

The use of fitness testing in primary schools

Christopher Wibberley

Health Promotion Officer
Trafford Health Authority

This paper, whilst proposing that fitness tests should be used more extensively in schools at both primary and secondary levels, advocates the need to identify a clear purpose behind the testing. It also emphasises the importance of holding this purpose in mind (along with other more general restrictions, which impose the need to employ relatively simple tests) when deciding what tests to employ. This paper is intended to be of general interest, rather than providing specific information, and it therefore takes the form of a comment on the issue as opposed to an account of original research. A battery of simple fitness tests, which has been used in two primary schools by the author, is also included.

It would seem fair to suggest that there is, generally speaking, some interest in the idea of fitness testing in schools (1, 2, 7, 9). This fact is also evidenced by the increasing amount of fitness testing equipment being advertised. However, although isolated examples may exist, little seems to have been done in concrete terms to introduce it into schools. This situation undoubtedly results from a number of factors, one of which may be the need for a clear idea about the real reasons for employing fitness testing, so that it is not seen to be considered only because of its apparent 'fashionability'

This paper will concern itself with possible reasons for employing fitness testing in schools as a continuing activity; the broad implications that these reasons have on what sort of tests are employed, and what peripheral activities these may involve.

Fitness testing could be initiated in schools for a variety of reasons including:

1. Assessing 'absolute' fitness levels of British schoolchildren — i.e., as part of a national survey.
2. As an intrinsically worthwhile activity, or because it may act to motivate participants in terms of increasing individual activity levels.
3. As a means of providing a physical activity profile of pupils — a quantitative record for PE.
4. As a means of identifying potential for various sporting roles.
5. As an aid for teaching about health-related aspects of exercise.

1. 'Absolute' fitness levels

It is not my intention to discuss the use of fitness tests as part of a survey of the school population's fitness levels. Although it is not unimportant to assess fitness levels of British schoolchildren, such an exercise will be a 'one-off' event, requiring the development of a validated

and relatively extensive battery of fitness tests, followed by its application in a controlled manner by an external group of 'sports scientists' (the latter being necessary if only because of the time such a survey would require).

2. A 'worthwhile activity'

Godin et al (6), studying the Canadian Home Fitness Test, suggest that the original aim of the Test was to motivate, although their study failed to find any significant effect from the use of the Test, with other simple fitness assessments and subsequent counselling, on the motivation of a group of mainly white-collar adult volunteers. They go on to suggest, though, that *a more important role of fitness tests will be to demonstrate a response to training, thereby reinforcing the initial intent* (ref. 6, page 244).

A similar point is made in an appendix to a study carried out by McIntosh & Charlton on the Sports Council's *Sport for All* campaign. They suggest that *one reason for testing fitness is the motivation of the individual* (ref. 8, page 187), and consider that *the most valuable feature of simple fitness tests... is that there is almost a guarantee of improvement in performance on repetition of the tests after a short programme of exercise* (Ibid). However, no evidence is provided concerning the motivational effect of fitness testing.

The Godin study involved adult volunteers. In schools the element of choice will only be present if fitness tests are used within an option-based system. Fitness testing supported by general conditioning, as opposed to specific sports-orientated training, may provide an alternative to traditional and even non-traditional sports-based curricula, especially if the pupils in question are concerned with their body-image (11); however, it would seem more appropriate for such testing to supplement a sports-orientated programme.

Worsley & Coonan (11) carried out some research investigating changes in physical health status and body knowledge in 10-year-old Australian schoolchildren following certain teaching and

activity programmes. They found that in terms of body knowledge, behavioural change, and fitness levels, it was best to employ a mixture of health lessons and daily PE lessons, plus self-monitoring in the areas of physical activity and diet, including a battery of fitness tests.

So, although it is assumed that fitness testing can act to motivate individuals in terms of participation in physical activity, in reality there is little empirical evidence to support this assumption. This may be because the link is regarded as being too obvious to warrant extensive research into it! Certainly the inclusion of occasional fitness testing into a PE programme could provide variety, stimulate interest amongst some pupils, and provide an extra form of extrinsic motivation. It is worth noting a finding of Worsley & Coonan's, however, that *too frequent monitoring of physical activities can produce boredom and lessening of performance* (ref. 11, page 119).

3. A physical activity profile

The third reason suggested for employing fitness testing in schools was to provide a physical activity profile of pupils. This profile could then act as the basis of a more objective means of assessment of pupils' ability than occurs in the majority of schools. Obviously, assessment would not be made purely on the basis of performance over a range of tests: a record could also be kept of pupils' participation in physical activity outside normal lessons in school, and outside school.

The information which could be gleaned from such records is potentially of greater use than merely as a record of individual achievement. It could be used to evaluate, and open up to question, the role of the school in the provision of extra-curricular opportunities for physical activity; it could also identify clubs within the community with which it might be beneficial to promote links. In addition, once recording has been carried out over a number of years, with different pupils, it might become possible to use the data in a comparative manner: to compare both achievement over the range of tests employed and levels of physical activity.

It may also then be possible to identify some discernible trends which may warrant further examination.

Keeping physical activity profiles as an individual record of achievement would go some way towards demonstrating that the school valued participation in physical activity. These records could supplement the pupils' eventual examinations, or provide alternative evidence of their ability to apply themselves to a given activity. I consider this to be of value even if the policy objective stated in the White Paper *Better Schools*, to establish by the end of the decade arrangements under which all pupils leaving school will be provided with a record of achievement (ref. 4, paragraph 116), is not achieved.

Mention of school leavers in the above discussion, may give the impression that I am advocating the use of fitness testing only at secondary school level. However, this is not the case; many of the benefits that may be accrued by including fitness testing and records of physical activity within the curriculum apply equally to primary schools. In addition to the potential benefits already mentioned, such records may also be of benefit both at primary and secondary levels in highlighting unsuspected abilities of individuals, or in identifying individuals with low levels of activity or fitness who may need

4. Potential sporting ability

This use of fitness testing would require teachers in charge of a team to define a number of broad characteristics which they consider to be desirable for different positions in the team. A battery of fitness and skill tests could then be used to aid identification of appropriate players. These may include tests which are specific to the particular sport involved, but should also include general tests of fitness. The battery of tests would obviously only supplement general observation by the teacher of individuals; but the results of the tests may provide some interesting suggestions about positions, or they could be used to suggest ways in which individuals might improve their game by utilising specific training drills.

Care should be taken, however, not to become too analytical in the use of fitness testing in this way, especially with younger children. There is a real danger that the enjoyment may be taken out of playing the game if testing and the results of the tests are taken too seriously.

5. Exercise as a health-related activity

If this is to be the aim of fitness testing, the tests selected should be able to illustrate whatever benefits of exercise are being suggested by the course work it supports. The tests should also be integrated with the course work, not used as an 'add-on' piece of practical work — which is perhaps not always the case with all practical work undertaken in schools. As a result of the course work and fitness testing, the pupils should be able to make an approximate evaluation of their own fitness levels, and be able to decide for themselves what action they can take if they want to maintain or improve that level of fitness (3, 5, 10, 11). If this is to be done, a certain core of information will be required — including the benefits to be expected from a variety of activities, and what facilities are offered by the community for participation in such activities. It may also be advisable during the course to ensure that the pupils can, in fact, make a realistic evaluation of their own physical activity levels, and how these levels can be increased generally as well as by taking part in specific sporting activities.

Some general points

Whatever the reason for employing fitness testing in schools, a basic core of tests covering tests related to stamina, strength and suppleness should be included. The actual tests employed should be selected with the reason behind the testing, the situation they are to be used in, and the equipment at hand (or likely to be available) in mind.

Of course, it may be decided to carry out fitness testing in schools for a combination of the suggested reasons, or for other reasons, which may require other considerations to be taken into account —

Some simple fitness tests for use in primary schools

The battery of tests outlined here was used by the author in two primary schools to introduce the idea of a connection between regular physical activity and the maintenance of good health. A questionnaire on physical activity levels, and a handout sheet, were also used to supplement a semi-structured discussion.

Test 1: 40 metre sprint

Pupils sprint between two marked points, being timed by a partner. [Performed in pairs or small groups depending upon the availability of stopwatches — pupils may have a stop-watch function on their wrist-watches.]

Test 2: standing long jump

Performed on concrete to facilitate measurement — the pupils jump from a marked line and a partner places a chalk mark at the back of the trailing foot. After three attempts the best jump is measured with a tapemeasure or ruler. [Performed in pairs or small groups depending upon the availability of tapemeasures/rulers.]

Test 3: 300 metre shuttle run

Pupils run around two marked points, 50 metres apart (if space allows) for a total of 300 metres, being timed by a partner. In order to demonstrate how the basic speed shown in the 50 metre sprint is carried over to the longer shuttle run, an 'endurance ratio' (time for 50m divided by time for 300m) could be calculated. This may prove a better measure of endurance than a raw time, as it attempts to take some account of an individual's basic running ability. [Group size as for test 1.]

Test 4: standing high jump

Performed against a wall; the pupil's height is marked on the wall with chalk; then, holding the chalk in the hand closest to the wall, the pupil jumps and marks the wall at the highest point possible. After three attempts the greatest height above their own height is measured — the teacher may have to make this measurement, with the pupils identifying the two marks to be measured. [Group size will depend upon the length of the wall, but in pairs at least to enable partners to spot the marks being made.]

General notes

The groupings should be arranged prior to the testing, and pupils should be given a chance to run through all the tests sometime during the week before the actual tests are carried out. These particular tests should be able to be carried out with equipment readily at hand; as has been suggested enough wristwatches with a stopwatch function may be available; if there are not enough tape measures, rulers can be used; mats may be required for the sit-ups and press-ups; chalk is needed for marking the jumps; and enough equipment is needed to mark out the runs to allow each group accurately to run the marked distances. Pupils should record their own results, or partners should record each other's results, as appropriate.

Test 5: 30 second press-ups

The number of press-ups achieved in 30 seconds is counted by a partner, one press-up being counted every time the chest of the subject touches the fist of the counter, on the floor under the subject's chest. [Performed in pairs, assuming space permits.]

Test 6: 30 second sit-ups

The number of bent knee sit-ups achieved in 30 seconds is counted by a partner. [Group size as for test 5.]

Test 7: flexibility

This test involves the measurement on a four point scale of the ability of pupils to bend forward with straight legs. The following scale has been adopted: (1) if most of the hands including the palms touch the ground, (2) if most of the parts of the fingers touch the ground, (3) if the tip of the fingers touch the ground; (4) if no part of the hands touch the ground; pupils should be able to hold the position for a count of three. [Performed in pairs or individually.]

Test 8: increase in pulse

This involves teaching pupils how to take their own, or a partner's, pulse. Having taken their resting pulse rate, the pupils perform a step test on benches. Using a metronome or a song with a regular fast beat ('Feel me' by Blancmange, which has a beat of two beats per second was used by the author) the pupils step up and down on the benches in time with the beat for three minutes. After three minutes the pupils sit down, and, when instructed to by the teacher (as soon as all the pupils have found their pulses), take their pulse for ten seconds. The change in pulse can be expressed as a raw difference or as a percentage increase. Alternatively the measure used could be just the pulse rate after bench stepping. [Group size dependent upon the number of benches.]

there may even be problems in secondary schools of overlap between subject areas. What I have attempted to imply is that the reason for employing fitness testing should be clearly thought out, as it may dictate a number of specific considerations that will have to be taken into account.

Some general problems arise from attempting to perform fitness testing in schools. These stem from the fact that a relatively large group of subjects will have to be dealt with in the same limited time. Testing pupils one at a time, or even in small groups, is not a realistic option in schools, especially if testing is going to be a continual activity – even if it is only carried out once or twice a year. The questions, therefore, which have to be asked about any proposed tests, include the following:

- Can the test be done with a large group, with the pupils in the group performing the tests as individuals, in pairs or in small groups?
- Is enough equipment available for the group or can the test be adapted for use with whatever equipment is available?
- Is the test acceptably accurate? 'Absolute' accuracy is not essential, but the test has to be worth doing (cf Armstrong, ref. 1, who also details the problems with respect to the accuracy of performance tests in this issue of *Education and Health*).

These questions, it is suggested, favour relatively simple tests as opposed to more elaborate ones which may require greater resources in terms of both time and equipment.

A further and perhaps slightly less general question is the frequency with which the testing should be repeated. As was stated above, Worsley & Coonan (11) found that boredom and even lessening of performance could result from too frequent monitoring. Although the reason for employing the tests may have some influence on their frequency and timing, it would seem sufficient to carry them

out either near the beginning and end of the school year or perhaps once a term.

Many of the points made in this paper could be regarded as being fairly obvious, but sometimes it is easy to overlook the obvious. If fitness testing – for whatever reason it is being employed – is going to be effective, it is important to get as many aspects as possible clarified in the planning stage, to avoid loss of enthusiasm by both pupils and teachers.

Acknowledgements

Thanks are due to the teachers at both Flixton Junior School and Mesne Lea School for their co-operation, and in general to Dr Frank Ledwith, Dr Bruce Davies and John Humphreys.

References

1. Armstrong, N., A comment on physical fitness testing. *British Journal of Physical Education*, 17: 1, 34, 1986.
2. Biddle, S., Field Tests of Health Related Fitness. *British Journal of Physical Education*, 17: 1, 31-33, 1986.
3. Corbin, C. & Fox, K., Flexibility: the forgotten part of fitness. *British Journal of Physical Education*, 16: 6, 191-193, 1985.
4. DES/Welsh Office, *Better Schools*. Cmd 9469, HMSO, 1985.
5. Fox, K. & Corbin, C., Cardiovascular fitness and the curriculum. *British Journal of Physical Education*, 16: 3, 108-110, 1985.
6. Godin, G., Cox, C. H. & Shephard, R. J., The impact of physical fitness evaluation on behavioural intentions towards regular exercise. *Canadian J. of App. Sports Sciences*, 8: 4, 240-245, 1983.
7. Hudson, C., Fitness Testing in Schools. *Bulletin of Physical Education*, 19: 2, 41-43, 1983.
8. McIntosh, P. & Charlton, V., *The impact of sport for all policy 1966-1984, and a way forward*. The Sports Council, 1985.
9. Parker Dodd, I., Health Related Fitness: workshop notes. In Spackman, L. (Ed.), *Health Related Fitness*, The College of St. Paul & St. Mary, Cheltenham, 1983.
10. Whitehead, J. & Corbin, C., Muscle Fitness. *British Journal of Physical Education*, 16: 5, 180-183, 1985.
11. Worsley, A. & Coonan, W., Ten year olds' acquisition of body knowledge – the Body Owners Programme 1980, 1981. *Health Education Journal*, 42: 4, 114-120, 1984.