. Instead, we prescribe activity then simply measure how much physical activity is undertaken.

“One person's data is another person's noise”

K.C. Cole

This model of evaluation is problematic for two reasons.

Firstly, and most importantly, it is not measuring the result, just the treatment. Advising people to undertake physical activity and then measuring it (but not measuring any resulting change in their fitness) is the equivalent of doctors prescribing statins and then measuring how many statins the patient is taking, as opposed to measuring cholesterol levels.

Secondly, in the absence of such data showing the effects, we are instead falling back on the self-reported data gathered from tools such as the APS and HSE, and using these as proxies from which to make assumptions as to our health status.

But the data from these surveys are extremely limited in their ability to predict health and fitness. This is because they are not directly measuring our health, but other aspects of our lives, such as physical activity undertaken and our BMI levels, which don't always correlate with health.

For example, knowing how much activity someone does actually tells you very little about a person's health. Knowing that someone goes cycling once a week for 30 min does not tell you about their overall health or fitness levels.

Similarly, a child's BMI alone provides very little information on health status and no information about physically fit they are. A study last year from the University of Pennsylvania was the most recent one to show that BMI is not an accurate measure of body composition. The study showed that BMI does not account for critical factors that contribute to health or mortality, such as fat distribution, proportion of muscle to fat, and sexual and racial differences in body composition.

The problems of BMI as an indicator of health are easily shown in the example of professional sportsmen. For example, professional rugby players fall in the “obese” category of a BMI chart – the most famous instance being Johnny Wilkinson, who, in his prime, was measured as “overweight”. In the recent rugby union autumn international of England vs. Samoa, none of the 30 professional sportspeople who took the pitch had a ‘healthy’ BMI.

More worrying, the notion of a ‘healthy’ weight neglects the means by which individuals achieve or maintain a given weight. An inactive individual who maintains low BMI by starvation and smoking is deemed more healthy than an active sportsperson who eats well, exercises a lot and doesn't smoke. The false negatives from BMI alone are dangerous as they brand many individuals with unhealthful lifestyles as healthy because of their weight alone.

“The goal is to turn data into information, and information into insight”
- Carly Fiorina, Former CEO of HP

Ironically enough, there is a simple solution. Assessing people’s overall fitness and health levels is relatively straightforward to do, through fitness testing.

Fitness testing is, in essence, a series of measurements taken by experts to determine physical fitness and health status of an individual or group. Measurements can include strength, stamina, speed, power and agility.

It is used by sports coaches, doctors and trainers to determine an individual’s level of fitness. The results can then be used to highlight current health conditions, to identify potential health risks and to design effective activity programmes.

Fitness testing has long been recognized as a tool to promote health promotion. Countries including Canada, the USA and Australia have all employed routine assessment of fitness as a health surveillance tool.

The key benefit of fitness testing is that it provides direct data on the key metrics of health, such as cardiorespiratory fitness, endurance and strength. One series of tests can provide a reasonably detailed overview of an individual’s health, irrespective of other factors, such as activity levels, weight or lifestyle. Furthermore, as it is objective, it is not subject to social bias like self reporting.

The data from fitness testing therefore can provide everyone, from government to individuals themselves, with an accurate picture of their health status – and crucially, what and how to improve.

Crucially, fitness testing does not just act as a surveillance tool. Giving meaningful feedback and to individuals about their fitness is an effective tool to increase levels of physical activity and by association their fitness.

Because fitness test results are sensitive to even small changes in behaviour, fitness testing can directly show to individuals and participants how even tiny changes in lifestyle can have a positive impact on their health – and therefore encourage them to continue.

This is particularly the case in children – compulsory fitness testing for 10-15 year olds in the USA resulted in an 8% improvement in levels of fitness over three years. The fitness of children in the UK has been shown to be declining rapidly – a fall of 8% over the decade from 1998-2008. Recent conference proceedings suggest this decline continued in children from the southeast of England from 2008 – 2014 **despite** proximity to the 2012 Olympics. These declines will have a significant impact on a growing problem of future ill-health and NHS burden.

The last report of the then Chief Medical Officer for England in 2009 advocated comprehensive fitness testing in school-age children.

One of the other benefits of fitness data is that it provides a completely objective assessment at baseline. This can be used as a single consistent dataset across the different organisations and departments which comprise the physical activity and sports sector, and help to link the disparate bodies into a single approach.

“It is a capital mistake to theorize before one has data”.

- Sir Arthur Conan Doyle

Physical activity can, without doubt, act as one of the most effective ways to prevent and cure a great deal of the health problems facing the UK population.

However, if it is to be used effectively as a medicine, its use and results must be properly measured and recorded.

Without such accurate and relevant data, our decision making will be limited in our effectiveness.

The need for objective and accurate data becomes particularly acute in today’s environment, where resources and funds are becoming increasingly scarce. It will longer be realistic or acceptable to base delivery on anecdotal evidence or estimated impact.

This is especially the case in a highly disparate sector, where there are a number of different types of bodies involved and different, often conflicting, views and priorities.

In such circumstances, a single consistent objective set of data can help inform policy and encourage us to work together. Otherwise, we are facing a situation which is best summed up by Jim Barksdale, CEO of Netscape:

“If we have data, let’s look at data. If all we have are opinions, let’s go with mine”.