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Appropriate and Inappropriate Uses of *FITNESSGRAM*®: A Commentary

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While the *FITNESSGRAM*® test battery is widely used in schools, not all users are aware of the *FITNESSGRAM* position paper as outlined in the Reference Manual, and for this reason may fail to use *FITNESSGRAM* materials as intended. The purpose of this paper is to outline the many appropriate uses, and some inappropriate uses, of *FITNESSGRAM.* Because California is a state that employs the *FITNESSGRAM* as its state fitness test, examples from California are used. Suggestions for future uses of fitness testing are included.

Key Words: physical activity, fitness, fitness testing

As documented in the historical article in this issue,[1] *FITNESSGRAM*® evolved from a parental report card to a full-fledged educational program, including a fitness test battery in 1986. So that users might have a clear understanding of the purpose of the fitness test battery (one part of the *FITNESSGRAM* program), a Reference Guide was developed.[2] In addition to documenting the science behind each individual test item, the Reference Guide includes a position statement that outlines the *FITNESSGRAM/ACTIVITYGRAM* philosophy, basic program goals and objectives, and appropriate and inappropriate uses of *FITNESSGRAM* (see Table 1). The purposes of this paper are to outline the appropriate and inappropriate uses of *FITNESSGRAM* for those who may not be aware of the position paper and program philosophy, and to suggest future uses for fitness testing. Examples from California, a state that uses the *FITNESSGRAM* as its state fitness test, are given.

Appropriate Uses of Fitness Tests

The *FITNESSGRAM* Reference Guide lists five intended uses. All of these uses are consistent with the philosophy and purposes outlined in Table 1. They include personal fitness self-testing, personal best testing, institutional testing, parental

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Table 1 *FITNESSGRAM*® Appropriate and Inappropriate Uses for Physical Education: Position of the *FITNESSGRAM* Scientific Advisory Board

The *FITNESSGRAM* Mission

The principal mission of the *FITNESSGRAM* program is to promote lifelong physical activity and other healthy behaviors among youth.

The "HELP" Philosophy of *FITNESSGRAM*

H HEALTH comes from regular physical activity and the development of health related fitness.
E Physical activity and fitness are for EVERYONE regardless of age, gender, or ability.
L Physical activity and physical fitness are for the LIFETIME.
P Physical activity programs should be designed to meet PERSONAL needs and interests.

FITNESSGRAM Goals and Guiding Principles

The primary goal of *FITNESSGRAM* is to facilitate learning about physical activity and physical fitness concepts and increase the likelihood that individuals will adopt lifetime patterns of physical activity. The following basic principles describe how *FITNESSGRAM* can be used to reach these goals. *FITNESSGRAM* information is designed to provide personal information about physical fitness and help individuals learn to plan lifelong physical activity programs to maintain or improve their fitness. Emphasis should be placed on helping individuals learn how to self-administer tests, interpret results, and build fitness profiles to be used in planning a personalized, lifetime fitness program.

Appropriate Uses for *FITNESSGRAM*

- Personal testing to help students evaluate their level of health related fitness.
- Institutional testing to allow teachers to view group data (for curriculum development).
- Personal best testing to allow individual students to *privately* determine performance levels.
- Teaching students about criterion referenced health standards and what types of activity are needed to reach them.
- Helping students track fitness results over time (in portfolios for example).
- Documenting that *FITNESSGRAM* is being administered in schools and that student self-assessments are being tracked over time is appropriate

Inappropriate Uses for *FITNESSGRAM*

Student scores on *FITNESSGRAM* should NOT be used to:

- Evaluate individual students in physical education (e.g., grading or state standards testing). Students are different in terms of interests and ability.

(*continued*)

Table 1 (*continued*)

Grading students on their fitness performance may be holding them accountable for accomplishments beyond their control. Posting the results for other students to see can be an embarrassing situation that does little to foster positive attitudes toward activity.

- Evaluate teacher effectiveness (e.g., teacher evaluations). Teachers can be effective at teaching youngsters how to develop and maintain physical fitness and still have students who do not perform well on fitness tests. Oftentimes a physical education teacher who only emphasizes fitness activities may be shortchanging his or her students in other areas such as skill development, social skills, and positive attitudes toward physical activity.
- Evaluate overall physical education quality (e.g., physical education program assessment). Physical fitness is only one part of a quality physical education program. Teaching physical skills, cooperative skills, and health maintenance skills are all important components of a quality program. A quality program is designed to foster lifelong physical activity.

Additional Considerations When Using *FITNESSGRAM*

- Consistent with the HELP philosophy, it is important that privacy of results be a priority when using *FITNESSGRAM*. The data collected during the assessments should be considered as personal information and appropriate care should be taken when administering the tests and discussing the results. Ensuring confidentiality with the assessments will help individuals focus on their personal needs and be less concerned about comparisons with others.
- A major determinant of regular lifetime physical activity is confidence in skills and behaviors associated with physical activity (self-efficacy). Uses of *FITNESSGRAM* that enhance self-efficacy are encouraged while those that undermine self-efficacy are discouraged. Accordingly, self-comparisons of results over time or self-comparisons to health standards are encouraged. Inter-student comparisons of private personal self-assessment data are discouraged.

Note: Adapted from *FITNESSGRAM* Reference Guide available at www.fitnessgram.net. The original position statement includes appropriate uses for *ACTIVITYGRAM* as well as *FITNESSGRAM*. Only those sections relating to *FITNESSGRAM* are used in this table.

reporting, and personal tracking.[2] The principal use is considered to be personal self-testing. Personal self-testing teaches students to test their own fitness and interpret their own test results for use in program planning. Scores are personal and private in nature. Personal best testing is for students who want to know how well they can perform on all items in the test. This type of testing is not necessarily for all students and also has the limitation of taking considerable time. Institutional testing requires trained testing teams and considerable school time. Such testing is typically done by schools, or school districts, to provide information that can be used by teachers in curriculum planning.

Institutional testing as a means of assigning grades, long-term student achievement, or teacher effectiveness is discouraged. Institutional testing will be discussed in greater detail later in this paper. Parental reporting and feedback involves the use of test scores, either from self-testing or institutional testing, to provide reports to parents. Typically parental reports of test results are accompanied by information to help interpret results, and face-to-face meetings between teachers and parents are encouraged to ensure that correct interpretations are made. Research suggests that parental reporting is effective in getting parents to make changes in the home that will promote healthy lifestyles.[3] Personal tracking occurs when multiple test results are plotted over periods of time so that students, teachers, and parents can see how they perform against criterion referenced standards. Dramatic shifts in fitness scores or in body fatness scores can be detected, and multifactored approaches can be implemented to help youth with problems. The American Academy of Pediatrics recommends the tracking of body mass index during the school years.[4] *FITNESSGRAM* software allows for this type of tracking for all items in the battery.

Physical Fitness Testing: Appropriate Uses

Personal self-testing is a recommended method of use for *FITNESSGRAM* because of the ease in which this type of testing can be appropriately used. Still, those who use self-testing should adhere to the guidelines discussed in this section. Because mandated institutional testing received so much publicity and because it has potential for abuse, it will be the focus of this section.

Recently states and/or school districts have mandated district or statewide fitness testing. In these instances schools are required to administer a test battery such as *FITNESSGRAM* to all students at selected grade levels. This practice can be used to accomplish educational goals that are deemed as appropriate uses. At the same time, district or statewide testing can lead to inappropriate professional practice.

The advantages of district or statewide assessment programs (see Table 1) using a test battery such as *FITNESSGRAM* include the following:

1. Regular institutional testing documents that regular testing is being conducted in schools.
2. Institutional tests provide the basis for parental reports and long-term tracking of individual student fitness (using *FITNESSGRAM* software).
3. Periodic institutional testing provides a standard against which self-testing results can be compared so that students can know the validity of their self-testing results, thus helping them learn to self-test properly.
4. Institutional testing can be used in conjunction with self-testing to help students learn about their current health fitness status and to help them plan physical activity programs for use throughout life.
5. Institutional tests can be used to help students determine personal bests in fitness test performance when used appropriately.
6. Institutional test results can help teachers and schools in developing curriculum plans based on student needs and can help teachers work with parents to help students plan a healthy lifestyle program to promote lifelong fitness.
7. Institutional test results can be used for conducting research related to fitness.

Appropriate Uses: A California Example

California is a state that mandates fitness testing.[5,6] In 1995 California Assembly Bill 265 was passed re-establishing a statewide physical fitness testing (PFT) program (California Education Code 60800). In 2001 the California Department of Education (CDE) decided they would collect and report data every year. Therefore, by law every student in the state of California (whether or not he or she is enrolled in a physical education class) in Grades 5, 7, and 9 is fitness tested annually using the *FITNESSGRAM* test. The general opt-out provision of the California Education Code 60615 does not apply to California fitness testing. Therefore, only students who are physically disabled are allowed to opt-out of fitness testing.[5] Because data is available for this state, examples from California will be used.

During the spring of 2002, the PFT was administered to 90% of all 5th grade students, 83% of all 7th grade students, and 68% of all 9th grade students in California. In 2003 the Standards and Assessment Division of the California Department of Education most recently reported the results of the PFT to the governor and the legislature.[6] The fact that a considerable number of schools in California are using the *FITNESSGRAM* test suggests there is the potential for satisfying many of the appropriate uses as outlined earlier. Specifically the mandated testing ensures that schools are using fitness testing and has the potential for benefiting youth, their parents, and teachers (and their schools). Benefits to youth include having access to a fitness report that can be used as a basis for perfecting self-testing and to build a personal fitness profile for planning a personal physical activity program, educating students concerning the need for health related physical fitness and the health benefits of regular physical activity.

Institutional testing, when combined with additional self-testing, has the potential for enhancing fitness and physical activity education in the schools. There is a caution, however. The benefits are greater for older and more mature students who are able to respond to fitness training. Also, older students have the opportunity for greater independence in making personal choices. Elementary school students are often forced into fitness training even though the chance of them showing significant improvement is small. For many students, testing and being forced into fitness activities that are perceived as difficult and threatening may do more harm than good. Finally, intense fitness activity is usually counterproductive for those youth who need it the most, the overweight and unskilled children. Virtually all children can be active if they expend effort, so a program that fosters enjoyment and feelings of competence is recommended as an alternative to a program that focuses on "getting kids fit."

As noted earlier, parents benefit by receiving a report of their child's fitness profile (using *FITNESSGRAM* software) and from consultation with the physical educators who can help parents interpret test results and plan programs to help their children improve in areas of deficiencies. Further, parents can track the fitness scores of their children over time (using *FITNESSGRAM* software) so that they can detect changes in fitness status and solutions to problems can be outlined. Research clearly indicates that weight control and personal fitness problems cannot be solved by the school alone, so involving the home and community in efforts to promote healthy lifestyles leading to lifelong fitness are essential.[7]

Teachers and educational personnel benefit because results provide information that can be used in planning curriculum. When used properly, individual test results

allow teachers to work with individual children to help them develop a personal plan for improving in areas of need. The testing and reporting experience provides the teacher with an excellent opportunity to teach youth (and their parents) about the health benefits of exercise and about self-management skills such as self-assessment, self-monitoring, goal setting, and program planning.[8] Group data, including reports of the number of youth meeting health standards for each test item, provides information concerning areas in which many youth may need improvement. In these cases additional self-testing opportunities for specific test items can be offered in the curriculum, and additional lessons can be implemented to help youth plan to improve in these areas of need.

As Table 2 indicates, in California most youth (more than half) meet minimum standards for most fitness tests. Emphasizing activities for one specific fitness component would be appropriate if a relatively large number of youth were below minimal standards. However, taking too much time in the curriculum to focus on one part of fitness would not necessarily be in the interest of the majority of youth. Given the limited amount of school time available for physical education, an appropriate balance of emphasis is important.

Table 2 Percentage of California Students in the Healthy Fitness Zone (HFZ)

PFT	Grade 5	Grade 7	Grade 9
Aerobic capacity	56.5	57.4	47.5
Body composition	65.9	66.3	64.7
Abdominal strength	78.1	80.7	77.7
Trunk extension strength	84.1	86.4	79.7
Upper body strength	62.5	62.2	61.1
Flexibility	63.7	69.3	65.5

For teachers and for schools, an important benefit of mandated institutional testing is the research that can be done using test results. In California data have been used to relate fitness performance to academic performance.[6] Studies such as this can provide information for teachers and schools. Care in interpreting data from institutional testing is critical. The studies conducted to date are cross-sectional and can only establish relationships—cause and effect cannot be inferred. Socioeconomic status and other demographic characteristics of youth must be considered because it is possible that these factors may be associated with the academic performance/physical fitness relationship. With available data it should be possible to determine how fitness performance is moderated by socioeconomic status. Also descriptive studies of the fitness levels of youth of varying socioeconomic status can be conducted. Clearly much more research is needed, and professionals must be careful about how they translate the results of existing data.

Consistent with the purposes of *FITNESSGRAM/ACTIVITYGRAM* it would be appropriate to collect data concerning physical activity patterns of youth, as well as fitness data, so that research can be conducted to determine the relationship among these variables using a large database such as the one in California.

Fitness Testing: Potential for Abuse

As noted earlier, there are many possible advantages of regular fitness testing, including mandatory institutional fitness testing, when programs are appropriately administered. However, there is considerable potential for abuse. The position statement of the *FITNESSGRAM* advisors (see Table 1) suggests three major areas of concern: (1) using test results as indicators of overall physical education program quality; (2) using test results as indicators of teacher effectiveness; and (3) using test results to grade youth in physical education class. In addition to these three areas of concern, other potential problems will be discussed.

Using test results as indicators of overall physical education program quality and/or teacher effectiveness: In many subject areas, outcome tests have been developed to "validate student achievement." These tests are typically written and overseen by outside agencies and student scores are used as indicators of program and teacher efficacy. There is considerable debate among educators regarding the use of standardized tests,[9,10] nevertheless, administrators often hold teachers accountable for producing high standardized test scores.

The use of *FITNESSGRAM* as an outcomes test to validate the overall quality of physical education programs is considered an abuse for several reasons. First, building physical fitness is but one of several important physical education objectives.[11] Testing only one objective as an indicator of learning in physical education is inappropriate. There is great potential for diverting already limited time to "training for physical fitness" at the expense of other important physical education objectives. Focusing on physical fitness, as opposed to focusing on promoting lifelong physically active living, can fail to produce either fitness or regular activity patterns among youth who are in greatest need, such as those who score low on fitness tests.[12] Second, among youth, physical activity is but one of many factors that influence physical fitness. To assume that physical activity, even in a quality physical education program, is the primary factor associated with fitness development is incorrect. Research clearly indicates that factors such as physiological age (maturation), chronological age, and heredity contribute much more to fitness performance among youth than does one's level of physical activity.[13]

Research shows that the use of qualified physical educators does increase the physical activity levels of youth,[14] but large improvements in fitness levels are unlikely, especially among young children, because of factors already discussed as well as the fact that preadolescent youth do not respond to fitness training in the same way as postadolescents and adults.[13,15] Another issue that cannot be ignored is that body weight/fatness is associated with performance on fitness test.[16] High levels of body fat are associated with low performance on some fitness measures. Fat is dead weight that reduces physical fitness performance. To hold physical education programs and teachers accountable for the fitness of youth, given the limited time available and other limiting factors described in this section, is unreasonable if not irresponsible.

Though not included in the *FITNESSGRAM* position paper (see Reference Guide), the issue of integrity in testing must also be considered. There is evidence that cheating has occurred among students and teachers taking and administering institutional tests in a variety of subject matter areas.[17] Among the abuses are practice sessions in which teachers share information gained after viewing tests, giving clues concerning answers during test sessions, and extending length of test-

ing sessions beyond specified limits. The potential for abuse when using physical fitness tests as "high stakes" assessments of student or teacher achievement are especially great. In fitness testing it would be easy for test distances in running tests to be shorter than normal, for errors to occur in counting acceptable repetitions, and for errors to occur in recording scores. Another possible abuse would be simply excluding, or reporting as absent, students with exceptionally low fitness scores. While it would be hoped that such practices would not occur, if the stakes are high, some abuse is likely.

Using test results to assign student grades: Many of the same reasons for not using institutional fitness test results to evaluate teachers and programs can be used to make the argument that these test results should not be employed for grading students. Because fitness scores are more affected by age (both physiological and chronological) and heredity than by physical activity levels, students who work very hard to improve their fitness may still score low on fitness assessments. The focus on fitness performance sends the wrong message (i.e., attaining a high level of physical fitness is more important than participating in regular daily physical activity).[12] Youth who expend effort and still fail to get a good grade because of low fitness scores are discouraged from continuing to participate in programs of regular physical activity, the principal purpose of *FITNESSGRAM* (see Table 1).

Confidentiality of test results: One advantage of paper-and-pencil tests is that the results can easily be kept confidential. No one other than the person being tested, parents, teachers, and other appropriate school officials know the results of a student's tests unless the student or parent chooses to reveal the results or unless school officials reveal the results inappropriately. With physical fitness testing, the actual testing process is often quite public. Appropriate protocol can be used to assure as much privacy as possible (e.g., separation of testing stations, screens to avoid observation of measurements, especially body composition measures) and to educate students concerning the confidentiality of the results of others. When partners or groups are used in testing, it should be understood that test results revealed to a partner or observed by others in the group (e.g., PACER) are confidential. A major advantage of self-testing is that it can be done in privacy or relative privacy.

Interpreting meaning from institutional results: Are youth less fit today than they were in the past? One benefit of regular mandatory institutional fitness testing is that it allows comparisons of the fitness of youth from year to year. The most recent testing results indicate that there were no major changes in fitness between 2001 and 2002 for California students.[6] Based on previous data from national fitness surveys, this finding is not surprising.[18] Over three decades of national testing (from 1958 to 1985) there was little change in the fitness of youth. This is because for most fitness test items (other than body composition), maturity and heredity play a greater role in fitness performance among youth than lifestyles including physical activity.[12]

The number of youth who are overweight or obese has increased nearly threefold in recent years.[19] This is, no doubt, because lifestyles (eating and activity patterns) have a major impact on body composition even in youth. It is reasonable to assume that if schools, homes, and communities worked together, the physical activity levels of youth could be increased. Such increases in activity would, no doubt, help many adolescents meet minimal criterion level fitness standards. Certainly younger children would also benefit from the increased activity, but not all will have success in meeting fitness standards. However, until cooperative efforts among those in

schools, homes, and communities are implemented, changes in year-to-year fitness scores are unlikely, especially among younger students. Multifaceted programs[20] that encourage regular activity will be needed.

Interpreting meaning from institutional results: Is the glass half empty or half full? One advantage of the fitness testing programs such as the one in California is that these types of programs report the percentages of youth at each grade level meeting criterion referenced health standards for each of the six tests in the *FITNESSGRAM* test battery. This approach is considered more appropriate than programs that report normative performances and use fitness items that are not considered to be health related.[21]

Reports noting the proportion of students meeting minimal standards provide information to local schools and school districts so that teachers can help individual students determine specific areas in need of improvement. While heredity and maturation affect fitness performance greatly, sound educational programs supported by families and communities can help most youth meet minimum fitness standards by promoting persistent effort in physical activity. Of concern is the fact that more than a few physical education teachers and some administrators have embraced institutional fitness testing as a means of "establishing a need for physical education in the schools." Reports of low fitness scores and high incidence of overweight among youth get the attention of the general public and legislators. Accordingly some physical educators, and others who would like to see more physical education in schools, choose to use institutional test results to justify physical education. Often they choose to interpret the results in such a way as to make it look as if our youth are unfit so that they can argue that physical education is needed to "get kids fit." This practice is disingenuous because it often results in the misrepresentation of data and may also ignore the facts presented earlier in this paper.

California data can be used to make a point. Results of California testing[5,6] for 2002 can be interpreted in many ways. One interpretation is that large numbers of youth are unfit (the glass is nearly empty). Results for all youth in Grades 5, 7, and 9 indicate that only 22% of 5th grade students, 26% of 7th grade students, and 23% of 9th grade students meet the minimal standards for all six test items. On the other hand, it could be argued that that 47.5 to 86.4% of youth are fit (see Table 2), depending on sex and age group (the glass is much more than half full). It is not necessary to use the data to show the unfitness of our youth. In fact our youth are probably the most fit subgroup in our society. This cannot be documented because few data are available concerning the fitness of American adults. But we can document the fact that youth are much more active than adults, and that a far greater number of adults are overweight or obese than is the case for youth.[22]

As noted previously, persistent effort in physical activity in the school, at home, and in the community can help students improve in those components of fitness in which they may not meet minimum health fitness standards. Research indicates that meeting standards in all six areas of fitness is not an easy task. Given enough tests, most people will have trouble meeting minimal standards in at least one. For example, one study indicates that even accomplished school-age athletes may have trouble meeting all fitness standards in a fitness battery.[23,24] Granted, the study used relatively high normative standards, but it does illustrate the fact that we all, even the most fit among us, typically have need for improvement in one area or another. Heredity dictates, in many cases, the areas of our strengths and weaknesses.

So is the glass half empty or half full? This is probably the wrong question.

More important is what can be done to help our young people adopt the healthy lifestyles that will lead to lifelong fitness. In the following section, some suggestions are offered.

Suggestions for the Future

FITNESSGRAM, and its accompanying program *ACTIVITYGRAM*, have as their principal purpose the promotion of lifetime physical activity for youth. *Physical Best*, a companion educational program, shares this primary goal. Central to the HELP philosophy that underlies these programs is the emphasis on promoting enjoyment and intrinsic motivation for physical activity for all youth. To the extent that fitness testing of any type contributes to this primary goal, it is encouraged. Steps described in this paper can increase the prospects that fitness testing will be a positive experience that promotes activity involvement rather than discouraging it.

Consistent with the ideas expressed in this paper and the position paper included in the *FITNESSGRAM* Reference Guide, regular fitness testing is encouraged when it is done in a way that appropriately focuses on important educational objectives. In such cases school districts and states that mandate testing can provide a service to students and parents. Teachers and school officials should be most concerned with providing feedback to students and parents so that the schools, in cooperation with the home and community, can help youth adopt physical activity patterns that are likely to lead to improvements in each individual's area of need. Accordingly, local data should be used by local schools to help their students meet personal goals based on individual needs. Self-testing and appropriate education programs are encouraged for those who do mandatory institutional testing as well as for those who do not.

The regular monitoring of fitness levels as a result of mandated institutional testing does keep the focus on the importance of fitness and regular physical activity and educational programs conducted in physical education to promote them. Physical education can focus on educating youth about fitness and teaching them how to become active to promote lifetime fitness. However, physical education by itself cannot and should not be held accountable for the fitness status of our youth. The school, the home, and the community must all be involved in promoting the healthy lifestyles necessary for promoting good health and fitness. In schools, users of *FITNESSGRAM*, whether in mandated institutional programs or less formal programs, should be aware of and carefully consider the *FITNESSGRAM* philosophy, objectives, and appropriate/inappropriate uses when using the test and associated programs. Without such considerations, school programs may prove counterproductive.

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