Physical Educator Resource Guide

American Alliance for Health, Physical Education Recreation and Dance

AAU USA

President's Council on Fitness, Sports & Nutrition

CDC Centers for Disease Control and Prevention

The Cooper Institute 501(c)(3)

Presidential Youth Fitness Program Physical Educator Resource Guide

The Presidential Youth Fitness Program Physical Educator Resource Guide is intended to provide an overview of the Presidential Youth Fitness Program. This guide is offered here, at no charge, for use only by school staff within the context of a school program or by after-school youth organizations and cannot be sold or distributed for any purpose.

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Content regarding the FITNESSGRAM® assessment on pages 7-46 has been provided by The Cooper Institute from Welk, G.J.& Meredith, M.D. (Eds.). (2010). *Fitnessgram / Activitygram Test Administration Manual, Updated* 4th ed. Champaign, IL: Human Kinetics.

Dear Physical Education Teachers/Physical Education Administrators:

Some new and exciting news to start the school year! Based on the latest science, the President's Council's on Fitness, Sports and Nutrition, has teamed up with The Cooper Institute, the Amateur Athletic Union, the Centers for Disease Control and Prevention, and the American Alliance for Health, Physical Education, Recreation, and Dance to launch the newly created Presidential Youth Fitness Program. The purpose of Presidential Youth Fitness Program is to provide assessment and educational and motivational tools necessary to help students adopt an active lifestyle that will optimize their health and educational experience.

As you are aware quality physical education programs play a unique role in teaching students the importance of health-related fitness, as well as to develop physical competence and cognitive understanding about physical activity so that students can adopt healthy and physically active lifestyles. In making this transition, the President's Council on Fitness, Sports & Nutrition will no longer promote the President's Council Fitness Test and instead will encourage the use of the FITNESSGRAM® assessment program, which focuses on health and lifelong physical activity.

Key to the success of Presidential Youth Fitness Program is the resources each of the partnering organizations brings to the program. This includes the coordination of the Presidential Youth Fitness Program led by the President's Council on Fitness, Sports and Nutrition, adoption of The Cooper Institute's fitness assessment, FITNESSGRAM®, professional development facilitated through the American Alliance for Health, Physical Education, Recreation and Dance, the recognition program managed by the Amateur Athletic Union, and the scientific and tracking expertise of the Centers for Disease Control and Prevention. As part of every educational program, purposeful measurement is an appropriate component of quality physical education, and we believe the Presidential Youth Fitness Program will make a major contribution to this goal.

We are excited about this major initiative and are hopeful that you embrace the program with full support. Additional information regarding the Presidential Youth Fitness Program, the Assessment Component, Physical Educator Resource Guide, and Parent Resource Guide, visit www.presidentialyouthfitnessprogram.org. We thank you for your continued support of quality physical education in our schools and we are here to ensure that you receive all the necessary tools to fully implement this program.

Sincerely,

Presidential Youth Fitness Program Partners:

President's Council's on Fitness, Sports and Nutrition
Centers for Disease Control and Prevention
The Cooper Institute
Amateur Athletic Union
American Alliance for Health, Physical Education, Recreation, and Dance

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INTRODUCTION TO THE PRESIDENTIAL YOUTH FITNESS PROGRAM

Physical activity is critical to our children's health and well-being. Research shows that children with better health are in school more days, are better able to learn, have higher self-esteem and are at lower risk for developing chronic diseases.

Since 1966 the President's Council on Fitness, Sports & Nutrition has promoted the President's Council Fitness Test. While the Fitness Test has changed over the years, the latest version assessed physical fitness using data from the 1985 National School Population Fitness Survey.

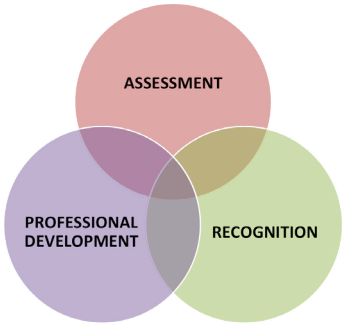
Based on the latest science, the President's Council on Fitness, Sports & Nutrition has teamed up with leaders in the field to provide a comprehensive program that provides training and resources to schools for assessing, tracking, and recognizing youth fitness. The Presidential Youth Fitness Program promotes healthy lifestyles, empowers students and parents and supports quality physical education.

Purpose

The purpose of the Presidential Youth Fitness Program is to offer a comprehensive school-based program that promotes health and regular physical activity for America's youth.

Program Components

The Presidential Youth Fitness Program is a voluntary school-based program that promotes health and regular physical activity for America's youth. The program has moved away from recognizing athletic performance to providing a barometer on student's health. As part of the Presidential Youth Fitness Program partnership, the President's Council on Fitness, Sports & Nutrition will no longer promote the President's Council Fitness Test and instead will encourage use of the FITNESSGRAM® assessment program, which focuses on health and lifelong physical activity. The comprehensive program provides resources for teachers to support quality physical education and materials for parents and students to help them physically active.



Program Partners

Amateur Athletic Union (AAU), one of the largest nonprofit volunteer sports organizations in the nation, is dedicated to helping people of all ages and abilities increase their physical activity and improve their fitness levels. AAU manages the President's Challenge, a premier program of the PCFSN. AAU, on behalf of the President's Challenge, provides the awards component for the Presidential Youth Fitness Program in addition to technical support.

American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD), the largest organization of professionals involved in physical education, recreation, fitness, dance, health promotion, and all specialties related to achieving an active, healthy lifestyle, provides its members with a comprehensive and coordinated array of programs to help further the health and well-being of the American public. AAHPERD contributes professional development and training expertise to the program.

The Center for Disease Control and Prevention (CDC) works to protect public health and safety by providing information to enhance health decisions. CDC supports the educational and research components of the program, bringing technical expertise and sound evaluation methods.

The Cooper Institute® (CI) is a nonprofit research and education organization dedicated to preventive medicine and public health. As the developers of FITNESSGRAM®, the CI aims to increase parental awareness of children's fitness levels. In conjunction with the CI, NFL Charities is the national partner for FITNESSGRAM®. NFL Charities has supported additional FITNESSGRAM® programming in more than 1,120 schools through a capacity-building grant. This partnership supports the NFL's Play 60 initiative to improve fitness and physical activity among youth. The CI provides the FITNESSGRAM®assessment and Healthy Fitness Zone® standards for the program as well as content support for the protocol and reference manual.

The President's Council on Fitness, Sports and Nutrition (PCFSN) is a committee of volunteer citizens who advise the President through the Secretary of Health and Human Services. The PCFSN promotes healthy lifestyles through fitness, sports, and nutrition programs that engage Americans across the lifespan. The Council is guiding the development and implementation of the Presidential Youth Fitness Program in addition to using its brand recognition to help drive this important initiative.

FITNESSGRAM TEST ADMINISTRATION

This chapter describes basic considerations for administering and scoring fitness test items. Table 4.1 provides a summary list of the test items.

This chapter provides information on how to administer the *FITNESSGRAM* battery in an efficient and organized manner.

Considerations for Testing Primary Grades

The major emphasis when testing children in grades K-3 should be on enjoyment and instructions on proper technique. It is important at this age not to focus on performance level. Performance standards are not available for the aerobic capacity test items for students younger than 10 years of age. While standards are provided for other test items for primary grade children, you are strongly encouraged not to emphasize performance level and test results.

Considerations for Safety

The test items used in *FITNESSGRAM* have been administered to millions of students and have been shown to be very safe. The prudent teacher, however, will recognize that with any strenuous physical activity there is always the possibility that incidents may occur.

Before administering any test items, be aware of the potential health problems of all students in your classes. For example, it is possible for a student to have a congenital heart condition that may require special consideration during the administration of an aerobic capacity measure or other test items. Maximizing the safety of all students should be the primary objective.

Your school district or agency should have established policies related to medical information, medical records, and medical clearance for activity. It is important that you be aware of these policies and that you follow them strictly.

TABLE 4.1 ***FITNESSGRAM* Test Items**

		Muscular strength, endurance, and flexibility			
Aerobic capacity	**Body composition**	**Abdominal strength and endurance**	**Trunk extensor strength and flexibility**	**Upper body strength and endurance**	**Flexibility**
The PACER*	Skinfold measure-ments*	Curl-up*	Trunk lift*	90° push-up*	Back-saver sit and reach
One-mile run	Body mass index			Modified pull-up	Shoulder stretch
The walk test (secondary students)	Bioelectric impedance analyzers			Flexed arm hang	

*Recommended test.

It is also important that students be conditioned adequately before taking the test. This conditioning period is especially important during the fall of the year and in hotter climates.

Considerations for Testing Special Populations

FITNESSGRAM is intended for use with students who do not have disabilities. You will, in many situations, also be working with students with disabilities. If certain physical fitness components are deemed important as a dimension in education, they are equally important for all students. We suggest, therefore, that teachers needing assistance in developing tasks for an assessment should consult one of these excellent resources: *Brockport Physical Fitness Test Kit, The Brockport Physical Fitness Test Manual,* and *The Brockport Physical Fitness Training Guide* (Winnick and Short, 1999).

Need Additional Resources?

To order the Brockport or *FITNESSGRAM* resources, call Human Kinetics at 800-747-4457, or order online at www.HumanKinetics.com. Visit www.fitnessgram.net for complete information about the assessment.

AEROBIC CAPACITY

Aerobic capacity is perhaps the most important area of any fitness program. Research clearly indicates that acceptable levels of aerobic capacity are associated with a reduced risk of high blood pressure, coronary heart disease, obesity, diabetes, some forms of cancer, and other health problems in adults. The evidence documenting the health benefits of physical activity has been summarized most concisely in *Physical Activity and Health: A Report of the Surgeon General* (U.S. Department of Health and Human Services, 1996), available online at www.cdc.gov/nccdphp/sgr/index.htm.

Many terms have been used to describe this dimension of physical fitness, including cardiovascular fitness, cardiorespiratory fitness, cardiorespiratory endurance, aerobic fitness, aerobic work capacity, and physical working capacity. Although defined somewhat differently, these terms can generally be considered synonymous with aerobic capacity. A laboratory measure of maximal oxygen uptake ($\dot{V}O_2max$) is generally considered to be the best measure of aerobic capacity. Because differences in body size can influence oxygen uptake, the measures of aerobic capacity are typically expressed relative to body weight (i.e., milliliters O_2 consumed per kilogram of body weight per minute, or ml · kg^{-1} · min^{-1}).

The *FITNESSGRAM* program provides three field tests of aerobic capacity (PACER, the one-mile run, and the walk test). Regardless of the assessment that was administered, the output will be expressed as aerobic capacity. Since the calculation of aerobic capacity requires the use of BMI, the entry of height and weight will be required in order to receive aerobic capacity output. All three tests have demonstrated strong reliability and validity against measured $\dot{V}O_2max$, but they vary in how and where they are administered. The following sections provide guidelines for administering and scoring all three tests.

Need Additional Resources?

For complete information about *FITNESSGRAM*, visit www.fitnessgram.net. To order the *FITNESSGRAM* software and related resources, call Human Kinetics at 800-747-4457, or order online at www.HumanKinetics.com. To review the science behind the assessment, please read the *Reference Guide*, which is available at no cost at www.fitnessgram.net.

Overview of the FITNESSGRAM Aerobic Capacity Standards

FITNESSGRAM Scientific Advisory Board

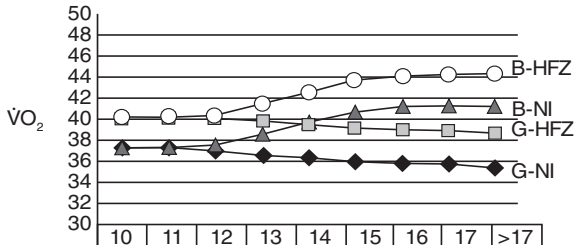
The FITNESSGRAM Scientific Advisory Board has been aware of some lingering issues with the aerobic fitness standards (i.e., disagreement between the PACER and one-mile test and excessively high passing rates for young girls), but it has proven difficult to resolve. A small subgroup of investigators worked collaboratively over the past year to resolve the issues. The group developed new health-related fitness standards using nationally representative data from the National Health and Nutrition Examination Survey (NHANES). The following information provides a comparison of the new standards with the old standards. There are several unique characteristics of these new standards.

1. The standards are age- and gender-specific and also take into account normal changes during growth and maturation. The values for boys increase with age while the values for girls decrease with age. These changes do not imply higher expectations for boys and lower expectations for girls. The changes are reflective of the natural developmental trends for boys and girls (boys gain muscle with age while girls tend to gain body fat through adolescence). The lines actually reflect the same relative level of fitness across age for both boys and girls.

2. The new standards would be equivalent for 10- and 11-year-old boys and girls. From a developmental perspective, boys and girls are more similar than different at these young ages. As they mature, boys and girls follow different developmental trends, so the fitness standards would follow these tracks.

3. The new standards allow classification into three unique zones (rather than two) with the use of two parallel lines. Students who have scores above the top line for their gender would be classified in the **Healthy Fitness Zone**. A child above this line would be classified as having sufficient fitness for good health. Students who have scores between the two lines would be classified in the **Needs Improvement** zone and receive a message that they should work to reach the Healthy Fitness Zone. Students below the bottom line would be classified in the **Needs Improvement—Health Risk** zone. This lowest fitness zone would provide youth and parents with an appropriate warning that this low level of fitness increases health risks. There will be some differences in classification, but the overall percentage of youth classified in the HFZ will be similar.

Comparison of Boys and Girls



	10	11	12	13	14	15	16	17	>17
Girls NI	37.3	37.3	37	36.6	36.3	36	35.8	35.7	35.3
Girls HFZ	40.2	40.2	40.1	39.7	39.4	39.1	38.9	38.8	38.6
Boys NI	37.3	37.3	37.6	38.6	39.6	40.6	41.1	41.2	41.2
Boys HFZ	40.2	40.2	40.3	41.4	42.5	43.6	44.1	44.2	44.3

4. Teachers and parents may expect some children to be classified differently with the new standards. Fewer young girls will achieve the new HFZ standard. More young boys and fewer older boys will achieve the new HFZ standard.

5. Output for aerobic capacity will no longer be expressed as PACER laps or one-mile time. Instead, the output will be aerobic capacity, which will be calculated from the test performance and body mass index. Therefore, the entry of height and weight will be required. Body mass index is a very critical factor in one's ability to perform aerobically. Evaluating aerobic capacity based solely on the performance result without including body mass index is an oversimplification and can result in errors of classification.

The *FITNESSGRAM* program places considerable importance on providing accurate information on health and fitness to school administrators, teachers, parents, and youth. New aerobic fitness standards have been developed to provide more specific information about potential health risks and allow for more prescriptive feedback messages.

The PACER

➪ *Recommended*

The PACER (Progressive Aerobic Cardiovascular Endurance Run) is the default aerobic capacity test in *FITNESSGRAM*. The PACER is a multistage fitness test adapted from the 20-meter shuttle run test published by Leger and Lambert (1982) and revised in 1988 (Leger et al.). The test is progressive in intensity—it is easy at the beginning and gets harder at the end. The progressive nature of the test provides a built-in warm-up and helps children to pace themselves effectively. The test has also been set to music to create a valid, fun alternative to the customary distance run test for measuring aerobic capacity.

The PACER is recommended for all ages, but its use is strongly recommended for participants in grades K-3. The PACER is recommended for a number of reasons, including the following:

- All students are more likely to have a positive experience in performing the PACER.
- The PACER helps students learn the skill of pacing.
- Students who have a poorer performance will finish first and not be subjected to the embarrassment of being the last person to complete the test.

When you are administering the test to these younger children, the emphasis should be on allowing the children to have a good time while learning how to take this test and how to pace themselves. Allow children to continue to run as long as they wish and as long as they are still enjoying the activity. Typically the test in grades K-3 will only last a few minutes. It is not desirable or necessary to make the children run to exhaustion.

Test Objective

To run as long as possible with continuous movement back and forth across a 20-meter space at a specified pace that gets faster each minute. A 15-meter version of the PACER test has been developed for teachers with smaller sized facilities.

Equipment and Facilities

Administering the PACER requires a flat, nonslippery surface at least 20 meters long, CD player with adequate volume, CD, measuring tape, marker cones, pencil, and copies of the score sheet (located at the end of this chapter). Students should wear shoes with nonslip soles. Plan for each student to have a 40- to 60-inch-wide space for running. An outdoor area can be used for this test if you do not have adequate indoor space. There should be a designated area for finished runners and for scorekeepers. You may want to paint lines or draw chalk lines to assist students in running in a straight line.

Test Instructions

- Mark the 20-meter (21-yard, 32-inch) course with marker cones to divide lanes and use a tape or chalk line at each end.
- Make copies of a suitable score sheet for each group of students to be tested. An example is provided at the end of this chapter.
- Before test day, allow students to listen to several minutes of the PACER cadence so that they know what to expect. Students should then be allowed at least two practice sessions.
- Allow students to select a partner. Have students who are being tested line up behind the start line.
- Each student being tested should run across the 20-meter distance and touch the line with a foot by the time the beep (e.g., the PACER cadence) sounds. The student should take full weight on the foot that is touching the line. At the sound of the beep, the student turns around and runs back to the other end. If some students get to the line before the beep, they must wait for the beep before running the other direction. Students continue in this manner until they fail to reach the line before the beep for the second time.
- A single beep will sound at the end of the time for each lap. A triple beep sounds at the end of each minute. The triple beep serves the same function as the single beep and also alerts the runners that the pace will get faster. Inform students that when the triple beep sounds, they should not stop but should continue the test by turning and running toward the other end of the area.
- Scoring the PACER will require the input of the student's height and weight. Calculation of aerobic capacity requires a score of at least 10 laps (20-meter version).

When to Stop

The first time a student does not reach the line by the beep, the student stops where he or she is and reverses direction immediately, attempting to get back on pace. The test is completed for a student

(continued)

the next time (second time) he or she fails to reach the line by the beep (the two misses do not have to be consecutive; the test is over after two total misses). Students just completing the test should continue to walk and stretch in the designated cool-down area.

Note: A student who remains at one end of the testing area through two beeps (does not run to the other end and back) should be scored as having two misses and the test is over.

Scoring

In the PACER test, a lap is one 20-meter distance (from one end to the other). Have the scorer record the lap number (crossing off each lap number) on a PACER score sheet (sample provided in this chapter). The recorded score is the total number of laps completed by the student. For ease in administration, it is permissible to count the first miss (not making the line by the beep). It is important to be consistent in the method used for counting with all of the students and classes.

An alternative scoring method is available. This method does not eliminate students when they miss their second beep (Schiemer, 1996). Using a PACER score sheet, the teacher establishes two different symbols to be used in recording, such as a star for making the line by the beep and a triangle for not making the line. The scorer then draws a star in the circle when the runner successfully makes the line by the beep and a triangle when the runner fails to make the line by the beep, simply making a record of what occurs. The runners can continue to participate until the leader stops the music or until they voluntarily stop running. To determine the score, find the second triangle (or whatever symbol was used). The number associated with the preceding star is the score.

Criterion standards for students in grades K-3 have purposefully not been established. There are concerns regarding the reliability and validity of the test results for very young children. Even with practice, it is difficult to ensure that young children will pace themselves appropriately and give a maximal effort. The object of the test for these younger students is simply to participate and learn about the test protocol.

Students ages 5 to 9 years in grades K-3 do not have to receive a score; they may simply participate in the activity. Regardless of the entry, the performance will not be evaluated against a criterion standard. Nine-year-olds in grade 4 may receive a score, and it will be evaluated against a criterion standard. All 10-year-old students receive a score regardless of grade level.

Suggestions for Test Administration

- The PACER cadence contains 21 levels (1 level per minute for 21 minutes). During the first minute, the 20-meter version allows 9 seconds to run the distance; the 15-meter version allows 6.75 seconds. The lap time decreases by approximately one-half second at each successive level. Make certain that students have practiced and understand that the speed will increase each minute.
- A single beep indicates the end of a lap (one 20-meter distance). The students run from one end to the other between each beep. Caution students not to begin too fast. The beginning speed is very slow. Nine seconds is allowed for running each 20-meter lap during the first minute.
- Triple beeps at the end of each minute indicate the end of a level and an increase in speed. Students should be alerted that the speed will increase. When students hear the triple beeps they should turn around at the line and immediately continue running. Some students have a tendency to hesitate when they hear the triple beeps.
- A student who cannot reach the line when the beep sounds should be given one more chance to attempt to regain the pace. The second time a student cannot reach the line by the beep, his or her test is completed.
- Groups of students may be tested at one time. Adult volunteers may be asked to help record scores. Students may record scores for each other or for younger students.
- Each runner must be allowed a path 40 to 60 inches wide. It may work best to mark the course.

One-Mile Run

⇨ *Alternative*

The one-mile run can be used instead of the PACER to provide an estimate of aerobic capacity ($\dot{V}O_2$max). For students who enjoy running and are highly motivated, it is a very good alternative assessment. Scoring of the one-mile run will require the input of a student's height and weight since the calculation of aerobic capacity includes BMI.

Test Objective

To run a mile at the fastest pace possible. If a student cannot run the total distance, walking is permitted.

Equipment and Facilities

A flat running course, stopwatch, pencil, and score sheets are required. The course may be a track or any other measured area. The course may be measured using a tape measure or cross country wheel. Caution: If the track is metric or shorter than 440 yards, adjust the running course (1,609.34 meters = 1 mile; 400 meters = 437.4 yards; 1,760 yards = 1 mile). On a metric track the run should be four laps plus 10 yards.

Test Instructions

Students begin on the signal "Ready, Start." As they cross the finish line, elapsed time should be called to the participants (or their partners). It is possible to test 15 to 20 students at one time by dividing the group. Have each student select a partner; one is the runner and one is the scorer. While one group runs, partners count laps and record the finish time. Appendix B contains a sample score sheet for scorers to use.

Scoring

The one-mile run is scored in minutes and seconds. You will need to enter a score in the software. Students ages 5 to 9 years do not have to be timed; they may simply complete the distance. Regardless of their mile-run time, a Healthy Fitness Zone standard will not be used to evaluate their score. Nine-year-olds in grade 4 should receive a score. All 10-year-olds should receive a score regardless of grade level.

Performance standards for students in grades K-3 have purposefully not been established. There are concerns regarding the reliability and validity of the test results for very young children. Even with practice, it is difficult to ensure that young children will pace themselves appropriately and give a maximal effort. The object of the test for these younger students is simply to complete the 1-mile distance at a comfortable pace and to practice pacing (photo 5.1).

Remember, the height and weight for each student must be entered in addition to the performance time on the one-mile run. Calculation of aerobic capacity requires a score less than 13:01.

Suggestions for Test Administration

- Call out times as the runners pass the start/stop line to assist students in pacing themselves.
- Preparation for the test should include instruction about pacing and practice in pacing. Without instruction, students usually run too fast early in the test and then are forced to walk in the later stages.
- Results are generally better if the student can maintain a constant pace during most of the test.

PHOTO 5.1 Student running.

- Walking is definitely permitted. Although the objective is to cover the distance in the best possible time, students who must walk should not be made to feel inferior. Encourage students who walk to move at a fast pace, rather than stroll. Attainment of the Healthy Fitness Zone is the important factor.
- Have students set a goal before running.
- Students should always warm up before taking the test. It is also important that students cool down by continuing to walk for several minutes after completing the distance. A good suggestion is to have those who have completed the distance do an easy activity (like juggling, hula hoop) while waiting for others to complete the distance. This keeps everyone moving and busy and takes the focus off the slower students who will complete the distance last.
- Administration of the test under conditions of unusually high temperature or humidity or when the wind is strong should be avoided, as these elements may be unsafe or may lead to an invalid estimate of aerobic capacity.
- Counting laps completed and accurately recording the run time can be a problem when a relatively small course is utilized with younger children. Many techniques are acceptable. Pair the students and have the resting partner count laps and record time for the runner. Older students or parents may be asked to assist in recording results for younger students.

Walk Test

➪ *Alternative*

Another alternative to the PACER test is the one-mile walk test. This test is only for students age 13 and older since it hasn't been validated with younger samples. The walk test is an excellent alternative test since it is an assessment that can most definitely be used for a lifetime. Secondary students should learn to do this assessment since it is one that they can repeat on their own to self-assess their fitness levels.

Test Objective

To walk 1 mile as quickly as possible while maintaining a constant walking pace the entire distance. This test is included in *FITNESSGRAM* for use with participants ages 13 years and older. The walk test is an excellent self-assessment skill for everyone to use throughout life.

Equipment and Facilities

A flat, measured running course, two or more stopwatches, pencils, and score sheets are required. Heart rate monitors, if available, make heart rate monitoring much easier. The course may be measured using a tape measure or cross country wheel. Caution: If the track is metric or shorter than 440 yards, adjust the course (1,609.34 meters = 1 mile; 400 meters = 437.4 yards; 1,760 yards = 1 mile). On a 400-meter track the walk should be four laps plus 10 yards.

Test Instructions

Students begin on the signal "Ready, Start." Participants should attempt to walk the full mile as quickly as they can but at a pace that can be maintained the entire distance (photo 5.2). As they cross the finish line, elapsed time should be called to the participants (or their partners). It is possible to test 15 to 30 students at one time by dividing the group. Have each student select a partner; one is the walker and one is the scorer. While one group walks, the scorers count laps and record the finish time.

At the conclusion of the one-mile walk, each student should take a 60-second heart rate count. The scorer can time the 60 seconds or a pace clock with a second hand can be used to allow students to count the time themselves. If using heart rate monitors to determine the heart rate, each participant should start his or her stopwatch at the beginning of the walk and stop it at the end. The last heart rate recorded during the walk should be used as the walking heart rate. The relative heart rate to walk a mile at a specific speed is used to estimate overall cardiovascular fitness.

(continued)

PHOTO 5.2 Student walking.

Scoring

The walk test is scored in minutes and seconds. You will need to enter a score in the software. A 60-second heart rate should be taken at the conclusion of the walk. Estimated $\dot{V}O_2$max is calculated using the Rockport Fitness Walking Test equation (Kline et al., 1987; McSwegin et al., 1998).

Suggestions for Test Administration

- Preparation for the test should include instruction and practice in pacing and in techniques for heart rate monitoring.
- Results are generally better if the student can maintain a constant pace during most of the test.
- Students should always warm up before taking the test. It is also important that students cool down by continuing to walk for several minutes after completing the distance.
- Administration of the test under conditions of unusually high temperature or humidity or when the wind is strong should be avoided, as these elements may cause an invalid estimate of aerobic capacity.

FITNESSGRAM

The PACER Individual Score Sheet A

Teacher _____ **Class period** _____ **Date** _____

Lap = one 20-meter length

Level	Laps													
1	1	2	3	4	5	6	7							
2	8	9	10	11	12	13	14	15						
3	16	17	18	19	20	21	22	23						
4	24	25	26	27	28	29	30	31	32					
5	33	34	35	36	37	38	39	40	41					
6	42	43	44	45	46	47	48	49	50	51				
7	52	53	54	55	56	57	58	59	60	61				
8	62	63	64	65	66	67	68	69	70	71	72			
9	73	74	75	76	77	78	79	80	81	82	83			
10	84	85	86	87	88	89	90	91	92	93	94			
11	95	96	97	98	99	100	101	102	103	104	105	106		
12	107	108	109	110	111	112	113	114	115	116	117	118		
13	119	120	121	122	123	124	125	126	127	128	129	130	131	
14	132	133	134	135	136	137	138	139	140	141	142	143	144	
15	145	146	147	148	149	150	151	152	153	154	155	156	157	

Lane _____ **Student's signature** _____ **Laps completed** _____

From *FITNESSGRAM/ACTIVITYGRAM Test Administration Manual, Updated Fourth Edition* by The Cooper Institute, 2010, Champaign, IL: Human Kinetics.

BODY COMPOSITION

The prevalence of overweight and obesity has increased sharply in recent years, and the trends are evident for children as well as adults. These trends have been associated with the low cost and availability of high-fat foods, as well as with declining levels of physical activity in the population. High levels of body fatness are associated with increased risk of coronary heart disease, stroke, and diabetes. While children are not generally at risk for heart disease or stroke, increases in blood pressure and cholesterol occur in overweight and obese children. In addition diabetes (type 2) has increasingly been diagnosed among children, even though this condition has generally been viewed as "adult-onset" diabetes. Obesity and heart disease risk factors are known to track through the life span, so it is important to document body composition as part of a comprehensive health-related fitness profile. Like other dimensions of health-related fitness, body composition does affect health status (even in childhood) and does improve with regular participation in physical activity.

A number of methods are available for estimating body composition, including underwater weighing, bioelectrical impedance, skinfold measures, and other anthropometry measures such as body mass index (BMI) that are based on height and weight. Each approach has some limitations leading to overall measurement errors of 2% to 3% for estimates of percent body fat. Estimates based on height and weight such as BMI result in 5% to 6% error because body weight reflects muscle and bone mass and not just fat mass (Lohman, 1987, 1992). Skinfold estimates have lower prediction error and provide a more direct estimate of body fatness, and are the recommended approach in *FITNESSGRAM.* The skinfold procedure uses two sites that are easy to measure and whose measurements are not very invasive (triceps and calf). Because other techniques are available to directly estimate percent body fat, values from other devices can be directly entered as a calculated percent body fat in the *FITNESSGRAM* software.

Need Additional Resources?

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Overview of the FITNESSGRAM Body Composition Standards

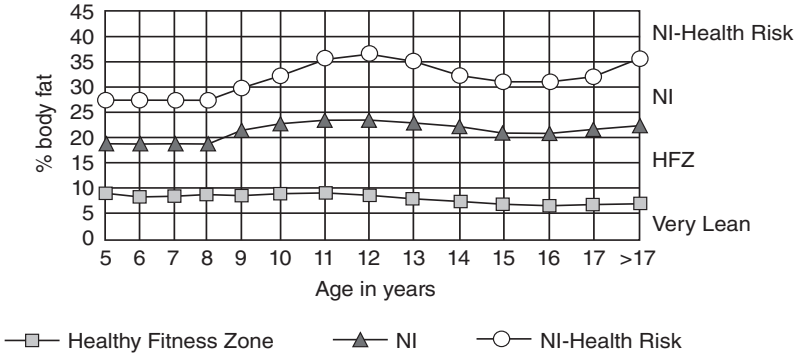
FITNESSGRAM Scientific Advisory Board

The *FITNESSGRAM* program is unique in the use of criterion-referenced standards that provide information about potential health risks associated with poor levels of fitness. Members of the Scientific Advisory Board collaborated with other experts in the field to develop new criterion-referenced standards using nationally representative data on children from the National Health and Nutrition Examination Survey (NHANES).

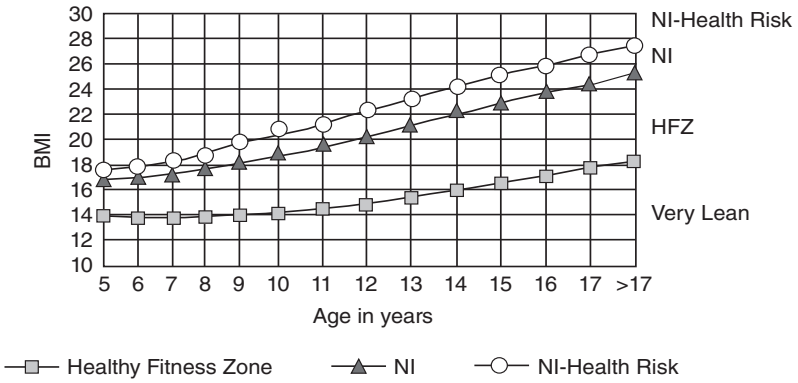
Because the *FITNESSGRAM* program includes health standards for both body fatness and BMI, it was particularly important to ensure that youth would be classified similarly with both assessments. To accomplish this, standards were first established for health risks associated with excess body fatness. The values from these analyses were then equated to corresponding BMI values to ensure good agreement. To provide some flexibility in the type of feedback provided, several different zones were developed (see the following graphs for body fat and BMI).

1. The standards are age- and gender-specific, and they also take into account normal changes during growth and maturation. The changes are reflective of the natural developmental trends for boys and girls (boys gain muscle with age while girls tend to gain body fat through adolescence). The new

Male Body Fat Standards



Male BMI Standards



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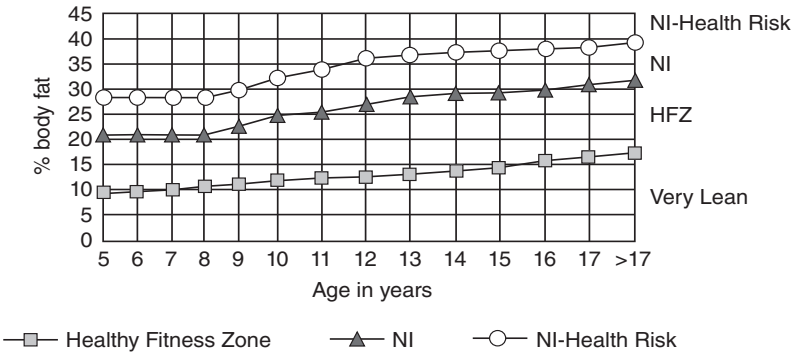
standards are similar for 10- and 11-year-old boys and girls. From a developmental perspective, boys and girls are more similar than different at these young ages. As they mature, boys and girls follow different developmental trends, so the fitness standards would follow these tracks.

2. The new standards allow classification in three unique zones (rather than two) with the use of two parallel lines. Students who have scores below the bottom line for their gender would be classified in the **Healthy Fitness Zone**. A child below this line would be classified as having sufficient fitness for good health. Students who have scores between the two lines would be classified in the **Needs Improvement** zone and receive a message that they should work to reach the Healthy Fitness Zone. Students above the top line would be classified in the **Needs Improvement—Health Risk** zone. This health-risk fitness zone would provide youth and parents with an appropriate warning that this level of fitness increases health risks. The new age- and gender-specific standards will be used to categorize student fitness levels into three zones instead of two.

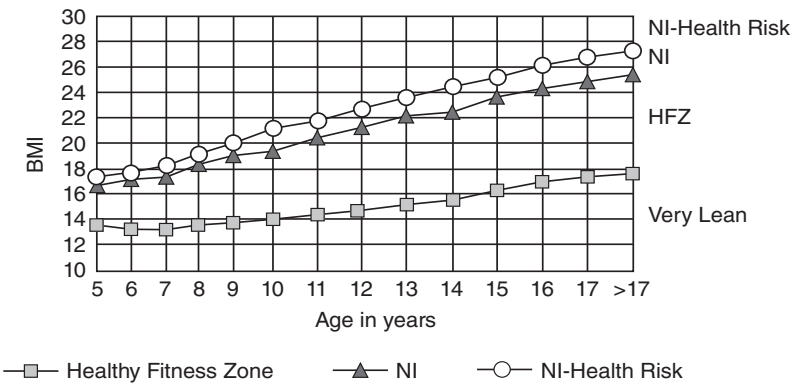
3. There will also be a zone called **Very Lean** (not indicated on these graphs). Reports for youth in this zone will reflect concern about healthy eating and activity. While there are children who are naturally very lean, it is important to make parents aware that their children's level of body composition places them in this category.

The *FITNESSGRAM* program places considerable importance on providing accurate information on health and fitness to school administrators, teachers, parents, and youth. New aerobic fitness standards have been developed to provide more specific information about potential health risks and allow for more prescriptive feedback messages.

Female Body Fat Standards



Female BMI Standards



Skinfold Measurements

➪ *Recommended*

This section provides information on measuring skinfolds, including suggestions on how best to learn to do skinfold measurements.

Test Objective

To measure the triceps and calf (and abdominal for college students) skinfold thicknesses for calculating percent body fat.

Equipment and Facilities

A skinfold caliper is necessary to perform this measurement. The cost of calipers ranges from $5 to $200. Both the expensive and inexpensive calipers have been shown to be effective for use by teachers who have had sufficient training and practice.

Testing Procedures

The triceps and calf skinfolds have been chosen for *FITNESSGRAM* because they are easily measured and highly correlated with total body fatness. The caliper measures a double layer of subcutaneous fat and skin.

Measurement Locations

The triceps skinfold is measured on the back of the right arm over the triceps muscle, midway between the elbow and the acromion process of the scapula (photo 6.1). Using a piece of string to find the midpoint is a good suggestion. The skinfold site should be vertical. Pinching the fold slightly above the midpoint will ensure that the fold is measured right on the midpoint (photos 6.2 and 6.3).

The calf skinfold is measured on the inside of the right leg at the level of maximal calf girth. The right foot is placed flat on an elevated surface with the knee flexed at a 90° angle (photo 6.4). The vertical skinfold should be grasped just above the level of maximal girth (photo 6.5) and the measurement made below the grasp.

For college students, the formula for calculating percent body fat includes the abdominal skinfold measurement in addition to the triceps and calf skinfolds. The abdominal skinfold is measured at a site 3 centimeters to the side of the midpoint of the umbilicus and 1 centimeter below it (photo 6.6). The

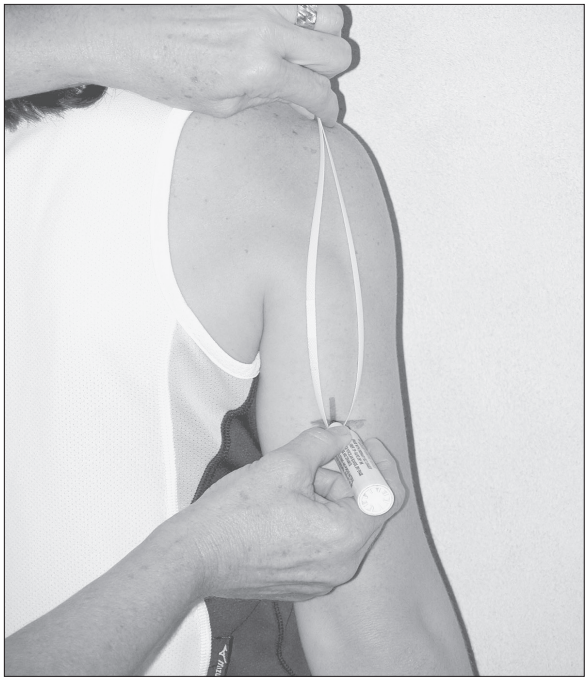


PHOTO 6.1 Locating the triceps skinfold site.

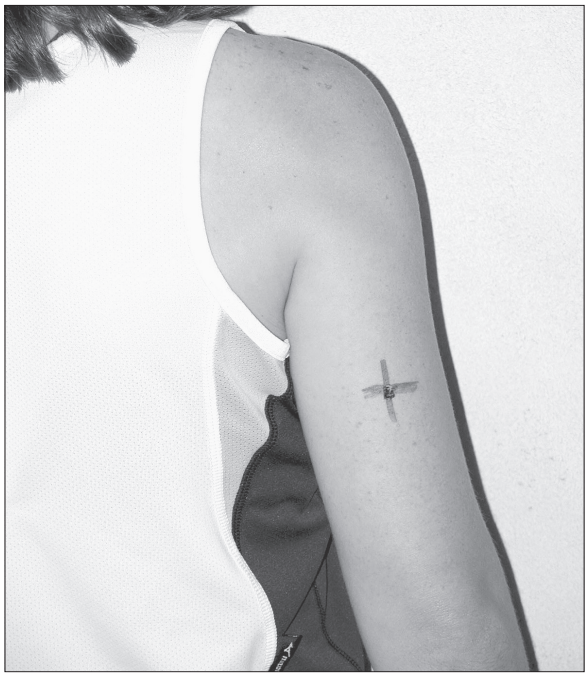


PHOTO 6.2 Site of the triceps skinfold.

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PHOTO 6.3 Triceps skinfold measurement.

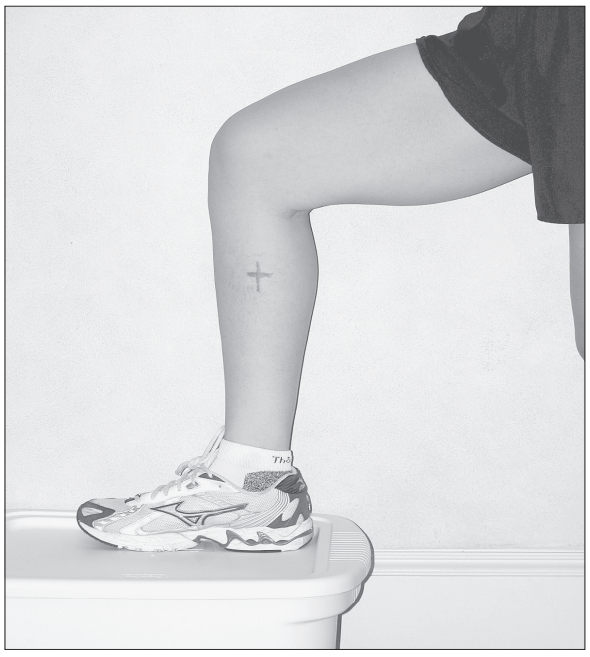

PHOTO 6.4 Placement of the leg for locating the calf skinfold site.

PHOTO 6.5 Calf skinfold measurement.

PHOTO 6.6 Site of abdominal skinfold.

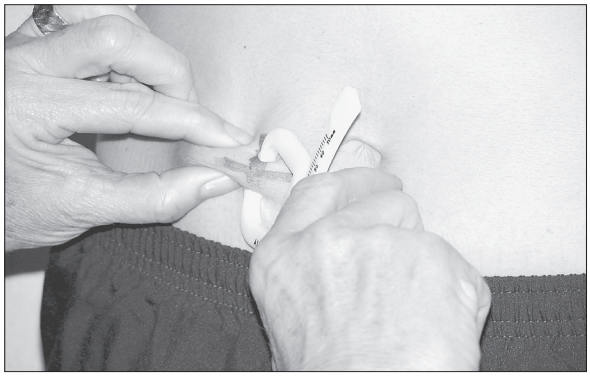

PHOTO 6.7 Abdominal skinfold measurement.

skinfold is horizontal and should be measured on the right side of the body (photo 6.7) while the subject relaxes the abdominal wall as much as possible.

(continued)

Measurement Technique

- Measure skinfolds on the person's right side.
- Instruct the student to relax the arm or leg being measured.
- Firmly grasp the skinfold between the thumb and forefinger and lift it away from the other body tissue. The grasp should not be so firm as to be painful.
- Place the caliper 1/2 inch below the pinch site.
- Be sure the caliper is in the middle of the fold.
- The recommended procedure is to do one measurement at each site before doing the second measurement at each site and finally the third set of measurements.

Scoring

The skinfold measure is registered on the caliper. Each measurement should be taken three times, with the recorded score being the median (middle) value of the three scores. To illustrate: If the readings were 7.0, 9.0, and 8.0, the score would be recorded as 8.0 millimeters. Each reading should be recorded to the nearest .5 millimeters. *FITNESSGRAM* uses the formula developed by Slaughter and Lohman to calculate percent body fat (Slaughter et al., 1988).

Suggestions for Test Administration

- Skinfolds should be measured in a setting that provides the child with privacy.
- Interpretation of the measurements may be given in a group setting as long as individual results are not identified.
- Whenever possible, it is recommended that the same tester administer the skinfold measurements to the same students at subsequent testing periods.
- Practice measuring the sites with another tester and compare results on the same students. As you become familiar with the methods you can generally find agreement within 10% between testers.

Learning to Do Skinfold Measurements

Using video training tapes or participating in a workshop are excellent ways to begin to learn how to do skinfold measurements.

Body Mass Index

➪ *Alternative*

The BMI provides an indication of the appropriateness of a child's weight relative to height. Body mass index is determined by the following formula:

$$\text{weight (kg)} / \text{height}^2 \text{ (m)}$$

While the data can be entered in pounds and inches, the results are calculated with the metric formula. For example, a student weighing 100 pounds (45.36 kilograms) who is 5 feet (1.52 meters) tall would have a BMI of 19.6. Another student of the same weight but 5 feet 2 inches tall would have a BMI of 18.3.

Therefore, height and weight measures, recorded as a regular portion of the testing process for all students, are converted to metric units by the computer to calculate BMI—pounds to kilograms and feet to meters.

Have people remove their shoes when you are measuring height and weight. In measuring height and weight, you are encouraged to drop fractions of an inch or a pound and use the last whole number. For example, a height of 5 feet 5 1/2 inches would be recorded as 5 feet 5 inches, and a weight of 112.5 pounds would be recorded as 112 pounds.

A score that is classified as "Needs improvement" generally indicates that a child weighs too much for his or her height. Body mass index is not the recommended procedure for determining body composition because it does not estimate the percent of fat. It merely provides information on the appropriateness of the weight relative to the height. For children found to be too heavy for their height, a skinfold test would clarify whether the weight is due to excess fat.

Portable Bioelectric Impedance Analyzers

A number of portable bioelectric impedance analyzer (BIA) devices are now commercially available at a price that is reasonable for most physical education programs (<$100). These devices estimate body composition by measuring the body's resistance to current flow. A body with more muscle will also have more total body water (and therefore have low resistance to current flow). A body with more fat will have less total body water and greater resistance to current flow. One type of device requires participants to stand on an instrument resembling a bathroom scale while barefoot. Another type of device uses a handgrip system that has participants squeeze handles while extending the arms.

Preliminary results with these devices suggest that they provide similar classification accuracy and body composition estimates as skinfold calipers. Because these devices can produce estimates of body composition faster than a skinfold test and do not require specific skill or experience it may provide a useful alternative to skinfold testing in some schools. The procedure is also less invasive than skinfold testing and may be better accepted in some districts that have specific policies against the use of skinfold calipers.

MUSCULAR STRENGTH, ENDURANCE, AND FLEXIBILITY

Tests of muscular strength, muscular endurance, and flexibility have been combined into one broad fitness category because the primary consideration is determining the functional health status of the musculoskeletal system. It is equally important to have strong muscles that can work forcefully and over a period of time and to be flexible enough to have a full range of motion at the joint. Musculoskeletal injuries are often the result of muscle imbalance at a specific joint; the muscles on one side may be much stronger than the opposing muscles or may not be flexible enough to allow complete motion or sudden motion to occur.

It is important to remember that the specificity of training bears directly on the development of musculoskeletal strength, endurance, and flexibility. The movements included in these test items are only a sampling of the many ways in which the body is required to move and adjust during physical activity.

The upper body and the abdominal/trunk region have been selected as areas for testing because of their perceived relationship to activities of daily living, correct posture, and the development/maintenance of a healthy, well-functioning back. The goals for a healthy back include proper alignment of the vertebrae and pelvis without excessive disc pressure and the ability of the pelvis to rotate forward and backward without strain on the muscles or connective tissue. To accomplish these goals an individual must have sufficient, but not excessive, flexibility of the low back, hamstring, and hip flexor muscles and strong, fatigue-resistant, abdominal and trunk extensor muscles. Although most students will be able to achieve the criterion standards for one or two of the included test items, it is important to educate them regarding the importance of muscular strength, muscular endurance, and flexibility in preventing problems as adults. It is especially important to make students aware of correct postural alignment and body mechanics in the event that they are developing scoliosis, which is a problem for teenage youth. The school nurse, a local physician, or a physical therapist is a good source of information about scoliosis.

Need Additional Resources?

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software and related resources, call Human Kinetics at 800-747-4457, or order online at www.HumanKinetics.com. To review the science behind the assessment, please read the *Reference Guide*, which is available at no cost at www.fitnessgram.net.

Abdominal Strength and Endurance

Strength and endurance of the abdominal muscles are important in promoting good posture and correct pelvic alignment. The latter is particularly important in the maintenance of low back health. In testing and training the muscles of this region, it is difficult to isolate the abdominal muscles. The modified sit-up, which is used in many fitness tests, involves the action of the hip flexor muscles in addition to the abdominal muscles. The curl-up assessment used in *FITNESSGRAM* is a safer and more effective test since it does not involve the assistance of the hip flexor muscles and minimizes compression in the spine, when compared to a full sit-up with the feet held. The protocol has been adapted from a version reported by Massicote (1990).

Curl-Up

➪ *Recommended*

This section provides information on the curl-up assessment used in *FITNESSGRAM*. The curl-up with knees flexed and feet unanchored has been selected because individually these elements have been shown to a) decrease movement of the fifth lumbar vertebra over the sacral vertebrae, b) minimize the activation of the hip flexors, c) increase the activation of the external and internal obliques and transverse abdominals, and d) maximize abdominal muscle activation of the lower and upper rectus abdominals relative to disc compression (load) when compared with a variety of sit-ups.

Few results are available on the consistency and accuracy of the curl-up. Reliability is higher for college students than for children but the values are acceptable for this type of assessment. Determination of validity has been hampered by the lack of an established criterion measure. Anatomical analysis and electromyographical documentation provide the primary support for the use of the curl-up test to determine abdominal strength and endurance.

Test Objective

To complete as many curl-ups as possible up to a maximum of 75 at a specified pace.

Equipment and Facilities

Gym mats and a measuring strip for every two students are needed. The measuring strip may be made of cardboard, rubber, smooth wood, or any similar thin, flat material and should be 30 to 35 inches long. Two widths of measuring strip may be needed. The narrower strip should be 3 inches wide and is used to test 5- to 9-year-olds; for older students the strip should be 4.5 inches wide.

Test Instructions

Allow students to select a partner. Partner A will perform the curl-ups while partner B counts and watches for form errors.

Partner A lies in a supine position on the mat, knees bent at an angle of approximately 140°, feet flat on the floor, legs slightly apart, arms straight and parallel to the trunk with palms of hands resting on the mat. The fingers are stretched out and the head is in contact with the mat. Make sure students have extended their feet as far as possible from the buttocks while still allowing feet to remain flat on floor. The closer the feet are positioned in relation to the buttocks, the more difficult the movement.

After partner A has assumed the correct position on the mat, partner B places a measuring strip on the mat under partner A's legs so that partner A's fingertips are just resting on the nearest edge of the measuring strip (photo 7.1). Partner B then kneels down at partner A's head in a position to count curl-ups and watch for form breaks. Partner B places a piece of paper under partner A's head. The paper will assist partner B in judging if partner A's head touches down on each repetition (photo 7.2). The observer should watch for the paper to crinkle each time partner A touches it with his or her head.

Before beginning the curl-up, it is a good practice for partner B to pull on partner A's hands to ensure that the shoulders are relaxed and in a normal resting position. If partner A is allowed to hunch the shoulders before beginning the test, he or she may be able to get the fingertips to the other side

(continued)

Curl-Up *(continued)*

PHOTO 7.1 Starting position for the curl-up test.

PHOTO 7.2 Position of the student in the "up" position for the curl-up test.

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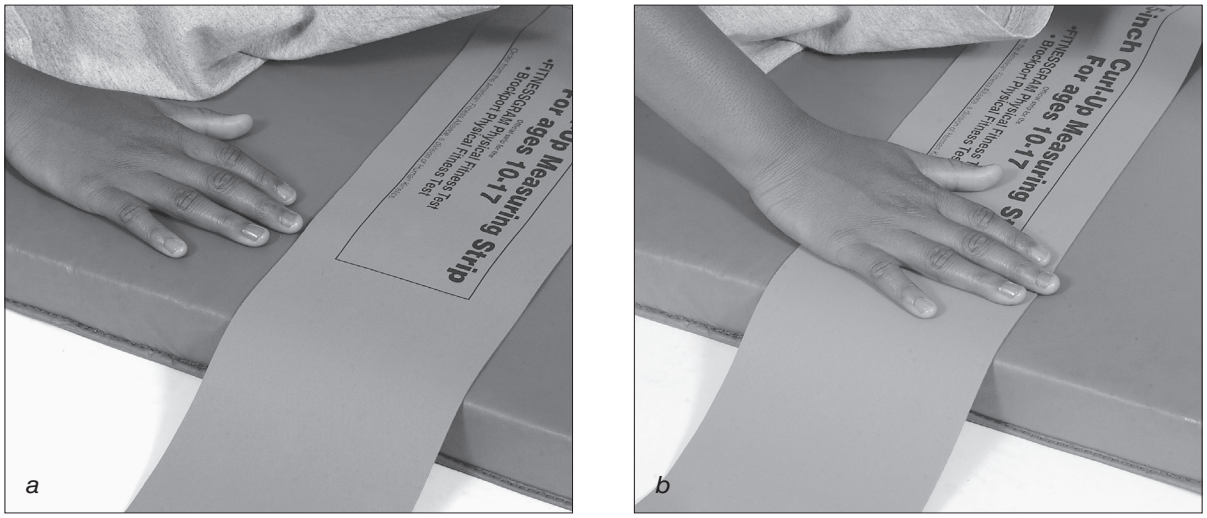

PHOTO 7.3 Close-up of the fingertips sliding: *(a)* starting position and *(b)* ending position.

of the testing strip by merely moving the arms and shoulders up and down. Keeping heels in contact with the mat, partner A curls up slowly, sliding fingers across the measuring strip until fingertips reach the other side (photo 7.3, *a* and *b*); then partner A curls back down until his or her head touches the piece of paper on the mat. Movement should be slow and gauged to the specified cadence of about 20 curl-ups per minute (1 curl every 3 seconds). The teacher should call a cadence or use a prerecorded cadence. A recorded cadence should be used to ensure accurate testing for students. Partner A continues without pausing until he or she can no longer continue or has completed 75 curl-ups.

When to Stop

Students are stopped after completing 75 curl-ups, when the **second** form correction is made, or when they can no longer continue.

Form Corrections

- Heels must remain in contact with the mat.
- Head must return to the mat on each repetition.
- Pauses and rest periods are not allowed. The movement should be continuous and with the cadence.
- Fingertips must touch the far side of the measuring strip.

Scoring

The score is the number of curl-ups performed. Curl-ups should be counted when the student's head returns to the mat. For ease in administration, it is permissible to count the first incorrect curl-up. It is important to be consistent with all of the students and classes when determining whether or not you will count the first incorrect curl-up.

Suggestions for Test Administration

- The student being tested should reposition if the body moves so that the head does not contact the mat at the appropriate spot or if the measuring strip is out of position.
- Movement should start with a flattening of the lower back followed by a slow curling of the upper spine.
- The hands should slide across the measuring strip until the fingertips reach the opposite side (3 or 4.5 inches) and then return to the supine position. The movement is completed when the back of the head touches the paper placed on mat.

(continued)

Curl-Up *(continued)*

- The cadence will encourage a steady, continuous movement done in the correct form.
- Students should not forcibly "reach" with their arms and hands but simply let the arms passively move along the floor in response to the action of the trunk and shoulders. Any jerking, kipping, or reaching motion will cause the students to constantly move out of position. When students first begin to use this test item, many will want to "reach" with their arms and hands, especially if they have previously done a timed sit-up test.
- This curl-up protocol is quite different from the one-minute sit-up. **Students will need to learn how to correctly perform this curl-up movement and be allowed time to practice.**

Trunk Extensor Strength and Flexibility

A test of trunk extensor strength and flexibility is included in *FITNESSGRAM* because of its relationship to low back health, especially proper vertebral alignment. Musculoskeletal fitness of the abdominal muscles, hamstrings, and back extensors works in concert to maintain posture and helps maintain low back health. The item is included in the assessment in part because of the educational value of simply doing the assessment. Students will learn that trunk extensor strength and flexibility is an important aspect of maintaining a healthy back.

Trunk Lift

➪ *Recommended*

It is important that attention be given to performance technique during this test. The movement should be performed in a slow and controlled manner. The maximum score on this test is 12 inches. While some flexibility is important, it is not advisable (or safe) to encourage hyperextension.

Test-retest studies of the trunk extension test (done without limiting the lift to 12 inches) have reported high reliability in high school and college aged students. There are no data on the consistency results for younger children.

Research results have shown that isokinetic trunk endurance, torso length, body weight, passive trunk extension, trunk extension endurance, trunk strength, and flexibility all contribute to performance of the trunk lift. However, a single repetition, partially body weight limited, restricted range item, this test is a minimal assessment of the components of trunk strength and flexibility. Most school-aged individuals will pass this test easily.

Test Objective

To lift the upper body off the floor using the muscles of the back and hold the position to allow for the measurement.

Equipment and Facilities

Gym mats and a measuring device are required to administer this test. A yardstick or 15-inch ruler is preferred; however a 12-inch ruler could be used if care is taken to make certain that the ruler is not placed directly under the student's chin. If students are measuring each other, the "rulers" should be made of some pliable material such as poster board. It is helpful to mark the 6-, 9-, and 12-inch marks with tape. Rope cut to 12 inches with the inch marks taped can also be used as a measuring device.

Test Instructions

The student being tested lies on the mat in a prone position (facedown). Toes are pointed and hands are placed under the thighs. Place a coin or other marker on the floor in line with the student's eyes. During the movement, the student's focus should not move from the coin or marker. The student lifts the upper body off the floor, in a very slow and controlled manner, to a maximum height of 12 inches (photos 7.4 and 7.5). The head should be maintained in a neutral (straight) alignment with the spine. The position is held long enough to allow the tester to place the ruler on the floor in front of the student and determine the distance from the floor to the student's chin. The ruler should be placed at

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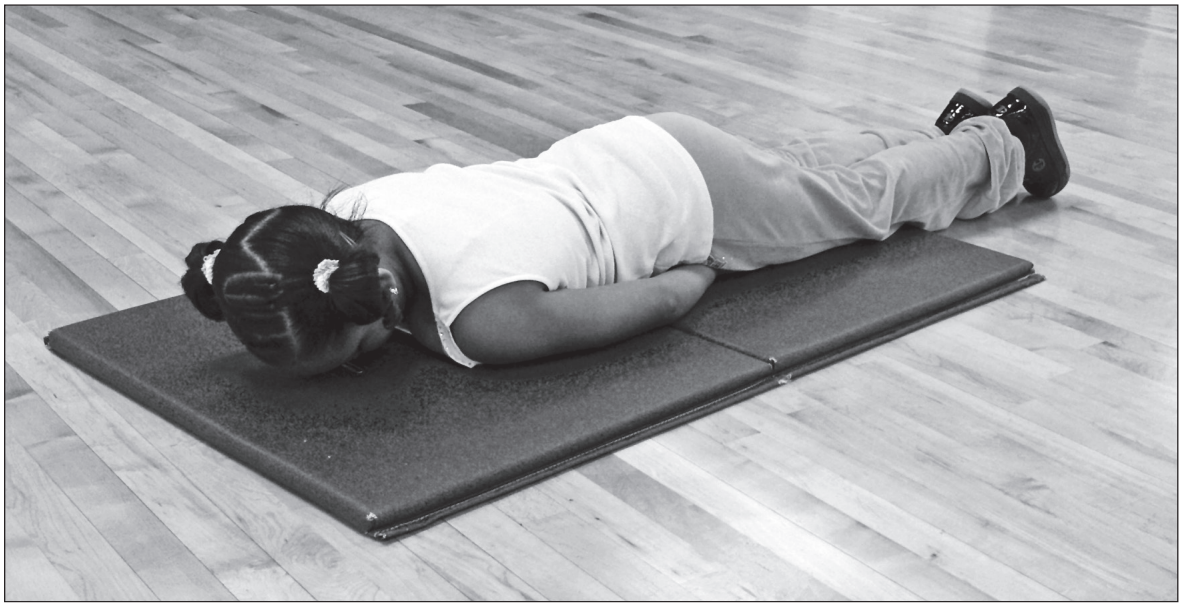


PHOTO 7.4 Starting position for the trunk lift.

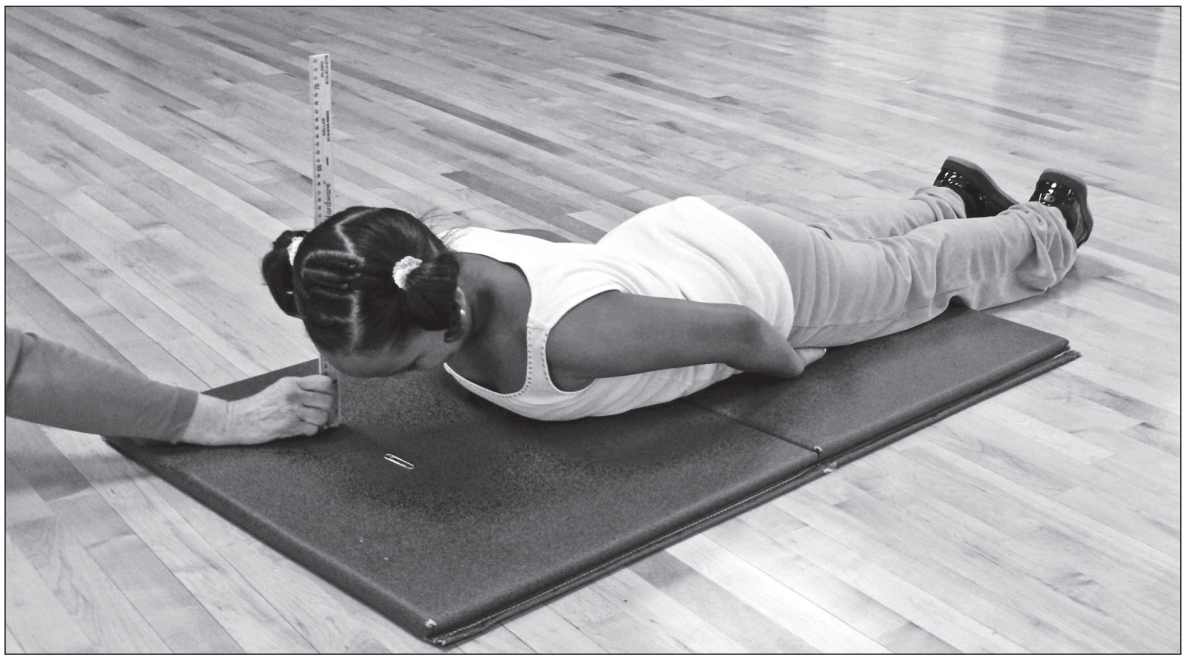


PHOTO 7.5 Student in the "up" or end position and measurement of the trunk lift.

(continued)

least an inch to the front of the student's chin and not directly under the chin. Once the measurement has been made, the student returns to the starting position in a controlled manner. Allow two trials, recording the highest score.

Scoring

The score is recorded in inches. Distances above 12 inches should be recorded as 12 inches.

Suggestions for Test Administration

- Do not allow students to do ballistic, bouncing movements.
- Do not encourage students to raise higher than 12 inches. The Healthy Fitness Zone ends at 12 inches, and scores beyond 12 inches will not be accepted by the computer. Excessive arching of the back may cause compression of the spinal discs.
- Maintaining focus on the spot on the floor should assist in maintaining the head in a neutral position.
- Partner B should make the reading at eye level and, therefore, should assume a squat or lying down position.

Upper Body Strength and Endurance

Strength and endurance of the muscles in the upper body are important in activities of daily living, maintaining functional health and promoting good posture. The role of upper body strength in maintaining functionality becomes more evident as a person ages. It is important that children and youth learn the importance of upper body strength and endurance as well as methods to use in developing and maintaining this area of fitness. The 90° push-up is the recommended test item. This 90° push-up has been adapted from assessments reported by Massicote (1990). Alternative tests include the modified pull-up and the flexed arm hang. It should be noted that although all of these items are intended to measure upper arm and shoulder girdle strength and endurance, they do not all involve the same muscle groups to the same extent and handling body weight is more of a factor in some than others.

90° Push-Up

➪ *Recommended*

The 90° push-up to an elbow angle of 90° is the recommended test for upper body strength and endurance. Test administration requires little or no equipment; multiple students may be tested at one time; and few zero scores result. This test also teaches students an activity that can be used throughout life as a conditioning activity as well as in self-testing.

The 90° push-up has generally been shown to produce consistent scores but reliability depends on how it is administered. Lower values have been reported for elementary aged students using partners to count the repetitions. Objectivity, or the ability of different observers to attain the same results, is a factor in this item because of the necessity of judging the 90° angle. Scores from student partners are consistently higher than adult counts because students tend to simply count each attempted 90° push-up and not evaluate whether it was done correctly. As with several of the other neuromuscular fitness items, determining the accuracy of the 90° push-up as a test of upper body strength and endurance is made difficult by the lack of an agreed upon criterion measure. Specific validation data are available for the 90° push-up in only two studies conducted on college age students. Validity coefficients against a 1-RM bench press were the highest when the criterion test was the number of repetitions (endurance) at an absolute, but sex-specific, load.

Before test day, students should be allowed to practice doing 90° push-ups and watching their partner do them. Teachers should make a concerted effort during these practice sessions to correct students who are not achieving the 90° angle. In this manner all students will gain greater skill in knowing what 90° "feels like" and "looks like."

(continued)

Test Objective

To complete as many 90° push-ups as possible at a rhythmic pace. This test item is used for males and females.

Equipment and Facilities

The correct cadence is 20 90° push-ups per minute (1 90° push-up every 3 seconds). A recorded cadence should be used to ensure accurate testing for students. The 90° push-up may be performed on a mat. Squares of cardboard or anything else that has a 90° angle may assist students in judging 90°.

Test Instructions

The students should be paired; one will perform the test while the other counts 90° push-ups and watches to see that the student being tested bends the elbow to 90° with the upper arm parallel to the floor.

The student being tested assumes a prone position on the mat with hands placed under or slightly wider than the shoulders, fingers stretched out, legs straight and slightly apart, and toes tucked under. The student pushes up off the mat with the arms until arms are straight, keeping the legs and back straight. The back should be kept in a straight line from head to toes throughout the test (photo 7.6). The student then lowers the body using the arms until the elbows bend at a 90° angle and the upper arms are parallel to the floor (photo 7.7). This movement is repeated as many times as possible. The student should push up and continue the movement until the arms are straight on each repetition. The rhythm should be approximately 20 90° push-ups per minute or 1 90° push-up every 3 seconds.

When to Stop

Students are stopped when the second form correction (mistake) is made. Only one form correction is allowed.

Form Corrections

- Stopping to rest or not maintaining a rhythmic pace
- Not achieving a 90° angle with the elbow on each repetition
- Not maintaining correct body position with a straight back
- Not extending arms fully

Scoring

The score is the number of 90° push-ups performed. For ease in administration, it is permissible to count the first incorrect 90° push-up. It is important to be consistent with all of the students and classes when determining if you will count the first incorrect push-up.

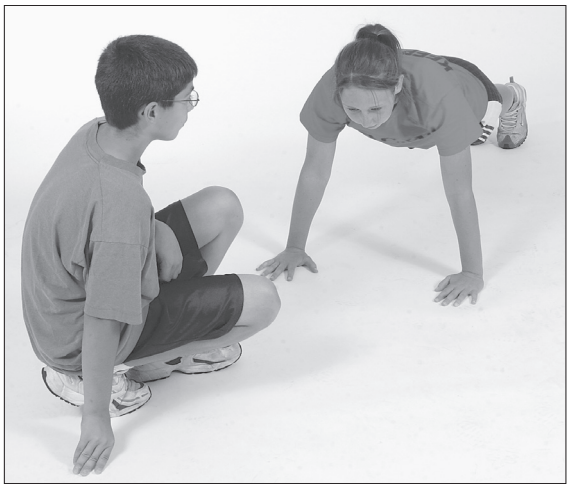


PHOTO 7.6 Starting position for the 90° push-up test.

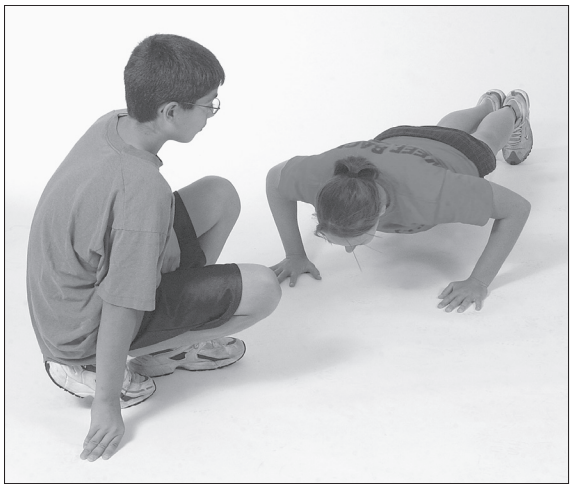


PHOTO 7.7 Student in the "down" position for the 90° push-up test.

(continued)

Suggestions for Test Administration

- Test should be terminated if the student appears to be in extreme discomfort or pain.
- A prerecorded cadence can be used, or the cadence can be called by the teacher.
- Males and females follow the same protocol.
- Find a short cone or other piece of pliable equipment that could be placed under the student's chest. The student must lower to the equipment in order for the 90° push-up to count. The size and height of the equipment that is used may vary depending on the age and size of your students.
- It may be helpful to make a recording with a voice-over that counts the number of 90° push-ups for the students (record the teacher counting over the cadence).

Modified Pull-Up

➪ *Alternative*

The modified pull-up shares the advantage of few zero scores and a wide range of scores with the 90° push-up. However, it does not, as commonly believed, negate the effect of body composition/weight on upper body performance. For schools with access to equipment , and desiring to test students individually, the modified pull-up is a very good test item to use.

The modified pull-up has been found to be a reliable test in primary, middle, and high school students. The modified pull-up has not been validated against a criterion measure but it has logical validity based on anatomical principles.

Test Objective

To successfully complete as many modified pull-ups as possible.

Equipment and Facilities

A modified pull-up stand, elastic band, pencil, and score sheet are necessary for administering this test. It is suggested that this assessment be performed on a mat or other soft surface.

Test Instructions

Position the student on his or her back with shoulders directly under a bar that has been set 1 to 2 inches above the student's reach. Place an elastic band 7 to 8 inches below and parallel to the bar.

The student grasps the bar with an overhand grip (palms away from body). The pull-up begins in this "down" position with arms and legs straight, buttocks off the floor, and only the heels touching the floor (photo 7.8). The student then pulls up until the chin is above the elastic band

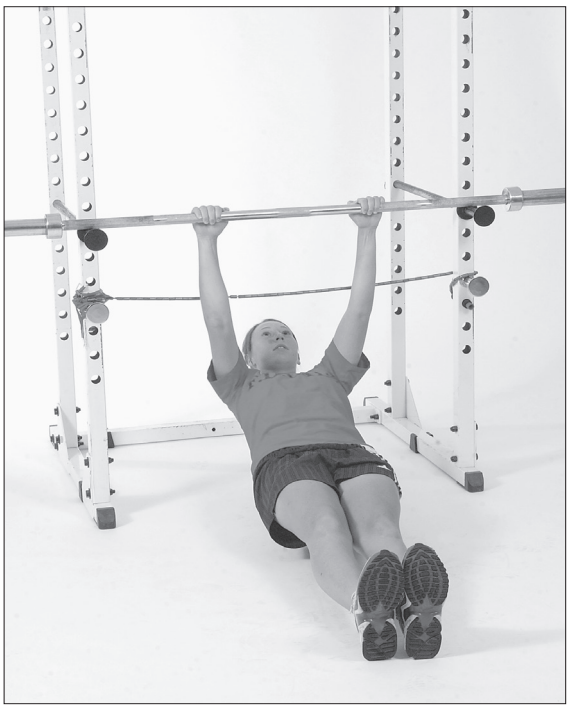


PHOTO 7.8 Starting position for the modified pull-up test.

(continued)

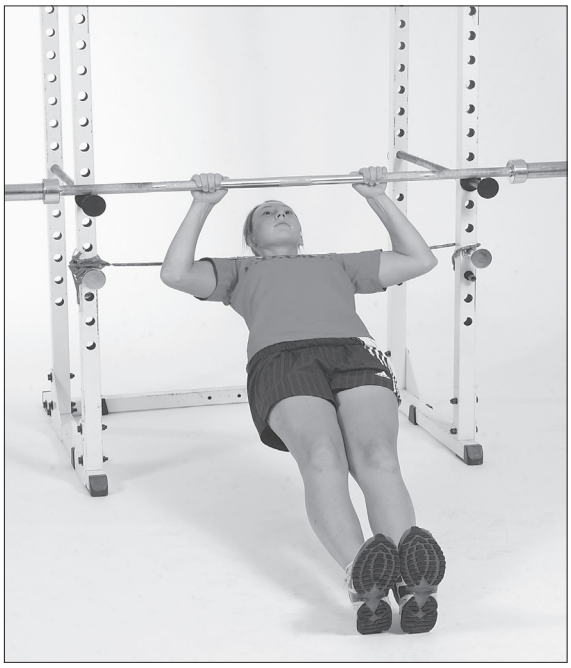


PHOTO 7.9 Student in the "up" position for the modified pull-up test.

(photo 7.9). The student then lowers the body to the "down" position. Movement continues in a rhythmic manner.

When to Stop

Students are stopped when the second form correction is made. There is no time limit, but movement should be rhythmical and continuous. Students should not stop and rest.

Form Corrections

- Stopping to rest or not maintaining a rhythmic pace
- Not lifting the chin above the elastic band
- Not maintaining straight body position with only heels in contact with the floor
- Not fully extending arms in the down position

Scoring

The score is the number of pull-ups performed. For ease in administration it is permissible to count the first incorrect pull-up. It is important to be consistent with all of the students and classes when determining if you will count the first incorrect pull-up.

Suggestions for Test Administration

- The test is terminated if the student experiences extreme discomfort or pain.
- Males and females follow the same protocol.

Flexed Arm Hang

➪ *Alternative*

A third alternative to the recommended 90° push-up is the flexed arm hang. The flexed arm hang is a static test of upper body strength and endurance.

Consistency in times for the flexed arm hang has been shown to be acceptable in both 9- and 10-year-olds and college aged students. Two studies, which have attempted to validate the flexed arm hang against the 1-RM arm curl for endurance have shown weak correlations. Thus, only anatomical logic validates this item, as with most of the other upper body tests.

Test Objective

To hang with the chin above the bar as long as possible.

Equipment and Facilities

A horizontal bar, chair or stool (optional), and stopwatch are required to administer this test item.

Test Instructions

The student grasps the bar with an overhand grip (palms facing away). With the assistance of one or more spotters, the student raises the body off the floor to a position in which the chin is above

(continued)

the bar, elbows are flexed, and the chest is close to the bar (photos 7.10 and 7.11). A stopwatch is started as soon as the student takes this position. The position is held as long as possible.

When to Stop

The watch is stopped when one of the following occurs:

- The student's chin touches the bar.
- The student tilts his or her head back to keep the chin above the bar.
- The student's chin falls below the bar.

Scoring

The score is the number of seconds for which the student is able to maintain the correct hanging position.

Suggestions for Test Administration

- The body must not swing during the test. If the student starts to swing, the teacher or assistant should hold an extended arm across the front of the thighs to prevent the swinging motion.
- Only one trial is permitted unless the teacher believes that the pupil has not had a fair opportunity to perform.

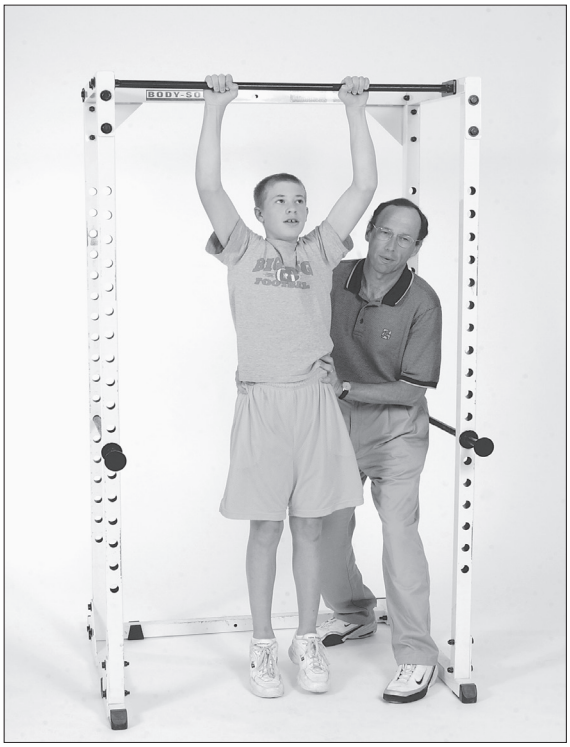


PHOTO 7.10 Starting position for the flexed arm hang test.

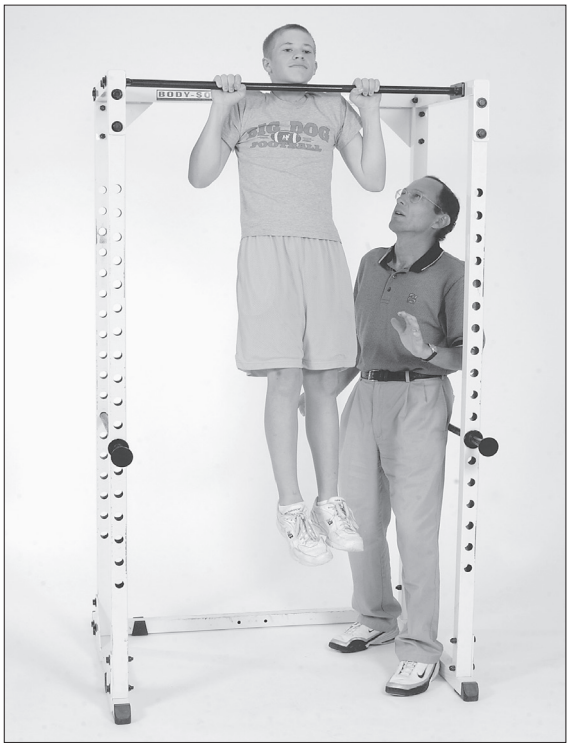


PHOTO 7.11 Student in the "up" position for the flexed arm hang test.

Flexibility

Maintaining adequate joint flexibility is important to functional health. However, for young people, decreased flexibility is generally not a problem. Many of your students will easily pass the flexibility item; therefore, the flexibility item has been made optional. If you decide not to administer the flexibility test, remember that you should teach students about flexibility and inform them that maintaining flexibility and range of motion will be important as they age.

Back-Saver Sit and Reach

➪ *Optional*

The back-saver sit and reach is very similar to the traditional sit and reach except that the measurement is performed on one side at a time. By testing one leg at a time a determination can be made of any asymmetry in hamstring flexibility, and hyperextension of both knees is avoided. The sit and reach measures predominantly the flexibility of the hamstring muscles. Normal hamstring flexibility allows rotation of the pelvis in forward bending movements and posterior tilting of the pelvis for proper sitting.

The back-saver sit and reach has been shown to provide extremely consistent scores when administered under standardized conditions. The back-saver sit and reach has also been shown to be a reasonably accurate measure of hamstring flexibility. When compared with criterion measures of hamstring flexibility, the correlations for both right and left legs have been moderate to high. Conversely, the back-saver sit and reach has been shown to correlate poorly with criterion tests of low back flexibility. Therefore, the back-saver sit and reach cannot be considered a valid measure of low back flexibility and should not be interpreted as such.

Test Objective

To be able to reach the specified distance on both the right and left sides of the body.

Equipment and Facilities

This assessment requires a sturdy box approximately 12 inches high. A measuring scale is placed on top of the box with the 9-inch mark parallel to the face of the box against which the student's foot will rest. The "zero" end of the ruler is nearest the student. A wooden box and yardstick will suffice. Tape the yardstick to the top of the box with the 9-inch mark at the nearest edge of the box. The "zero" end of the yardstick is nearest the student.

Test Instructions

The student removes his or her shoes and sits down at the test apparatus. One leg is fully extended with the foot flat against the face of the box. The other knee is bent with the sole of the foot flat on the floor. The instep is placed in line with, and 2 to 3 inches to the side of, the straight knee. The arms are extended forward over the measuring scale with the hands placed one on top of the other (photo 7.12). With palms down, the student reaches directly forward (keeping back straight and the head up) with both hands along the scale four times and holds the position of the fourth reach for at least 1 second (photo 7.13). After one side has been measured, the student switches the position of the legs and reaches again. The student may allow the bent knee to move to the side as the body moves forward if necessary, but the sole of the foot must remain on the floor.

Scoring

Record the number of inches on each side to the nearest 1/2 inch reached, to a maximum score of 12 inches. Performance is limited to discourage hypermobility. To be in the Healthy Fitness Zone, the student should meet the standard on both the right and the left sides.

Suggestions for Test Administration

- The bent knee moves to the side, allowing the body to move past it, but the sole of the foot must remain on the floor.
- Keep the back straight and the head up during the forward flexion movement.

(continued)

Back-Saver Sit and Reach *(continued)*

- The knee of the extended leg should remain straight. Tester may place one hand above the student's knee to help keep the knee straight.
- Hands should reach forward evenly.
- The trial should be repeated if the hands reach unevenly or the knee bends.
- Hips must remain square to the box. Do not allow the student to turn the hip away from the box while reaching.

PHOTO 7.12 Starting position for measuring the right side.

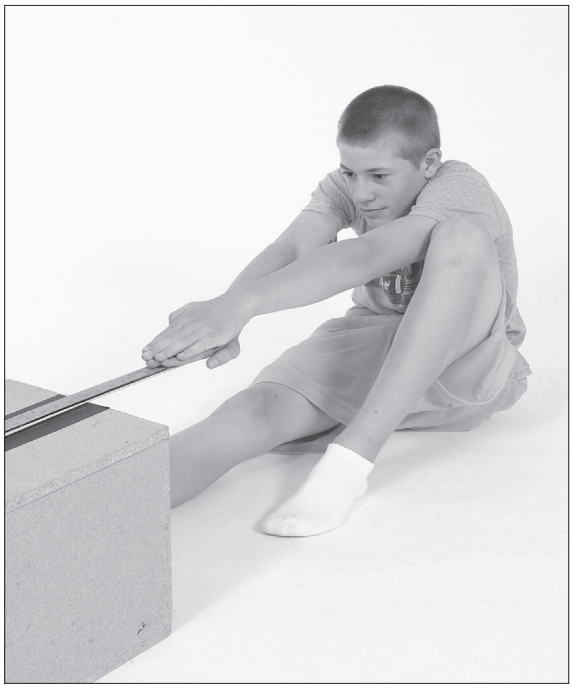


PHOTO 7.13 Back-saver sit and reach stretch for the right side.

Shoulder Stretch

➪ *Optional*

The shoulder stretch is a simple test of upper arm and shoulder girdle flexibility intended to parallel the strength/endurance assessment of that region. If used alternately with the back-saver sit and reach, it may be useful in educating students that flexibility is specific to each joint and that hamstring flexibility neither represents a total body flexibility nor is the only part of the body where flexibility is important.

Test Objective

To be able to touch the fingertips together behind the back by reaching over the shoulder and under the elbow.

Equipment and Facilities

No equipment is necessary to complete this test item.

Test Description

Allow students to select a partner. The partner judges ability to complete the stretch.

To test the right shoulder, partner A reaches with the right hand over the right shoulder and down the back as if to pull up a zipper or scratch between the shoulder blades. At the same time partner A places the left hand behind the back and reaches up, trying to touch the fingers of the right hand (photo 7.14). Partner B observes whether the fingers touch.

To test the left shoulder, partner A reaches with the left hand over the left shoulder and down the back as if to pull up a zipper or scratch between the shoulder blades. At the same time partner A places the right hand behind the back and reaches up, trying to touch the fingers of the left hand (photo 7.15). Partner B notes whether the fingers touch.

Scoring

If the student is able to touch his or her fingers with the left hand over the shoulder, a "Y" is recorded for the left side; if not, an "N" is recorded. If the student is able to touch the fingers with the right hand over the shoulder, a "Y" is recorded for the right side; otherwise an "N" is recorded. To achieve the Healthy Fitness Zone, a "Y" must be recorded on both the right and left side.

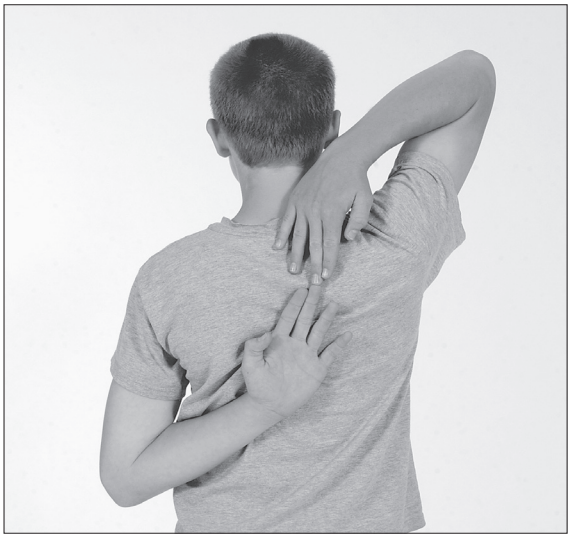


PHOTO 7.14 Shoulder stretch on the right side.

PHOTO 7.15 Shoulder stretch on the left side.

INTERPRETING FITNESSGRAM RESULTS

FITNESSGRAM uses criterion-referenced standards to evaluate fitness performance. These standards have been established to represent a level of fitness that offers some degree of protection against "hypokinetic" diseases (i.e., conditions that result from sedentary living). Performance is classified in two general areas: Healthy Fitness Zone (HFZ) and the "Needs Improvement" zone. Attaining the HFZ for a test indicates that the child has a sufficient fitness level to provide important health benefits. The "Needs Improvement" zone should be interpreted as an indication that the child may be at risk if that level of fitness stays the same over time. For the body composition item, a third Very Low area is designated within the HFZ. Scores falling in this area deserve special attention to determine why the student's score is very low.

This chapter explains how the criterion-referenced standards are established for the different assessments, how maturation and development can influence fitness results, and how to specifically interpret results from the different dimensions of fitness.

Derivation of Criterion-Referenced Standards

To help children understand and interpret these results, it is important to have a basic understanding of how the standards are established. Unlike the percentile-based standards that are used in some fitness batteries, the criterion-referenced standards used in *FITNESSGRAM* are anchored to an outcome that has inherent meaning and importance. Slight adjustments have been made in the $\dot{V}O_2$max, PACER, and body composition standards the past several years. Detailed information on the derivation of the criterion-referenced standards is available in the *FITNESSGRAM Reference Guide*, which is available at no cost at www.fitnessgram.net. The following paragraphs provide brief descriptions of the basis for the standards.

The aerobic fitness standards were established with the use of nationally representative data from the National Health and Nutrition Examination Survey (NHANES). Data on levels of aerobic

capacity (measured with a submaximal clinical exercise test) were associated with the presence of metabolic syndrome, which is a collection of factors that are associated with an increased risk for diabetes and cardiovascular disease (including high triglycerides, high blood pressure, and high levels of circulating insulin). Numerous studies have documented that physical fitness provides protection against health risks, even among overweight youth. Studies have also shown that the benefits of physical fitness may be independent of physical activity. These findings support the importance of evaluating potential health risks that result from low levels of fitness.

The aerobic fitness standards establish three zones based on potential risks for future health problems. The Healthy Fitness Zone was established by determining the level of fitness required for a low risk for future health problems. The Needs Improvement—Health Risk zone defines levels of fitness that indicate potential health risks (current or future risks). Youth between the two zones are classified in an intermediate zone referred to as Needs Improvement.

The aerobic fitness standards are based on estimated aerobic capacity. Each of the primary assessments provides estimates of aerobic capacity, but differences in the tests and the associated prediction equations can lead to differences in fitness classification (depending on what test is used). To minimize misclassification, the PACER test score is equated to a corresponding mile run time to determine estimated aerobic capacity. This improves the classification agreement between the two assessments. Detailed information on the derivation of these standards is available in the chapter Aerobic Capacity Assessments in the *FITNESSGRAM Reference Guide*, which is available at no cost at www.fitnessgram.net.

The body composition standards were established with the use of nationally representative data from the National Health and Nutrition Examination Survey (NHANES). Data on body fat were associated with the presence of metabolic syndrome, a collection of risk factors that are associated with an increased risk for diabetes and cardiovascular disease (including high triglycerides, high blood pressure, and high levels of circulating insulin). Evidence from numerous epidemiological studies has documented that body fat levels and associated risk factors track throughout adolescence and into adulthood. It is important to identify youth who may be at increased risk so that preventive or treatment programs can be initiated.

The body composition standards establish three zones based on potential risks for future health problems. The Healthy Fitness Zone was established by determining body fat values that indicate a low risk for potential health problems. The Needs Improvement—Health Risk zone, in contrast, defines levels of body fatness that indicate a clear or substantial risk for future health problems. Youth between the two zones are classified into an intermediate zone referred to as Needs Improvement. These youth are not considered to be at high risk but should be encouraged to keep working to reduce body fat until they reach the Healthy Fitness Zone.

The body fat standards were then equated to corresponding BMI values to ensure good classification agreement between the body fat standards and BMI standards. The two assessments are very different and can't be expected to have perfect agreement. However, the BMI standards can be interpreted in a similar way as the body fat standards described previously. Detailed information on the derivation of the body fat and BMI standards is available in the chapter Body Composition Assessment in the *FITNESSGRAM Reference Guide*, which is available at no cost at www.fitnessgram.net.

Criterion-referenced standards for the musculoskeletal fitness assessments are more difficult to establish than those for aerobic capacity or body composition. The reason is that there are few immediate health risks associated with poor musculoskeletal fitness. Lack of strength, muscle endurance, and flexibility may increase the risk of injuries and back problems later in life, but children are not as susceptible to these health problems. This delayed risk makes it more difficult to determine how much fitness is needed to provide important health benefits in this dimension of fitness. The approach for most of these test items is to utilize a "contrasting group methodology" to determine the amount of fitness in each of the tests that would be possible with a reasonable amount of training. By comparing a "trained" group to an "untrained" group it is possible to establish cut-points that are empirically based and anchored to training responses from exercise rather than health outcomes.

Tables 9.1 and 9.2 provide a list of standards that define the HFZ for each of the assessments. All students should strive to achieve a score that places them inside the HFZ. It is possible for some students to score above the HFZ. *FITNESSGRAM* acknowledges performances above the HFZ but does not recommend this level of performance as an appropriate goal level for all students. However,

TABLE 9.1 ***FITNESSGRAM*® Standards for Healthy Fitness Zone®**

BOYS

Age	Aerobic capacity $\dot{V}O_2$max (ml/kg/min) PACER, one-mile run, and walk test			Percent body fat				Body mass index			
	NI-Health Risk	NI	HFZ	Very Lean	HFZ	NI	NI-Health Risk	Very Lean	HFZ	NI	NI-Health Risk
5	Participation in test encouraged. Aerobic standards not recommended.			≤8.8	8.9-18.8	18.9	≥27.0	≤13.8	13.9-16.7	16.8	≥17.5
6				≤8.4	8.5-18.8	18.9	≥27.0	≤13.7	13.8-16.9	17.0	≥17.8
7				≤8.2	8.3-18.8	18.9	≥27.0	≤13.7	13.8-17.3	17.4	≥18.3
8				≤8.3	8.4-18.8	18.9	≥27.0	≤13.8	13.9-17.8	17.9	≥19.0
9				≤8.6	8.7-20.6	20.7	≥30.1	≤14.0	14.1-18.5	18.6	≥19.9
10	≤37.3	37.4-40.1	≥40.2	≤8.8	8.9-22.4	22.5	≥33.2	≤14.2	14.3-18.9	19.0	≥20.8
11	≤37.3	37.4-40.1	≥40.2	≤8.7	8.8-23.6	23.7	≥35.4	≤14.5	14.6-19.7	19.8	≥21.8
12	≤37.6	37.7-40.2	≥40.3	≤8.3	8.4-23.6	23.7	≥35.9	≤15.0	15.1-20.5	20.6	≥22.7
13	≤38.6	38.7-41.0	≥41.1	≤7.7	7.8-22.8	22.9	≥35.0	≤15.4	15.5-21.3	21.4	≥23.6
14	≤39.6	39.7-42.4	≥42.5	≤7.0	7.1-21.3	21.4	≥33.2	≤16.0	16.1-22.1	22.2	≥24.5
15	≤40.6	40.7-43.5	≥43.6	≤6.5	6.6-20.1	20.2	≥31.5	≤16.5	16.6-22.9	23.0	≥25.3
16	≤41.0	41.1-44.0	≥44.1	≤6.4	6.5-20.1	20.2	≥31.6	≤17.1	17.2-23.7	23.8	≥26.0
17	≤41.2	41.3-44.1	≥44.2	≤6.6	6.7-20.9	21.0	≥33.0	≤17.7	17.8-24.4	24.5	≥26.7
>17	≤41.2	41.3-44.2	≥44.3	≤6.9	7.0-22.2	22.3	≥35.1	≤18.2	18.3-25.1	25.2	≥27.5

Age	Curl-up (no. completed)	Trunk lift (inches)	90° push-up (no. completed)	Modified pull-up (no. completed)	Flexed arm hang (seconds)	Back-saver sit and reach* (inches)	Shoulder stretch
5	≥2	6-12	≥3	≥2	≥2	8	Healthy Fitness Zone = touching fingertips together behind the back on both the right and left sides.
6	≥2	6-12	≥3	≥2	≥2	8	
7	≥4	6-12	≥4	≥3	≥3	8	
8	≥6	6-12	≥5	≥4	≥3	8	
9	≥9	6-12	≥6	≥5	≥4	8	
10	≥12	9-12	≥7	≥5	≥4	8	
11	≥15	9-12	≥8	≥6	≥6	8	
12	≥18	9-12	≥10	≥7	≥10	8	
13	≥21	9-12	≥12	≥8	≥12	8	
14	≥24	9-12	≥14	≥9	≥15	8	
15	≥24	9-12	≥16	≥10	≥15	8	
16	≥24	9-12	≥18	≥12	≥15	8	
17	≥24	9-12	≥18	≥14	≥15	8	
>17	≥24	9-12	≥18	≥14	≥15	8	

*Test scored Yes/No; must reach this distance on each side to achieve the HFZ.

TABLE 9.2 *FITNESSGRAM*® Standards for Healthy Fitness Zone®

GIRLS

Age	Aerobic capacity $\dot{V}O_2$max (ml/kg/min) PACER, one-mile run, and walk test			Percent body fat				Body mass index			
	NI-Health Risk	NI	HFZ	Very Lean	HFZ	NI	NI-Health Risk	Very Lean	HFZ	NI	NI-Health Risk
5	Participation in test encouraged. Aerobic standards not recommended.			≤9.7	9.8-20.8	20.9	≥28.4	≤13.5	13.6-16.7	16.8	≥17.3
6				≤9.8	9.9-20.8	20.9	≥28.4	≤13.4	13.5-17.0	17.1	≥17.7
7				≤10.0	10.1-20.8	20.9	≥28.4	≤13.4	13.5-17.5	17.6	≥18.3
8				≤10.4	10.5-20.8	20.9	≥28.4	≤13.5	13.6-18.2	18.3	≥19.1
9				≤10.9	11.0-22.6	22.7	≥30.8	≤13.7	13.8-18.9	19.0	≥20.0
10	≤37.3	37.4-40.1	≥40.2	≤11.5	11.6-24.3	24.4	≥33.0	≤14.0	14.1-19.5	19.6	≥21.0
11	≤37.3	37.4-40.1	≥40.2	≤12.1	12.2-25.7	25.8	≥34.5	≤14.4	14.5-20.4	20.5	≥21.9
12	≤37.0	37.1-40.0	≥40.1	≤12.6	12.7-26.7	26.8	≥35.5	≤14.8	14.9-21.2	21.3	≥22.9
13	≤36.6	36.7-39.6	≥39.7	≤13.3	13.4-27.7	27.8	≥36.3	≤15.3	15.4-22.0	22.1	≥23.8
14	≤36.3	36.4-39.3	≥39.4	≤13.9	14.0-28.5	28.6	≥36.8	≤15.8	15.9-22.8	22.9	≥24.6
15	≤36.0	36.1-39.0	≥39.1	≤14.5	14.6-29.1	29.2	≥37.1	≤16.3	16.4-23.5	23.6	≥25.4
16	≤35.8	35.9-38.8	≥38.9	≤15.2	15.3-29.7	29.8	≥37.4	≤16.8	16.9-24.1	24.2	≥26.1
17	≤35.7	35.8-38.7	≥38.8	≤15.8	15.9-30.4	30.5	≥37.9	≤17.2	17.3-24.6	24.7	≥26.7
>17	≤35.3	35.4-38.5	≥38.6	≤16.4	16.5-31.3	31.4	≥38.6	≤17.5	17.6-25.1	25.2	≥27.2

Age	Curl-up (no. completed)	Trunk lift (inches)	90° push-up (no. completed)	Modified pull-up (no. completed)	Flexed arm hang (seconds)	Back-saver sit and reach* (inches)	Shoulder stretch
5	≥2	6-12	≥3	≥2	≥2	9	Healthy Fitness Zone = touching fingertips together behind the back on both the right and left sides.
6	≥2	6-12	≥3	≥2	≥2	9	
7	≥4	6-12	≥4	≥3	≥3	9	
8	≥6	6-12	≥5	≥4	≥3	9	
9	≥9	6-12	≥6	≥4	≥4	9	
10	≥12	9-12	≥7	≥4	≥4	9	
11	≥15	9-12	≥7	≥4	≥6	10	
12	≥18	9-12	≥7	≥4	≥7	10	
13	≥18	9-12	≥7	≥4	≥8	10	
14	≥18	9-12	≥7	≥4	≥8	10	
15	≥18	9-12	≥7	≥4	≥8	12	
16	≥18	9-12	≥7	≥4	≥8	12	
17	≥18	9-12	≥7	≥4	≥8	12	
>17	≥18	9-12	≥7	≥4	≥8	12	

*Test scored Yes/No; must reach this distance on each side to achieve the HFZ.

students who desire to achieve a high level of athletic performance may need to consider setting goals beyond the HFZ. Students, especially younger students, may need assistance in setting realistic goals.

Influence of Body Size and Maturity on Fitness

Body size (height and weight) is to some extent related to physical fitness as measured by a combination of tests. Although there is much variability among individuals, the influence of body size on fitness is especially apparent in two ways:

1. Excess weight associated with fatness tends to have a negative influence on aerobic capacity and on test items in which the body must be lifted or moved (e.g., upper body strength items).
2. Variation in body size associated with maturity can influence fitness around the time of the adolescent growth spurt and sexual maturation. There is considerable variation among individuals in the timing of this maturation period. In adequately nourished children, the timing is largely determined by genetics. Within a given age group of early-adolescent children, there will be great variation in the maturation level.

Changes in body fatness and body size can have major effects on fitness test performance. Boys show a clear growth spurt in muscle mass, strength, power, and endurance and a decrease in subcutaneous fat on the arms and legs. Girls show considerably smaller growth spurts in strength, power, and endurance and tend to accumulate body fat compared to boys. During periods of rapid maturational change, children may experience an increase or decrease in their abilities to perform on certain test items completely independent of their levels of physical activity.

Interpreting Performance on Physical Fitness Assessments

The *FITNESSGRAM* report from the software provides personalized feedback that can help a child (and parent) become more informed about levels of health-related fitness. (Information on the *FITNESSGRAM* software is available at www.fitnessgram.net. For information on the PYFP grant program for funding opportunities, please visit www.presidentialyouthfitnessprogram.org.) A sample report is shown in figure 9.1 to highlight some of the features. As is evident in the illustration, the report uses easy-to-read bar charts to indicate fitness levels for each of the completed tests. Comparisons between the past and the current tests allow for some indication of trends over time. Personalized feedback messages that appear in the text blocks help provide individualized feedback to the students. The feedback is processed using internal algorithms in the software that take into account a child's overall fitness profile. Students with favorable scores on the assessments (i.e., those reaching the HFZ) receive congratulatory messages and reminders to maintain their involvement in physical activity. Students with less favorable scores (i.e., those in the "Needs Improvement" zone) receive supportive messages and prescriptive feedback about how to be more active and how to improve their scores.

If scores for more than one assessment in a fitness area are entered in the software, the following guidelines are used to determine which result will be printed:

- If one performance is in the HFZ and the other is not, the better performance will be printed.
- If the performances on all assessments are in the HFZ or are not in the HFZ, the default item will print (PACER, percent body fat, 90° push-up, back-saver sit and reach).

While the assessments in the *FITNESSGRAM* battery have good reliability and validity, the results of the tests should still be used as only rough indicators. A number of factors can influence fitness scores, and most are not within a child's control. As mentioned previously, maturation and development can have a major impact on a child's fitness scores. A child's fitness level and response to training are also determined to a great degree by their genetics. Some children will improve performance more rapidly than others. Some children will be able to perform at a much higher level than others regardless of training levels. Rather than emphasizing a child's fitness scores, it is more important to emphasize involvement in regular physical activity. Good physical fitness levels will not be of much value if they are not maintained through continued involvement in physical activity.

Aerobic Capacity

Aerobic capacity indicates the ability of the respiratory, cardiovascular, and muscular systems to take up, transport, and utilize oxygen during exercise and activity. A laboratory measure of $\dot{V}O_2$max is

FITNESSGRAM®

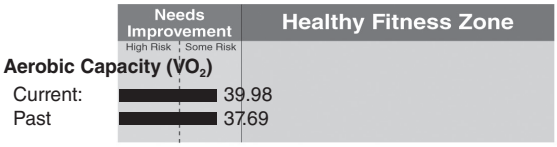
IN PARTNERSHIP WITH Play60 THE NFL MOVEMENT FOR AN ACTIVE GENERATION

Joe Jogger
Grade: 5 Age: 12
Westside School

Instructor(s): Bostick, Sue

	Date	Height	Weight
Current:	01/15/2010	5' 1"	123 lbs
Past:	05/05/2009	4' 9"	120 lbs

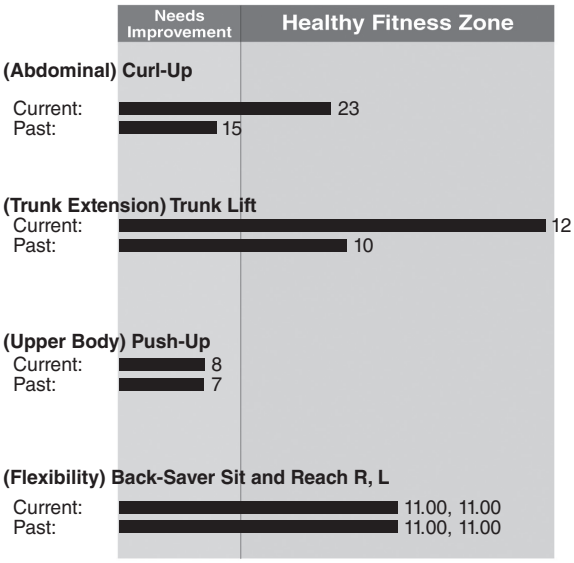
AEROBIC CAPACITY



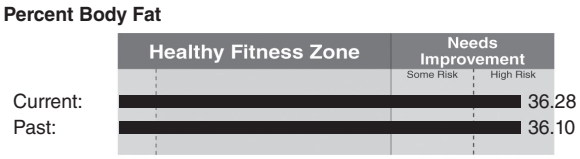
Your score for Aerobic Capacity is based on # of PACER laps and your BMI. It shows your ability to do activities such as running, cycling, and sports at a high level.

	Pacer Laps	BMI
Current:	11	23.24
Past:	11	25.96

MUSCLE STRENGTH, ENDURANCE, & FLEXIBILITY



BODY COMPOSITION



Being too lean or too heavy may be a sign of (or lead to) health problems.

ACTIVITY

	Number of Days
On how many of the past 7 days did you participate in physical activity for a total of 30-60 minutes, or more, over the course of the day?	4
On how many of the past 7 days did you do exercises to strengthen or tone your muscles?	4
On how many of the past 7 days did you do exercises to loosen up or relax your muscles?	3

MESSAGES

You should work to improve your aerobic capacity. Try to do more physical activity (60 minutes every day). Play active games, sports, or other activities that make you breathe hard. Good aerobic capacity is important in preventing health problems.

To improve your upper-body strength, be sure that your strength activities include modified pull-ups, push-ups, and climbing activities. You may need to do more arm exercises.

Your flexibility is in the Healthy Fitness Zone. To maintain your fitness, stretch slowly 3 or 4 days each week, holding the stretch 20-30 seconds. Don't forget that you need to stretch all areas of the body.

Your abdominal and trunk strength are both in the Healthy Fitness Zone. To maintain your fitness, be sure that your strength-training activities include exercise for each of these areas. Abdominal and trunk exercises should be done at least 3 to 5 days each week.

Joe, your body composition score needs improvement. If it stays at this level you will have a much greater chance of future health problems. You also report low levels of physical activity and this may lead to health problems. To improve, do the following:
-Try to get more activity (at least 60 minutes every day).
-Reduce time spent watching TV or playing video games.
-Eat a healthy diet including fresh fruits and vegetables.
-Reduce your calories from foods with solid fats and added sugars.
Improving your body composition score will improve your health and may help imcrease other fitness scores.

Healthy Fitness Zone for 12 year-old boys
Aerobic Capacity: ≥ 40.3 Curl-up: ≥ 18 repetitions
Trunk Lift: 9-12 inches Push-up: ≥ 10 repetitions
Back-Saver Sit and Reach: At least 8 inches on R & L
Percent Body Fat: 8.4% - 23.6%

To be healthy and fit it is important to do some physical activity almost every day. Aerobic exercise is good for your heart and body composition. Strength and flexibility exercises are good for your muscles and joints.

Good job! You are doing some aerobic activity and strength and flexibility exercises. Additional vigorous aerobic activity would help to promote higher levels of fitness.

FIGURE 9.1 Sample student *FITNESSGRAM* computer report. Information on the *FITNESSGRAM* software is available at www.fitnessgram.net. For information on the PYFP grant program for funding opportunities, please visit www.presidentialyouthfitnessprogram.org.

generally the best measure of aerobic capacity. *FITNESSGRAM* output for this area of fitness is now the calculated score for aerobic capacity. The calculation includes the actual performance score on the one-mile run, the PACER, or the walk test as well as body mass index. (Note that the *FITNESSGRAM* software automatically performs these calculations. For information on resources, please visit www.fitnessgram.net. There is an online Excel® calculator score sheet available at no cost on the PYFP website: www.presidentialyouthfitnessprogram.org.) This calculated score on aerobic capacity may be used in comparing performance from one test date to another or among different test items. A low score on the aerobic field test may be influenced by many factors:

- Actual aerobic capacity level
- Body composition
- Running and walking efficiency and economy
- Motivation level during the actual testing experience
- Extreme environmental conditions
- Ability to pace on the one-mile run and the walk test
- Genetics and innate ability

Changes in any of these factors may influence the test score.

Aerobic capacity can be improved substantially in an unconditioned person who participates regularly in sustained activities involving large muscle groups. The amount of improvement is related to the beginning level of fitness and to the intensity, duration, and frequency of the training. The major part of the improvement will occur during the first six months. Thereafter, improvement will be much slower. Boys and girls who are overfat may expect an improvement in the aerobic capacity measure with a reduction in body fat.

Changes caused by maturation can influence results on the tests. For boys, aerobic capacity in relation to body weight stays relatively constant during the growing years. For girls, aerobic capacity tends to remain constant between ages 5 and 10 years but decreases after age 10 due to increasing sex-specific essential fat. Running economy, however, also exerts an influence on absolute performance. In boys, for example, one-mile run and PACER test scores tend to improve progressively with age, even though $\dot{V}O_2$max expressed relative to body weight tends to remain constant, because running economy improves. In 10- to 12-year-old girls, these field test scores also tend to improve as the result of improved running economy; but between ages 12 and 18, scores tend to remain relatively constant because improved running economy is offset by declining $\dot{V}O_2$max expressed relative to body weight. The differences in age-related changes in the relation of the one-mile run or PACER test scores to running economy are taken into account via the estimated VO_2 equations in the *FITNESSGRAM* software and in the online Excel calculator score sheet mentioned previously.

Body Composition

Body composition standards have been established for both percent body fat calculated from triceps and calf skinfold measurements (for college students, abdominal skinfold is also included) and for BMI calculated from measurements of weight and height. The HFZ standards fall between the Very Lean category and the Needs Improvement categories. Scores that fall either below or above the HFZ should receive attention, because those students have greater potential than others to develop health problems related to their level of fatness or leanness.

Tables 9.1 and 9.2 indicate the HFZ for both percent fat and BMI as well as the Needs Improvement, Needs Improvement—Health Risk, and the Very Lean categories. Ideally, students should strive to be within the HFZ. A score in the Needs Improvement category indicates that the student is either overfat or the student's weight is too high for his or her height. However, students who are extremely muscular may have a BMI in the Needs Improvement area but may not have excess fat. Students in the Needs Improvement category should work to move into the HFZ because their level of body composition puts them at some risk of developing health problems. Students in the Needs Improvement—Health Risk category must be strongly encouraged to modify their activity and eating behaviors to begin reducing their weight. Students in this Health Risk category have a great possibility of developing health problems now and in the future if their body composition does not change.

When interpreting body composition scores, remember the following:

- Skinfold measurements provide an estimate of body fatness.
- A 3% to 5% error in body fat measurement is associated with the skinfold method.
- Body mass index provides an estimate of the appropriateness of the weight for the height.

- Body mass index may falsely identify a very muscular lean person as overfat (too heavy for height) or a lightweight person with little muscular development and a large percentage of fat as being in the HFZ when the person is actually overfat.

In general, students who score in the Needs Improvement category should be encouraged to work toward the HFZ by slowly changing their body weight through increased physical activity and decreased consumption of high-calorie, low-nutrient foods. Changing dietary habits and exercise habits can be very difficult. Students with severe obesity or eating disorders may need professional assistance in their attempts to modify their behaviors. Evidence in adults clearly indicates that participation in regular physical activity moderates the health risks associated with obesity. Because this relationship likely holds true for children as well, emphasis for overweight children should be on being physically active and not on absolute weight or fat loss.

It is important to remember when interpreting body composition results that most students who are overfat may also have performances in other test areas that are outside the HFZ. An improvement in body composition will generally result in an improved performance in aerobic capacity and also muscular strength and endurance, especially in the upper body, due to a reduction in excess weight.

FITNESSGRAM also identifies students who are exceptionally lean. Students in this range (designated as very lean) receive a message indicating that being this lean may not be best for health. A score in the Very Lean category is treated as being in the HFZ with respect to the output on the *FITNESSGRAM* report.

Parents and teachers should notice students who are categorized as very lean and should consider factors that may be responsible for their low level of body fat. Many students may naturally be very lean, whereas others may have inappropriate nutritional patterns. A few students may have eating disorders. A factor to consider is whether the student's level of fat has suddenly changed from within the optimal range to a level identified as very lean. Severe changes may signal a potential problem. Creating awareness of a child's current status is the primary purpose in identifying lean students. Changes in status should be monitored.

FITNESSGRAM results can be very helpful in allowing students to follow changes in their levels of body fat over time. Obesity is a health problem for both children and adults, and results of tracking studies reveal that overweight and obesity track through the life span. To reduce problems with weight later in life, it is important to address the problem earlier, before the lifestyle patterns and physiological changes are firmly established.

Muscular Strength, Endurance, and Flexibility

Students who score poorly in one or more areas of muscle strength, endurance, and flexibility should be encouraged to participate in calisthenics and other strengthening and stretching activities that will develop those areas. However, it is essential to remember that physical fitness training is very specific and that the areas of the body being tested represent only a fraction of the total body.

To focus on activities that develop the extensors of the arms without equal attention to the flexors of the arms will not accomplish the important objective, which is to develop an overall healthy musculoskeletal system. Remember, you must have strength and flexibility in the muscles on both sides of every joint. A useful activity for all students is to identify exercises to strengthen and stretch the muscles at every major joint of the trunk, upper body, and lower body.

Poor performance on the measures of abdominal strength and trunk extensor strength and flexibility may merit special attention. Gaining strength and flexibility in these areas may help prevent low back pain, which affects millions of people, young and old.

Summary of Fitness Testing Principles

In interpreting performance on physical fitness assessments, it is most important to remember the following:

- The physical fitness experience should always be fun and enjoyable.
- Physical fitness testing should not become a competitive sport.
- The performance of one student should not be compared to that of another student.
- The primary reason for testing is to provide the student with personal information that may be used in planning a personal fitness program.
- The performance level on fitness tests should not be used as a basis for grading.

Supplemental Resources

To further enhance communication with parents, the software offers a report written specifically for parents. Though the *FITNESSGRAM* student report provides some background information for parents, it primarily includes information for the student. The *FITNESSGRAM* parent report includes information to help parents understand the assessment, the meaning of the results, and steps to take to help their child improve.

The *FITNESSGRAM* parent report includes

- a brief explanation of each assessment,
- details on the importance of each assessment,
- the child's actual scores and the Healthy Fitness Zone (HFZ) for the child's gender and age,
- an explanation of the HFZ and the student report,
- the philosophy that guides the FITNESSGRAM program,
- detailed information on their child's physical activity needs, and
- ideas for parents to help their child become more physically active.

This report will give parents a better understanding of the fitness assessment process, which may help them to assist their children in being physically active. It is very important that parents play a supportive role in their children's physical activity and fitness program.

For complete information about *FITNESSGRAM,* visit www.fitnessgram.net. To order the *FITNESSGRAM* software and related resources, call Human Kinetics at 800-747-4457, or order online at www.HumanKinetics.com. To review the science behind the assessment, please read the *Reference Guide*, which is available at no cost at www.fitnessgram.net.

To learn more about the FITNESSGRAM philosophy, appropriate and inappropriate uses of the program, and how to administer the test items, please take advantage of the free online course for the assessment, which is based on the *FITNESSGRAM Test Administration Manual.* The course is located here: www.fitnessgram.net/training.

To order the Brockport resources for students with disabilities, call Human Kinetics at 800-747-4457, or order online at www.HumanKinetics.com.

For infomation on the Presidential Youth Fitness Program for grant opportunties, recognition resources, and professional development, please visit www.presidentialyouthfitnessprogram.org.

EFFECTIVE WAYS OF USING ASSESSMENT RESULTS

Philosophy

Purposeful measurement is an appropriate component of quality physical education. Combining fitness measurement and instruction is an appropriate instruction strategy and should be the main reason for measuring fitness. Measurement without a plan for using the data does little to serve students' needs and is not an educationally sound practice.

According to Meredith and Welk (2007), "The ultimate long-term objective of a physical education program is to teach students the physical and behavioral skills they need to be active for life." (1) Learning physical skills is essential and provides students with the opportunity to experience and enjoy a variety of physical activities. Developing a health-enhancing level of fitness and competence in a variety of skills will make it easier for students to learn sports and activities that they can perform to be physically active throughout their lives. Students also need behavioral skills to help them understand the intrinsic rewards associated with daily physical activity. Students need to learn to self-assess their personal fitness levels, analyze the data, develop personal fitness plans and, ultimately, motivate themselves to remain physically active for a lifetime.

No matter what students aspire to become, they will live happier, more productive lives if they are healthy. Maintaining appropriate levels of physical fitness is vital to overall health, so the connection between maintaining personal fitness and overall health is a strong one.

Criterion-Referenced Versus Normative-Referenced Measurement

Fitness measurement can be divided into two types: norm-referenced and criterion-referenced. Norm-referenced measurement compares a large sampling of student performances to determine fitness standards relative to each other. Criterion-referenced measurement compares student scores to a set standard of health-related fitness that will indicate the level of fitness necessary for good health regardless of other students' scores. Criterion-referenced measurements are based on a large sample of individuals' scores, which are analyzed with those individuals' risk factors for chronic diseases that affect long-term wellness. Scoring in this fashion places more focus on achieving health-related fitness.

Guidelines for Measurement Administration

Physical educators are placing more emphasis on health-related fitness. Using a pretest assessment allows students to establish baseline data for fitness and the foundation for developing personal fitness plans, setting goals and evaluating progress toward those goals. Maintaining personal physical activity and nutrition logs are an integral part of the process, because they encourage students to focus on the process of improving fitness and not just an analysis of one-time scores.

Linking fitness measurement to the established curriculum and encouraging students to assume responsibility for their own health and wellness is the goal of all fitness measurement. With proper measurement administration, the following appropriate practices through proper fitness measurement administration will support this belief.

- Use valid, reliable and objective measures for all fitness measurement.
- Follow specific protocols for each measurement item. If using peer assessment, allow adequate time for instruction in the measurement administration.
- Ensure adequate instruction and ample practice time before formal measurement. Provide two to three weeks of instruction and preparation, for example, before measuring for aerobic capacity for items such as the Progressive Aerobic Cardiovascular Endurance Run (PACER) test or mile run.

- Use a research-based set of standards or criteria for evaluating data.
- Keep student fitness scores confidential; do not post them.
- Consider administering fitness measurement in a small-group or station setting. Avoid administering the measurement items in a format that might embarrass or humiliate students.
- Allow for the monitoring of personal fitness and activity goals by ensuring that measurement administration is ongoing.
- Conduct no formal measuring for fitness in grades K-3. Instead, place emphasis on physical activity and instruction in the health-related fitness components.
- Establish a positive and motivating measurement environment for students.

Uses for Fitness Data

It is NASPE's position that fitness measurement can enhance teaching and learning in physical education. This position statement outlines key guidelines for ensuring the proper use of fitness measurement in relation to national standards and developmentally appropriate instruction.

Appropriate Uses

Fitness measurement facilitates the process of fitness education. Students are made aware of the components of health-related fitness and how to evaluate their personal levels of fitness through self-measurement. Teaching self-measurement is an important objective, because it provides the tools and experiences for students to learn how to measure themselves and plan personal fitness plans throughout life. Teachers should assure each student that his or her fitness information will be kept confidential, and will not be shared with peers, unless the student desires it.

The main goal for fitness measurement is making students – and their parents – aware of the benefits of fitness. Students can use the personalized reports as a means to determine their own fitness levels and to take steps toward maintaining or improving their personal fitness levels. By providing personalized reports for the parents, including information about a student's level of health-related fitness, teachers can enhance parental involvement in promoting physical activity.

Reporting can take place through parent/teacher conferences or by sending reports through via mail or e-mail. Note: It's important to help parents interpret the results of the fitness measurement and suggest strategies for how to maintain or improve their student's fitness levels.

Students can use fitness data to explore types of activities that will lead to improving their personal fitness. Examining fitness data and the procedure for developing fitness plans can motivate students to make changes in their personal fitness levels. The sequence of fitness plan development should include:

- Fitness data analysis.
- Goal-setting based on test results.
- Linking physical activities to personal goals.
- Developing logs and journals and other physical activity measures.

All of those strategies can be included as part of personal fitness portfolios that students create from year to year, as well as with annual student fitness results. Schools also can use fitness measurement to examine their instructional programs. By analyzing school data, schools can determine areas of concentration and begin the discussion of how to make instruction-related changes in the physical education program to address areas of student need. Analyzing the data might show the need for more professional development, for example, to improve various aspects of health-related fitness, and it might reinforce the need for curriculum development within a school or school system.

Inappropriate Uses

Inappropriate uses of fitness measurement include grading students and evaluating teacher effectiveness.

Grading Students

Because students differ in terms of interests and ability, teachers should not use student scores to evaluate individual students within K-12 physical education. Grading students on fitness might constitute holding them accountable for results that are beyond their control. Likewise, posting fitness results can create a situation that fosters negative attitudes toward physical activity. Recognizing and posting students' fitness scores for fitness can create a feeling of frustration among students who struggle with their personal fitness levels. Instead, recognizing student success in improving fitness levels can provide a more positive way to acknowledge student achievement. Rather than posting names of students who have attained a high level of fitness, recognizing students who have improved fitness scores over time from year to year might be a better strategy.

Also, posting names of students who are participating in the appropriate activities to improve or maintain their fitness can serve as an effective way of recognizing appropriate practices for improving fitness. Exempting students from physical education based on high fitness test scores also constitutes an inappropriate practice related to fitness scores. Attaining a high level of fitness performance doesn't mean that a student will have the knowledge, skills and motivation to be fit and active for a lifetime. Standards-based grading should reflect students' knowledge of activities and concepts related to fitness education, including their understanding of fitness concepts, their ability to plan a fitness program by using appropriate activities, their maintaining a physical activity or nutrition log, and their developing personal portfolios related to fitness.

Evaluating Teacher Effectiveness

Teachers can be effective at helping students develop and maintain fitness and still have students not perform well on fitness measurements. A better way to assess teacher effectiveness is to assess whether students understand the process for fitness improvement. Examining students' knowledge of the steps needed for developing a fitness plan provides a more accurate evaluation of teacher effectiveness. All teachers should strive to assess the "process, not the product" for fitness improvement.

Evaluating Physical Education Programs Overall

Promoting physical fitness is only one part of quality physical education programs. Other aspects include: competency in motor skill and movement patterns; understanding of movement concepts, principles and tactics; cooperation and conflict resolution as part of personal and social behavior; and valuing physical activity.

Summary

Current concerns about the health and wellness of our youths have generated widespread interest in fitness measurement. Many states have begun the process of instituting statewide or districtwide fitness measurement. It's important to remember that fitness measurement alone will not make students more fit. Instead, helping them value physical education and physical activity will serve as the foundation for improving personal health. Students' health-related fitness will improve only by using sound instruction practices and providing students with the knowledge and skills they need to be physically active for a lifetime.

PROMOTING PHYSICAL ACTIVITY

Establishing and implementing high-quality physical education (PE) programs can provide students with the appropriate knowledge, skills, behaviors, and confidence to be physically active for life. High-quality PE is the cornerstone of a school's physical activity program.

Benefits of Physical Activity

- The U.S. Department of Health and Human Services (HHS) recommends that young people participate in at least 60 minutes of moderate to vigorous physical activity (MVPA) daily to obtain multiple health benefits, such as decreased likelihood of developing heart disease, type 2 diabetes, and obesity. For overweight and obese youth, physical activity can reduce body fatness.
- Additionally, participation in physical activity is associated with academic benefits such as improved concentration,2-3 memory,4 and classroom behavior.

Insufficient Physical Activity Levels Among Youth

- In 2009, less than 20% of adolescents participated in physical activity for at least 60 minutes daily
- About one in four adolescents does not engage in 60 minutes of physical activity on any days of the week

The Current State of Physical Education

Physical education (PE) is an effective strategy to increase physical activity among young people. HHS recommends that students engage in MVPA for at least 50% of the time they spend in PE class—one of the most critical outcome measures in determining the quality of a PE program.

- Nine studies have documented that, in typical PE classes, students engage in MVPA less than 50% of class time
- PE teachers use too much of their class time for activities related to administrative and management tasks (e.g., taking attendance, making announcements). Student MVPA rates are lowest during these types of activities. One study found that 15-26% of PE class time was spent on management tasks

Education Improving the Quality of Physical

Studies have shown that programs designed to improve the quality of PE can increase the amount of time that students are engaged in MVPA to more than 50% of PE class time. For example:

- The Child and Adolescent Trial for Cardiovascular Health (CATCH) intervention, implemented in 96 elementary schools in four U.S. cities, increased average percentage of time spent in MVPA during PE classes from 37.4% at base line to 51.9% at follow-up.
- A middle school PE intervention, implemented in six middle schools in four U.S. cities, led to an average of 58.7% of class time being spent in MVPA.

Key Strategies for Improving the Quality of Physical Education

Programs designed to improve the quality of PE have used two key strategies to increase student time in MVPA during PE class:

1. Implement a well-designed curriculum.
In PE, as in any other academic subject, the curriculum shapes instruction by mapping out for teachers what students should be taught and how their acquisition of knowledge and skills should be assessed. A 2006 CDC survey found that nearly half of the nation's schools do not even have a PE curriculum.24 A high-quality, well-designed PE curriculum:

- Is based on national, state, or local PE standards that describe what students should know and be able to do as a result of a high-quality PE program.

- Is designed to maximize physical activity during lessons and keep students moderately to vigorously active for at least 50% of class time.
- Includes student assessment protocols to determine if students are getting enough MVPA during PE and achieving learning objectives and standards.

Programs that increased students' time engaged in MVPA modified the PE curricula by:

- Replacing games or activities that tended to provide lower levels of physical activity (e.g., softball) with activities that were inherently more active (e.g., aerobic dance, aerobic games, jump rope).
- Adding fitness and circuit training stations to lesson plans.
- Providing teachers with a menu of MVPA activities to help build more active lessons.

CDC's Physical Education Curriculum Analysis Tool (PECAT) helps school districts conduct a comprehensive analysis of written PE curricula, based on evidence-based characteristics of effectiveness and the national PE standards. Results from PECAT can help schools enhance an existing curriculum, develop their own curriculum, or select a published curriculum for the delivery of high-quality PE in schools. The tool is available online at www.cdc.gov/healthyyouth/pecat.

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2. Provide teachers with appropriate training and supervision.

Improving the qualifications and skills of PE teachers requires appropriate training and supervision. Well-designed professional development can help PE teachers increase the amount of time students spend in MVPA and decrease the amount of time spent on administrative and classroom management tasks

Programs that have increased students' time engaged in MVPA provided teachers with appropriate training and supervision by:

- Training PE specialists and classroom teachers on ways to minimize time spent on classroom management, transitions, and administrative tasks.
- Providing on-site consultation and regular feedback to teachers on their instructional strategies.
- Training master PE teachers to teach and mentor other PE teachers about strategies for increasing MVPA during PE class.

To increase the time that students spend engaged in MVPA during PE classes, all PE teachers should receive:

- Targeted training on methods to increase the amount of class time students are engaged in MVPA. In 2006 less than half of the nation's PE classes had a teacher who had received this type of staff development.
- Specific training about how to implement the PE curriculum they will be using.
- Annual professional development opportunities to enhance their instructional skills and techniques.
- Feedback through supervision and mentoring from master PE teachers.

PRESIDENTIAL ACTIVE LIFESTYLE AWARD

The promotion and adoption of physical activity is at the heart of the Presidential Youth Fitness Program. The President's Challenge—the premier program of the President's Council on Fitness, Sports & Nutrition—offers PALA+ as a tool to encourage physical activity and healthy lifestyles. PALA+ is designed to motivate you and your child (aged 6 and older) to make physical activity and healthy eating part of everyday life.

The physical activity requirements for PALA+ are 60 minutes/day for kids, 30 minutes/day for adults, five days a week for six out of eight weeks. The nutrition component requires participants to add a weekly healthy eating goal and build upon those goals throughout the same six-week period. Once you achieve your physical activity and healthy eating goals you can receive a certificate signed by the Council co-chairs.

Participation in PALA+ is one way to meet the recommendations of the *2008 Physical Activity Guidelines for Americans*. The healthy eating goals are based on the consumer messages from the *Dietary Guidelines for Americans, 2010*. Building upon the healthy eating goals each week helps you make gradual changes that, when combined with regular physical activity, can improve their overall health and well-being.

Healthy eating goals in PALA+ include:

- I made half my plate fruits and vegetables
- At least half of the grains that I ate were whole grains
- I chose fat-free or low-fat (1%) milk, yogurt, or cheese
- I drank water instead of sugary drinks
- I chose lean sources of protein
- I compared sodium (salt) in foods like soup and frozen meals and chose foods with less sodium
- I ate seafood this week
- I ate smaller portions

The President's Challenge encourages all Americans to make physical activity and good nutrition part of their everyday lives. Regardless of age, background, or ability, the President's Challenge can help motivate individuals to move more often and eat healthy! PALA+ can help all Americans jumpstart or maintain a healthy lifestyle. Students can either used the paper log, provided on page 63, or sign up online at www.presidentschallenge.org.

PALA+
activity+nutrition

Be active. Have fun.

Presidential Active Lifestyle Award: Activity + Nutrition (PALA+)

PALA+ promotes physical activity AND good nutrition, because it takes both to lead a healthy lifestyle. Sign up for the six-week program to help you maintain or improve your health. Anyone age 6 and older can earn their PALA+ today – sign up at **www.presidentschallenge.org** or use the log on the reverse side.

PHYSICAL ACTIVITY A healthy life is an active life. Youth (6-17 years old) need to be active at least 60 minutes a day (or 11,000 steps for girls and 13,000 steps for boys). Adults (18 and older), 30 minutes (or 8500 steps). So, take a walk with friends, bike ride after dinner, garden, or play a game of basketball at the park. Get your heart pumping and your muscles moving. When you've logged six weeks of physical activity, congratulations. You've started a regular routine for a more active lifestyle.

GOOD NUTRITION
Start eating healthy. It's easier than you think! Take it one step at a time. Commit to one new healthy eating goal this week, and circle it on your weekly PALA+ log. The following week add a different goal – but make sure you continue to maintain your healthy eating goal(s) from the week(s) before. Focus on your healthy eating goals every week and remember, the more often you incorporate them into your lifestyle, the better you will feel. When you've achieved six different healthy eating goals, congratulations. You've started a routine for a healthier lifestyle.

Tips for Healthy Eating:

Make half your plate fruit and vegetables.

Keep it simple by filling half your plate with fruits and vegetables at meal time. The more colorful you make your plate; the more likely you are to get the vitamins, minerals, and fiber your body needs to be healthy. Remember that all forms count – fresh, frozen, canned (fruit in water or 100% juice), dried, or 100% juice.

Make half the grains you eat whole grains.

An easy way to eat more whole grains is to switch from a refined grain food to a whole-grain food. For example, eat whole-wheat bread instead of white bread, brown rice instead of white rice, and low-fat popcorn instead of snack chips. Read the ingredients list and choose products that list a whole-grain ingredient first. Look for things like: "whole wheat," "brown rice," "bulgur," "buckwheat," "oatmeal," "rolled oats," "quinoa," or "wild rice."

Choose fat-free or low-fat (1%) milk, yogurt, or cheese.

To help build your bones and keep them strong, dairy products should be a key part of your diet because they provide calcium, vitamin D, and many other nutrients your bones need.

Drink water instead of sugary drinks.

Regular soda and other sweet drinks such as fruit drinks and energy drinks are high in calories because they have a lot of added sugar. Instead, reach for a tall glass of water. Try adding a slice of lemon, lime or watermelon or a splash of 100% juice to your glass of water if you want some flavor.

Choose lean sources of protein.

Meat, poultry, seafood, dry beans or peas, eggs, nuts, and seeds are considered part of the protein foods group. Select leaner cuts of ground beef (label says 90% lean or higher), turkey breast, or chicken breast. Grill, roast, poach, or boil meat, poultry, or seafood instead of frying. Include beans or peas in main dishes such as chili, stews, casseroles, salads, tacos, enchiladas, and burritos.

Compare sodium in foods like soup and frozen meals and choose foods with less sodium.

Read the Nutrition Facts label to compare sodium in foods like soup, bread, canned vegetables, and frozen meals – and choose the foods with lower amounts. Look for "low sodium," "reduced sodium," and "no salt added" on food packages.

Eat some seafood.

Seafood includes fish (such as salmon, tuna, and trout) and shellfish (such as crab, mussels, and oysters). Seafood has protein, minerals, and omega-3 fatty acids (heart healthy fat). Adults should try to eat at least 8 ounces a week of a variety of seafood. Children can eat smaller amounts of seafood too.

Pay attention to portion size.

Check to see what the recommended portion sizes of

foods you eat look like in the bowls, plates, and glasses you use at home. For example – check 3/4 cup cereal, 3 ounces cooked chicken, 1 cup milk, 1/2 cup of juice. When dining out avoid "supersizing" your meal or buying "combo" meal deals that often include large size menu items. Choose small size items instead or ask for a "take home" bag and wrap up half of your meal to take home before you even start to eat.

PALA+
activity+nutrition

www.presidentschallenge.org

Participant Name | Age | Date Started

Group ID (if applicable) | Date Completed

Week 1

Day	Physical Activities	# of Minutes or Pedometer Steps
Mon		
Tues		
Wed		
Thurs		
Fri		
Sat		
Sun		

Healthy Eating—Select a goal for this week.

Week 2

Day	Physical Activities	# of Minutes or Pedometer Steps
Mon		
Tues		
Wed		
Thurs		
Fri		
Sat		
Sun		

Healthy Eating—Circle and continue with last week's goal, and add a new goal.

Week 3

Day	Physical Activities	# of Minutes or Pedometer Steps
Mon		
Tues		
Wed		
Thurs		
Fri		
Sat		
Sun		

Healthy Eating—Circle and continue with previous goals, and add a new goal.

Week 4

Day	Physical Activities	# of Minutes or Pedometer Steps
Mon		
Tues		
Wed		
Thurs		
Fri		
Sat		
Sun		

Healthy Eating—Circle and continue with previous goals, and add a new goal.

Week 5

Day	Physical Activities	# of Minutes or Pedometer Steps
Mon		
Tues		
Wed		
Thurs		
Fri		
Sat		
Sun		

Healthy Eating—Circle and continue with previous goals, and add a new goal.

Week 6

Day	Physical Activities	# of Minutes or Pedometer Steps
Mon		
Tues		
Wed		
Thurs		
Fri		
Sat		
Sun		

Healthy Eating—Circle and continue with previous goals, and add a new goal.

Healthy Eating Goals

- I made half my plate fruits and vegetables
- At least half of the grains that I ate were whole grains
- I chose fat-free or low fat (1%) milk, yogurt, or cheese
- I drank water instead of sugary drinks
- I chose lean sources of protein
- I compared sodium in foods like soup and frozen meals and chose foods with less sodium
- I ate seafood
- I ate smaller portions

INSTRUCTIONS: **Online:** Create an online account at www.presidentschallenge.org. Participate as an individual or join a group (ID at the top of page if applicable). Once you achieve PALA, you're eligible to receive a certificate! **Paper:** Use this hard copy log to track your progress. Once completed, report your accomplishment and receive your certificate at www.presidentschallenge.org! Or, if part of a group, make sure to return it to your group administrator to get recognized.

RECOGNITION

Show Your Students That Hard Work Pays Off

Since only modest amounts of physical activity are needed for obtaining health benefits, most students who participate in physical activity almost every day will be able to achieve a score that will place them in the Healthy Fitness Zone® and earn them an opportunity to get recognized.

To start celebrating your school's involvement in the Show Your Students That Hard Work Pays Off

Since only modest amounts of physical activity are needed for obtaining health benefits, most students who participate in physical activity almost every day will be able to achieve a score that will place them in the Healthy Fitness Zone® and earn them an opportunity to get recognized.

To start celebrating your school's involvement in the Presidential Youth Fitness Program, make sure you download your free school recognition certificate. Make sure you display it prominently for all your students and staff to see.

There are supplemental resources to help your students celebrate their own health and fitness accomplishments including individual Presidential Youth Fitness Program; make sure you download your free school recognition certificate. Make sure you display it prominently for all your students and staff to see.