

The History of *FITNESSGRAM*[®]

**Sharon A. Plowman, Charles L. Sterling, Charles B. Corbin,
Marilu D. Meredith, Gregory J. Welk, and James R. Morrow, Jr.**

Initially designed by Charles L. Sterling as a physical fitness “report card” *FITNESSGRAM*[®]/*ACTIVITYGRAM*[®] is now an educational assessment and reporting software program. Based on physiological/epidemiological, behavioral, and pedagogical research, *FITNESSGRAM* is committed to health-related physical fitness, criterion-referenced standards, an emphasis on physical activity including behavioral based recognitions, and the latest in technology. The evolution of these major concepts is described in this history of *FITNESSGRAM*.

Key Words: health-related physical fitness, physical activity assessment, criterion-referenced fitness standards

The concept for *FITNESSGRAM*[®] had its beginning in 1977 when Charles L. Sterling, the Director of Health and Physical Education of the Richardson, Texas, school system, recognized school administrators’ and parents’ interest in a physical fitness “report card” similar to those used in other educational areas. He also recognized the potential for using computers to print reports and keep student records. Sterling and teachers Marilu Meredith, Nancy Voith, Cindy Raymond, and Don Rainey administered the Texas Physical Fitness–Motor Ability Test¹ in their schools. Personalized fitness report cards were then generated for all students using customized software developed for the school district’s mainframe computer.

In 1981 Sterling joined the staff of the Cooper Institute for Aerobics Research (CIAR/IAR) in Dallas. The Institute had a mainframe computer that allowed batch processing of the physical fitness reports. This created the opportunity to take the concept to a wider audience, but a name was needed. *FITNESSGRAM* was chosen through a contest in the local school district; Nancy Voith is credited with the winning entry. This name played off the concept of a telegram and suited the intended purpose of the report, namely, to communicate important fitness information to children and parents. The Campbell Soup Company’s Institute for Health and Fitness signed on as a national sponsor to support the promotion and dissemination of the tool. Marilu Meredith was hired as National Project Director in 1982, a position she continues to hold today.

Plowman is Prof. Emeritus, Dept. of Kinesiology & Physical Education, Northern Illinois Univ., DeKalb, IL 60115. Sterling is retired from The Cooper Institute. Corbin is Prof. Emeritus, Dept. of Exercise & Wellness, Arizona State Univ. Polytechnic Campus, Mesa, AZ 85212. Meredith is with The Cooper Institute, 12330 Preston Rd, Dallas, TX 75230. Welk is with the Dept. of Health & Human Performance, Iowa State Univ., Ames, IA 50011. Morrow is with the Dept. of Kinesiology, Univ. of North Texas, Denton, TX 76203.

The program was implemented in phases with the first pilot conducted in 30 schools in the Tulsa, Oklahoma, School District (1982–83) using the AAHPERD Youth Fitness Test (YFT).^{2,3,4} In the second year (1983–84), approximately 125 schools throughout Oklahoma participated and were able to select either the AAHPERD YFT or the AAHPERD Health Related Fitness Test (HRPFT).⁵ After these successes, FG was implemented on a national basis first as a pilot, one district per state in addition to Oklahoma (1984–85), and then unrestricted (1985–86).

Now, in 2006, *FITNESSGRAM/ACTIVITYGRAM* (FG)* is an educational assessment and reporting software system that has been used by thousands of teachers with millions of youth in schools worldwide to help teachers track health-related fitness and physical activity information over time and to produce personalized reports for children, parents, and school administrators. In conjunction with a variety of partners, FG has pushed the evolution of physical fitness and physical activity philosophy, research, evaluation, education, and promotion. This evolution has occurred in four major areas:

1. A commitment to the concept of health-related physical fitness;
2. A concentration on criterion-referenced evaluation in place of percentile norm-referenced evaluation;
3. A consistent emphasis on fitness behavior/physical activity;
4. Systematic updating and sophistication of the computerized reporting system.

A Commitment to Health-Related Physical Fitness

At its inception, FG was not a test battery. The route to embracing the current health related battery reflects the basic changes that were made in the second half of the 20th century in the concept of physical fitness.

The history of youth physical fitness testing from approximately the 1860s to 1988 is described in a government document prepared by Roberta Park,⁶ and much of it need not be repeated here. Suffice it to say that since its inception in 1885, the organization now known as the American Alliance for Health, Physical Education, Recreation and Dance (AAHPER/AAHPERD) was deeply concerned with the physical fitness of American youth. Formal government involvement began in 1956 when President Dwight D. Eisenhower established the President's Council on Youth Fitness (PCYF) (later changed to President's Council on Physical Fitness and Sports [PCPFS]) in response to published data that American children were less fit than European children.^{7,8} Shortly thereafter the Research Council of AAHPER agreed on a battery of tests and the AAHPER Youth Fitness Project, a nationwide pilot study of the fitness levels of boys and girls ages 5 to 12 years was completed, headed by Paul Hunsicker. As a result the AAHPER YFT Manual with national norms was published in 1958.

The test items included pull-ups for boys/ modified pull-ups for girls, straight leg sit-ups, shuttle run, standing broad (long) jump, 50-yd dash, softball throw for distance, 600-yd run/walk, and three aquatic tests that were rarely used. In 1966 the

* For brevity, the symbol FG will be used to refer to the *FITNESSGRAM* test battery, report card, and management software as well as the *ACTIVITYGRAM* assessment and report card system in any version.

then President's Council on Physical Fitness, at the direction of President Lyndon Johnson, established a Presidential Award Program based on AAHPER's YFT. Criteria for this award for young people ages 10 through 17 years included being in good academic standing, a recommendation from the school principal, and scoring $\geq 85\%$ ile on all seven items.

Between 1958 and 1975 minor changes were made in the test items and norms.⁹ However, by the early 1970s there was mounting dissatisfaction with the actual test items and philosophy behind the test and award program from both practitioners and researchers. In 1972–73 the Texas Physical Fitness-Motor Ability Test¹ was developed. At the same time a joint committee from the Measurement and Evaluation Council (MEC) and Physical Fitness Council (PFC) of AAHPER, chaired by Dale Mood and then Mike Reuter, was put in place to “recommend...appropriate activities concerning testing of components of physical fitness.”¹⁰ The committee was usurped when a small group of AAHPER and PCYF people, apparently at the initiation of the AAHPER staff, changed the YFT. The Texas distance-run items and norms were incorporated as options, the California version of a 1-minute flexed knee sit-up replaced the straight leg sit-up, and the softball throw for distance was deleted for the 1975 AAHPER Youth Fitness Survey (and 1976 published manual).²

In 1975 a joint committee was established to systematically study whether the AAHPER YFT needed major revision. Don Franks, Frank Katch, Vic Katch, Sharon Plowman, Margaret J. Safrit, and Andrew Jackson (chairperson), representing the MEC, PFC, and Research Council (RC, later renamed Research Consortium) of AAHPER, comprised the committee. Ray Cizek attended the meetings as the AAHPER staff liaison, and Ash Hayes was invited to represent the PCPFS.^{11,12,13} After extensive review of the literature, much discussion, open hearings at the 1976 national convention, and solicitation of opinions from colleagues, *A Position Paper on Physical Fitness* was submitted to AAHPER. This position paper called for a revision of the AAHPER YFT and set as a basic goal the relating of physical fitness to functional health and not sport performance.

A six-member Task Force on Youth Fitness was appointed in 1977 to implement the proposals made in the position paper. Members of this task force included Steven Blair, Charles Corbin (resigned after initial meeting and contributions; replaced by Don Franks), Andrew (Tony) Jackson, Michael Pollock, Margaret (Jo) Safrit, and Harold Falls (chairperson). Ray Cizek served as the AAHPER staff consultant.^{11–14} Throughout 1978 the task force established goals and gathered information. Consultants, who joined the task force members for the 1979 meetings to finalize the test items, identify normative sources/establish norms, and write the manual included Charles Dotson, Dennis Humphrey, Tim Lohman, Russ Pate, Sharon Plowman, and Glen Swengros (PCPFS).^{13,15} Additional input was obtained from Gary Krahenbuhl, William Stone, Kirk Cureton, Robert Serfass, Ed Burke, Frank Katch, Vic Katch, and Ash Hayes.⁵ The components and items agreed upon were cardiorespiratory function (1 mi/9 min or 1.5mi/12 min), body composition (triceps or sum of triceps and subscapular skinfolds), and abdominal and low back-hamstring musculoskeletal function (bent knee, timed sit-ups; sit-and-reach).

Although the task force recommended to AAHPER that the YFT items be relegated to an optional appendix in the new manual (and a study be undertaken for the performance related motor fitness items), that the new test be called the AAHPERD Physical Fitness test, and that the current award system be eliminated,¹³ the Board of Governors did not concur. The result was the 1980 publication of the AAHPERD

HRPFT Manual⁵ and continuance of the AAHPER YFT and Presidential Award system (theoretically, both for a period of 2 years). FG continued to support both tests. Thus, during this time AAHPERD, PCPFS, and the CIAR worked together.

In 1984 a Technical Manual¹⁶ for the HRPFT test was published. Also in 1984, a report of the AAHPERD RC Committee to Evaluate the Two-Test System, chaired by Ed Burke, reiterated the recommendation that the HRPFT be made the primary test with the non-overlapping YFT motor fitness items combined into a second part of the testing manual. A 5-year transition phase ending in 1989–90 was suggested.¹⁷

As a result of the Burke committee report, yet another AAHPERD task force was appointed in 1985. This task force (Manual Task Force), chaired by Harold Falls and made up of members of the RC, MEC, and PFC, was charged with developing a single AAHPERD fitness test battery, establishing criterion-referenced standards, examining the existing awards schemes, and writing the appropriate manual.¹⁸ At the same time, the PCPFS was conducting the 1985 School Population Survey and developing its own youth fitness test and awards program. In late 1985/early 1986 the AAHPERD Executive Committee was approached and given the “opportunity” to approve, publish, and promote the new PCPFS fitness test as well as continue to administer the Presidential Award.^{19,20} The Manual Task Force was asked to “advise the Alliance on the data and test items included in the population fitness survey for updating and inclusion of the AAHPERD Youth Fitness Test.”²¹

A series of phone discussions failed to produce an agreement from January to April 1986.²² The Manual Task Force had scheduled its first meeting to take place at the AAHPERD national convention on April 10, 1986, and invited representatives from the PCPFS and CIAR to attend for discussions in an attempt to reach a compromise. However, on April 9 the PCPFS distributed its new fitness test and awards flyer, *Fitness Testing and the Presidential Physical Fitness Award*.^{23,24} Selected test items included: pull-ups for boys/flexed arm hang (FAH) for girls, sit-ups, 1-mile run, shuttle run, and sit-and-reach. The creation of a test and awards system by the PCPFS represented a change in policy. Prior to 1984 the PCPFS had left the decision on test composition and the selling of awards (a major source of revenue) to AAHPERD, although the PCPFS had determined the criteria for the Presidential Award.^{25,26}

Despite the unilateral and unexpected action of presenting the new test by the PCPFS, representatives from the Manual Task Force met with representatives of the PCPFS as previously scheduled. Complete agreement could not be reached. Following the meeting, the Manual Task Force recommended to the AAHPERD Executive Committee that AAHPERD support the HRPFT and not the PCPFS test and award system. This decision and the reasons for it were communicated directly from Harold Falls to Ash Hayes.²⁷ Specifically, the four major concerns were the omission of any item to measure body composition, the continued use of the 85%ile for the Presidential Award, the inclusion of the shuttle run, and the choice of the items used to measure upper arm and shoulder girdle strength/endurance. FG remained committed to whatever AAHPERD decided.²⁸

Negotiations among the Manual Task Force (and the councils the members represented) and the AAHPERD Executive Board and Board of Governors as well as among AAHPERD, PCPFS, and CIAR continued throughout the spring of 1986.²⁰ The perceived lack of commitment from the AAHPERD leadership to the health-related physical fitness concept, the awkward and time-consuming decision-

making process utilized by the AAHPERD structure, and the overwhelming financial considerations linked to the awards led concerned members of AAHPERD to hold several meetings at the annual American College of Sports Medicine meetings in Indianapolis. At one of these meetings, Steve Blair, Harold Falls, Patty Freedson, Don Franks, Dennis Humphrey, Tim Lohman, Pat McSwegin, Jim Morrow, Russ Pate, Sharon Plowman, and Jack Wilmore decided they would work to provide the best physical fitness test to this nation whether through AAHPERD or other avenues.²² The Manual Task Force (on which many of these individuals served) continued to work.

In July the AAHPERD Executive Committee and PCPFS agreed to form a Joint Task Force made up of the respective presidents/chairs of the RC (Don Franks), MEC (Jim Morrow), and PFC (Sharon Plowman), Ash Hayes (Executive Director), Guy Reiff and Bill Savage representing the PCPFS, with Barbara Lockhart (AAHPERD President) and Hal Haywood (Acting Executive Vice President, AAHPERD) ex officio. The Task Force was charged with finding a compromise solution for a fitness test and award system that would be endorsed by AAHPERD, PCPFS, and CIAR.²⁹ This Joint Task Force called for the presentation of position statements from any interested professionals at hearings that were held in Chicago on October 3–4, 1986.³⁰

Immediately after the hearings, the Joint Task Force met and devised a plan that appeared to be agreeable to all parties.³¹ However, the plan was never ratified. Part of the difficulty was that CIAR/Campbell Soup could not support the plan, and FG was integral to the AAHPERD Manual Task Forces' recommendations.²⁴ The "compromise" required computer programming of two tests (albeit with some overlapping items, but with a total of nine different ones) with norms that were to be criterion-referenced for AAHPERD awards and percentile-referenced for the Presidential Award.³¹

In a letter³² Charles Sterling informed AAHPERD that the Campbell Soup Company had informed CIAR that "reprogramming more than one test is not an economic reality." Thus, a decision had been made "in house" (Charles Sterling, Lee Dukes, Marilu Meredith, Steve Blair)³³ to utilize a single test consisting of five items: 1-mile run, modified sit-up, sit-and-reach, pull-up/flexed arm hang (either sex), body composition (Grades 4–12) assessed by triceps and calf skinfolds (default to body mass index [BMI] if no skinfolds taken), and an optional shuttle run for K–3. Thus the first FG test battery was established. AAHPERD and the PCPFS were invited to adopt the new test and program. Dialogue continued among the three parties until time simply ran out. The Manual Task Force ceased writing in December 1986,³⁴ material was returned to the members in February,³⁵ and the committee was formally disbanded by AAHPERD in March 1987.³⁶

On February 23, 1987, Charles Sterling informed Hal Haywood³⁷ that "The institute must now move forward with the finalization of test methodology, manual writing, and refinement of the awards program. We will, as of today, begin contacting content experts to form an advisory committee to contribute to this effort." The initial meeting of the *FITNESSGRAM* "advisory committee," later changed to Advisory Council, was held in Atlanta, Georgia, on March 9–10, 1987. Persons attending were Steve Blair, Lee Dukes (Campbell Soup), Chuck Corbin, Harold Falls, Tim Lohman, Marilu Meredith, Jim Morrow, Russ Pate, Sharon Plowman, Charles Sterling, and Katie Stone (Campbell Soup).³⁸ Kirk Cureton, also a founding member of the Advisory Council, did not attend.

Table 1 The *FITNESSGRAM*[®] Advisory Council

Advisory Council member	Dates served
Steven N. Blair	1987–
Dave B. Buller	2003–2004
Chuck B. Corbin	1987–
Kirk J. Cureton	1987–
Harold B. Falls	1987–2005
Scott Going	2005–
William Kohl	1993–1996
Timothy G. Lohman	1987–2005
Marilu D. Meredith	1982–
James R. Morrow, Jr.	1987–
Robert P. Pangrazi	1993–2005
Russell R. Pate	1987–
Sharon A. Plowman	1987–
Jodi Prochaska	2005–
Margaret J. Safrit	1989–1995
James F. Sallis	1989–2004
Charles L. Sterling	1977–2002
Gregory J. Welk	1996–
Weimo Zhu	2003–

The CIAR and individual members of the FG scientific advisory board were committed to health-related fitness based on research evidence that would dictate the test items and program. The unity of purpose and ability to move quickly on decisions was instantly apparent. Material prepared by the former AAHPERD Manual Task Force members and others were discussed at great length and used as the basis for developing the new *FITNESSGRAM* Test Administration Manual.³⁹ This Advisory Council has remained essentially intact from 1987 to the present while adding specialists to enhance the group as the need arose. A complete list of the advisors and their years of service is included in Table 1. Table 2 summarizes the various committees that ultimately led to the formation of the FG Advisory Council.

The goal of a unified test was not achieved in the 1980s due to philosophical differences between the PCPFS, AAHPERD, and the CIAR. The net result was that, for the first time, FG had a test battery and was developing standards and awards; the PCPFS had its own President's Challenge Test⁴⁰ and awards program; and AAHPERD continued with both the HRPFT and the YFT until publication of Physical Best (PB) in 1988.⁴¹ The PB test battery included the 1-mile run, sum of triceps and calf skinfolds, sit-and-reach, modified sit-ups, and pull-up/modified pull-up. Several years later AAHPERD developed its own fitness reporting system as part of the PB program. Obviously, there was considerable overlap between

Table 2 The Road to the *FITNESSGRAM*® Advisory Council

Date	Name of committee	Charge	Outcome
1975	Joint Task Force to Study Revision of AAHPERD Youth Fitness Test (YFT)	To determine if the YFT needed revising.	Position Paper on Physical Fitness recommending switch to health-related physical fitness
1977	Task Force on Youth Fitness	To implement recommendations for revision to health-related physical fitness.	1980 AAHPERD Health-Related Physical Fitness manual
1985	Physical Fitness Test Manual Task Force	To develop a single AAHPERD fitness battery, establish criterion-referenced standards, examine awards, write manual.	Disbanded
1986	Joint AAHPERD-PCPFS Task Force	To find a test & award system that represented a compromise and could be endorsed by AAHPERD, PCPFS, and CIAR.	Unsuccessful
1987	FG Advisory Council	To devise a health-related fitness test, criterion-referenced standards, physical activity promotion and reporting system.	<i>FITNESSGRAM</i> / <i>ACTIVITYGRAM</i>

the tests and the philosophies of FG and PB. In 1991 Prudential Insurance began its 6-year sponsorship of *FITNESSGRAM*. In December 1993 a strategic partnership was formed between AAHPERD (represented by Mike Davis, president) and CIAR/Prudential (represented by Charles Sterling, Bill Kohl [FG scientific director], Marilu Meredith, and Don Southwell [Prudential president]). FG was designated the fitness and activity assessment and reporting program and AAHPERD's PB became the education program.⁴²

In 1999 the cooperative work of Charles Sterling, Marilu Meredith, Greg Welk (FG Scientific Director) and Steve Blair from CIAR, Mike Davis and Gayle Claman of AAHPERD, and Rainer Martens and Scott Wikgren of Human Kinetics Publishers resulted in an ongoing agreement for Human Kinetics to publish, market, and distribute all FG materials. Human Kinetics was already publishing the PB materials, so this agreement brought together an array of educational resources to support youth fitness and activity programming. The PCPFS now includes an optional health-related fitness test as part of the President's Challenge,⁴³ but as of 2006 their test and FG continue to operate independently.

A Concentration on Criterion-Referenced Standards (CRS)

Normative referenced standards (NRS) rank an individual's performance relative to that of all other individuals in the group used for reference. The makeup of the reference group is critical, especially in terms of physical activity and health history in relation to physical fitness standards, and part of the question has always been whether these norms should be based on what the population can currently do, or whether only trained individuals should be tested to represent goals. The AAHPER(D) Youth Fitness Test was scored and the Presidential Award recipients were determined on the basis of percentile normative standards. The 85th percentile standard of the latter was a source of controversy throughout the 1970s and 1980s and remains so today, although lower percentile awards and criterion-referenced health-related awards are also now available from the PCPFS.⁴³ Despite the 1977 Task Force recommendation, the AAHPERD Health Related Physical Fitness Test⁵ also utilized percentile rather than criterion-referenced norms. Teachers were encouraged, however, to interpret the test results following guidelines that functioned as CRS. The first true CRS were developed in 1978 for the South Carolina Physical Fitness Test.⁴⁴

In 1987 the FG Scientific Advisory Board established CRS for the mile run, %BF/BMI, sit-and-reach, sit-ups, pull-ups, and FAH.^{39,45} These standards set one cutoff point. Scores above the cutoff were classified as acceptable; no label was associated with scores below the cutoff. The cutoff points were based on empirical data, normative data, and the professional judgment of the advisory council members.⁴⁶ They were intended to set a specific minimal level of performance on each test item that was consistent with acceptable good health (minimal disease risk) and adequate function (the ability to carry on with tasks of daily life) independent of the population tested, or the proportion of the population that meets the standard.³⁹

The FG CRS were the first for youth fitness that were put into widespread national and international use. In the 1992 Test Administration Manual,⁴⁷ healthy fitness zones (HFZ) replaced the single cutoff score. Results of each test could now be evaluated as "Needs Improvement" (NI), in the "Healthy Fitness Zone" (HFZ), or above the Healthy Fitness Zone. The goal remained achievement of the HFZ for all students, but it was recognized that scores higher than the upper limit of the HFZ were both attainable and healthy, with the possible exception of excessive leanness.

CRS for health-related physical fitness require both criterion and field test items that relate to health status and function. They also require scores that are responsive to health status and physical activity. This means that the reliability and validity must be established not only for the field test items but also for the criterion referenced standards. Additional criteria for field tests include objectivity and ease of administration. Available physiologic and psychometric research on each item in the FG battery was presented first in 1994,⁴⁸ published online in 2001, and updated in 2003.⁴⁹ Areas of needed research are constantly being explored, and as information is available, test items and standards are changed. Table 3 presents a listing of the deletions and additions of test items that have occurred from 1987 to 2005.

Table 3 Additions and Deletions to the FITNESSGRAM® Health-Related Fitness Test Battery 1987–2005

Fitness component	Test item	Year included	Year deleted
Aerobic Capacity	One Mile Run/Walk	1987	
	PACER	1992	
	One Mile Walk Test	1999	
Body Composition	Skinfold Measure of % Body Fat	1987	
	Body Mass Index (height & weight)	1987	
	Portable Bioelectric Impedance Analyzers	2004	
Muscular Strength & Endurance	Modified Sit-up Test	1987	1992
	Curl-up Test	1992	
	Pull-up	1987	2005
	Flexed Arm Hang	1987	
	90° Push-up	1992	
	Modified Pull-up	1992	
	Trunk Lift	1992	
Flexibility	Sit-and-Reach Test	1987	1992
	Back-Saver Sit-and-Reach Test	1992	
	Shoulder Stretch	1992	
Other Items	Shuttle Run (K–3)	1987	1992

A Consistent Emphasis on Fitness Behavior/ Physical Activity

The emphasis on fitness behavior and physical activity is seen in two major areas of the FG program: the award structure and the development of *ACTIVITYGRAM*. In 1987 FG offered awards that were labeled as such.³⁹ By 1992,⁴⁷ however, the decision had been made to not use an award system but instead to institute a recognition system. This was based on the belief that awards are often perceived as being something that is given and are attainable only by an elite few whereas recognition is earned by accomplishment. Because maintaining good fitness depends on establishing patterns of regular physical activity, activity participation should be reinforced. In the 2004 manual⁵⁰ these ideas were formalized into the HELP philosophy. The essence of the HELP philosophy is that *Health* comes from regular physical activity and the development of health-related physical fitness is for *Everyone* for a *Lifetime* and it should be designed to meet *Personal* needs.^{50,51}

FG allows recognition both for fitness attainment (the product), for all individuals who attain the HFZ, but emphasizes rewarding fitness behavior (the process). Teachers are encouraged not to use test performance recognition to the exclusion of

activity participation recognition. Available recognitions have changed through the years. “I’m Fit” was designed to recognize either achievement of the HFZ on 5 of 6 (or 4 of 5) test items or improvement in performance on at least 2 test items. “Get Fit,” “Fit for Life,” the *FITNESSGRAM* Honor Award, and “SMARTCHOICE” programs were intended to recognize participants for completion of exercise logs, achievement of specific goals, fulfillment of contractual agreements, and completion of the test assessment plus physical activities at home, in school, or the community.^{39,47} “It’s Your Move” was introduced in 1994 and consisted of a series of activity booklets for students in K–6 that incorporated a recognition system. “You Stay Active,” a joint AAHPERD/CIAR project,⁵² was introduced in 1995 and consisted of comprehensive activity programs, assessment activities, cognitive activities, activity-promoting events, goal-setting performance recognition, and a model school/teacher recognition program for conducting programs that focused attention on and encouraged regular physical activity.⁵³ Now, in 2006, students can still earn the “Get Fit” or a Fitness Contract Recognition (determined by the teacher). In addition, students can earn the Presidential Active Lifestyle Award.⁵⁰ FG/CIAR, AAHPERD, and the PCPFS jointly promote the PCPFS Presidential Active Lifestyle Award (PALA).^{43,50}

The culmination of the emphasis on physical activity occurred with the development of *ACTIVITYGRAM*^{50,53} predominantly targeted for Gades 5 and higher. The *ACTIVITYGRAM* module was based conceptually on a previously validated instrument known as the Previous Day Physical Activity Recall,⁵⁴ but includes a number of enhancements that take advantage of the computer interface and other features to help promote interest and involvement in physical activity. The student is asked to report his/her activity for each 30-min block on two schooldays and one weekend day, selecting from a list of activities categorized according to the Physical Activity Pyramid.^{50,55} Duration and intensity are quantified. Students completing the assessment receive personalized reports similar to the existing FG reports but evaluating their minutes of activity, times during the day when they are active, and the types of activity in which they are currently engaged.

Systematic Updating and Sophistication of the Computerized Reporting System

As stated previously, FG was originally conceived and produced as a mainframe computerized reporting system for physical fitness test results. Table 4 presents the evolution of the *FITNESSGRAM* software from version 1.0 to the current 8.0. Note that (for reasons now forgotten) there never was a version 4.0, and the missing version 7.0 was an attempted web based system that was never widely available. As can be seen from Table 4, the first two versions supported the AAHPER(D) YFT and HRPFT. Since that time the *FITNESSGRAM* test battery has been the only test battery supported. *ACTIVITYGRAM* first appeared in version 6.0.

The importance of the sponsorship of Campbell Soup (1982–90) and then Prudential Insurance (1991–97) cannot be stressed enough. This support allowed initially for the data entry to be done in Dallas and ultimately for personal computer (PC) software to be programmed and distributed to schools first without charge and then essentially for pennies per student involved. Prudential Life Insurance agents were given kits and encouraged to become involved with their local schools. By

Table 4 Key Highlights in the Evolution of *FITNESSGRAM*® Software and Reports**1982 – 1984 (Version 1.0)****Sponsor / Partnerships**

- Campbell Soup Company’s Institute for Health and Fitness

Technology

- Mini-mainframe computer at Cooper Institute for Aerobics Research, Dallas, Texas
- Service bureau approach—all data sent to Dallas where reports were produced and returned to districts
- Data entered via “bubble” cards completed by teacher, then scanned into database.
- Graphical presentation of current test results

Notable Features

- Schools could administer the AAHPERD Health Related Fitness Test or the AAHPERD Youth Fitness Test
- Results were presented using percentile norms
- Basic reports included: *FITNESSGRAM* (single sheet report for student and parents) and Summary Report

1985 – 1987 (Version 2.0)**Sponsor / Partnerships**

- Campbell Soup Company’s Institute for Health and Fitness

Technology

- Apple IIe, dual disk
- Menu-driven application
- Easy-to-use software
- *FITNESSGRAM* reports were printed on preprinted forms with a line printer
- Teachers entered data by typing

Notable Features

- Software was available for both the AAHPERD Health Related Fitness Test and the AAHPERD Youth Fitness Test
- Results were presented using percentile norms

1987 – 1993 (Version 3.0)**Sponsor / Partnerships**

- Campbell Soup Company continued as sponsor through 1989–90 school year
- Prudential Insurance Company began sponsorship in 1991–92 school year

Technology

- Versions for Apple IIe, Apple IIgs, and DOS
- Dual disk version, added a DOS hard disk version in 1989
- Easy-to-use software
- *FITNESSGRAM* reports produced on preprinted forms with a line printer
- Basic group statistical report included in software

(continued)

Table 4 (continued)

Notable Features

- *FITNESSGRAM* health related test battery
- Results were presented using criterion referenced standards indicating minimal levels of fitness for health

1994 – 1998 (Version 5.0)

Sponsor / Partnerships

- Prudential Insurance Company continued sponsorship through 1996–97 school year
- No sponsor beyond 1997
- Implemented partnership with AAHPERD and their Physical Best curriculum program

Technology

- Versions for DOS, Macintosh, and later Windows
- Hard drive data storage
- Relational database using multiple related tables of data
- Printing available on laser printers
- Introduced importing and exporting of data
- Included new utilities to facilitate management of data such as promoting students and moving them from class to class
- Added the Achievement of Standards Report
- Teachers enter data by typing or scanning with Scantron forms

Notable Features

- Introduction of Healthy Fitness Zone rather than a single standard
- Introduction of the PACER aerobic capacity assessment and new musculoskeletal fitness tests (curl-up, trunk lift, 90° push-up, back saver sit-and-reach, and shoulder stretch)
- Reported calculated VO_2 max to allow for comparison between aerobic capacity assessments from one test date to another
- Included a Spanish translation of the *FITNESSGRAM* report
- Introduced handwritten version of the Long Term Tracking Report

1999 – 2004 (Version 6.0)

Sponsor / Partnerships

- Continued partnership with AAHPERD and their Physical Best curriculum program
- Finalized partnership with Human Kinetics to publish and distribute all *FITNESSGRAM* materials in 1999
- AAHPERD, CIAR, and HK formed the American Fitness Alliance
- Entered into cooperative arrangement with PCPFS and AAHPERD to promote the Presidential Active Lifestyle Award (PALA)

(continued)

Table 4 (continued)

Technology

- Versions for Windows and Macintosh
- Network version of software to allow use in school computer labs
- Student interface available to allow students to do own data entry
- Graphical presentation of both current and past test results

Notable Features

- Introduction of *ACTIVITYGRAM* module that included a 3-day physical activity recall and report of results
- Introduction of questions regarding activity levels for integration with fitness output

2005 (Version 8.0)**Sponsor / Partnerships**

- Continued partnership with AAHPERD and their Physical Best curriculum program
- Continued partnership with Human Kinetics to publish and distribute all *FITNESSGRAM* materials
- Continued cooperative arrangement with PCPFS and AAHPERD to promote the Presidential Active Lifestyle Award (PALA)

Technology

- Versions for Windows and Macintosh
- Use of SQL database engine
- Standalone version, Local Area Network version (school building) and Wide Area Network version (district server)
- Centralized database for network versions
- Greatly enhanced import and export capabilities
- Improved security features
- Data entry via a pocket PC module
- Teachers can select from the test items and order them on the input screen and on the score sheet for recording data

Notable Features

- Introduction of Activity Log module for entering pedometer steps per day or minutes of activity per day
 - Activity Log includes feature to allow teachers to develop customized incentive challenges for students and classes
 - New report specifically for parents explaining *FITNESSGRAM* test results
 - Modification in presentation of body composition information
 - New preprinted output forms for *ACTIVITYGRAM*
 - Access to *ACTIVITYGRAM* through the teacher application
 - Computerized long-term tracking report for *FITNESSGRAM* data
-

1997, sponsorship ended and FG was supported directly from product sales. The publication agreement with Human Kinetics has allowed FG to continue to grow the user base and to enhance and upgrade the software and reports.

As suggested above, data entry was initially conducted at CIAR in Dallas. Teachers completed “bubble” cards that were then scanned into the mini-mainframe computer that printed the FG report cards, which in turn were sent back to the teachers. By version 2.0, teachers could type in the data that was then printed out via an inline printer on forms that were purchased. Scantron forms for scanning data into the computer and the ability to utilize laser printers were the next innovations. Student input of data became an option with version 6.0. Now it is possible to input data directly from a pocket PC module.

Initially the only output that was available was the individual student report, the FG card. Gradually group statistical information became part of the output starting with version 3.0. Reports can now be generated for individual classes, schools, or districts. With version 8.0 it is possible to longitudinally track students graphically on each item with available data throughout their school career.

The sophistication of the PC software has always depended in large part on the sophistication of the available computers in the schools. At first that meant Apple technology in the form of IIe, IIgs, and Macintosh. By version 3.0 (1989) a DOS version was available and this evolved into Windows. Currently Macintosh and Windows versions are available. Networking versions that allowed use in school computer labs first became available in version 6.0. Version 8.0 is designed to enhance the use of assessments in school and district computer networks. Previous versions allowed multiple teachers to be linked in the same school. The latest version allows multiple schools to be linked within a larger school district. The use of unique individual, teacher, school, district, and state ID numbers will facilitate the use of this data for large-scale tracking and surveillance projects. Enhancements in the software also allow for more personalized monitoring of physical activity. An activity log now provides a calendar-type interface that allows youth to monitor and track their personal activity levels (using minutes or pedometer steps). Youth who meet the requirements for the PCPFS PALA award are automatically flagged within the software so that teachers can send requests to PCPFS for awards.

Conclusion

FITNESSGRAM/ACTIVITYGRAM represents an important innovation in the field of physical education/youth fitness. It is dedicated to providing the best possible physical fitness assessment, activity promotion, and feedback system for students, teachers, and parents to encourage lifelong physical activity and lifetime health-related physical fitness. Materials included in the Administration Manual and Technical Reference Guide are constantly updated based on physiological/epidemiological, behavioral, and pedagogical research to support these unchanging goals utilizing the latest technology. Therefore *FITNESSGRAM/ACTIVITYGRAM* will always be evolving—a work in progress.

References

1. Governor's Commission on Physical Fitness. *Texas Physical Fitness-Motor Ability Test*. Austin, TX: Author; 1972.

2. American Alliance for Health, Physical Education, and Recreation. *AAHPER Youth Fitness Test Manual*. Washington, DC: Author; 1976.
3. Lacy E, Marshall B. FITNESSGRAM: An answer to physical fitness improvement for school children. *JOPERD*. 1984; 55(1):18-19.
4. Razor JE. AAHPERD and a fit America. *JOPERD*. 1984; 55(6):54-60.
5. American Alliance for Health, Physical Education, Recreation and Dance. *AAHPERD Health Related Physical Fitness Test Manual*. Reston, VA: Author; 1980.
6. Park RJ. Measurement of physical fitness: A historical perspective. *ODPHP Monograph Series*. Washington, DC: U.S. Dept. of Health and Human Services; Public Health Service; 1988.
7. Kraus H, Hirschland RP. Muscular fitness and health. *JOHPER*. 1953; 24(10):17-19.
8. Kraus H, Hirschland RP. Minimum muscular fitness tests in school children. *Res Q*. 1954; 25:178-188.
9. American Association for Health, Physical Education, and Recreation. *AAHPER Youth Fitness Test Manual*. Washington, DC: Author; 1965.
10. Mood, D. Letter to Baumgartner T, Nelson J, Reuter M. 11/14/1972.
11. American Alliance for Health, Physical Education and Recreation. Youth fitness task force appointed by AAHPER. *Research Consortium Newsletter*. 1977 Oct; 2(2):1-2.
12. Plowman SA, Falls HB. How fit? And for what? AAHPER Youth Fitness Test revision. *JOPER*. 1978; 49(9):22-24.
13. Plowman SA, Falls HB. Fitness testing in the schools: Revision of the AAHPER Youth Fitness Test. In: Cundiff DE, ed. *Implementation of Aerobic Programs*. Washington, DC: AAHPER; 1979; 70-77.
14. American Alliance for Health, Physical Education, and Recreation. Task force on youth fitness. *Research Consortium Newsletter*. 1978 March; 3(1):1.
15. Falls HB. Task force on youth fitness. *Research Consortium Newsletter*. 1979 March; 4(1):1,3.
16. American Alliance for Health, Physical Education, Recreation and Dance. *AAHPERD Technical Manual Health Related Physical Fitness*. Reston, VA: Author; 1984.
17. Burke EJ. Letter to Kroll W. 7/11/1984.
18. Haymes E. Letter to Falls H. 6/26/1985.
19. Franks BD. Letter to Measurement and Evaluation Council, Physical Fitness Council, and Research Consortium Executive Committees. 6/01/1986.
20. Franks BD. Significant events in development of physical fitness test in AAHPERD. 6/24/1986.
21. Annarino A. Memorandum to Physical Fitness Test Manual Revision Committee: Harold Falls, Chairperson, Patty Freedson, Dennis Humphrey, Wendell Leimohm, Tim Lohman, James Morrow, Russ Pate, Sharon Plowman and Terry Wood. Re: Alliance Executive Committee Action—1985 PCPFS School Population Survey. 3/04/1986.
22. Franks BD. Letter to AAHPERD Executive Committee. 6/24/1986.
23. The President's Council on Physical Fitness and Sports. *Fitness testing and the Presidential Physical Fitness Award*. 4/1986.
24. Franks BD. Letter to Hayes AE. 4/06/1987.
25. Orr B. Memorandum to AAHPERD Board of Governors and Alliance Assembly Delegates. Preliminary 1986–87 budget. 3/14/1986.
26. Razor JE. Memorandum to Ciszek R. 5/22/1984.
27. Falls HB. Letter to Hayes A. 4/23/1986.
28. Franks BD. Letter to Physical Fitness Manual Revision Committee. 4/21/1986.
29. Lockhart BD. Letter to Franks BD, representing Research Consortium, ARAPCS Measurement & Evaluation and Physical Fitness Councils. Re: Fitness Test—AAHPERD and PCPFS. 6/14/1986.
30. Lockhart BD. Letter to “Persons interested in AAHPERD Youth Fitness Testing Program.” 8/22/1986.

31. Hayes A. *Corrected Task Force Report*. 10/16/1986.
32. Sterling CL. Letter to Haywood H. 10/30/1986.
33. Meredith MD. Personal communication (e-mail) to Plowman SA. 7/11/2005.
34. Falls H. Letter to individuals involved in writing the new AAHPERD Youth Fitness Manual. 12/08/1986.
35. Franks BD. Letter to Falls H. 2/26/1987.
36. Lockhard BD. Letter to Franks BD. 3/19/1987.
37. Sterling CL. Letter to Haywood H. 2/23/1987.
38. Minutes of FITNESSGRAM Meeting. Atlanta, GA. 3/9-10/1987.
39. Cooper Institute for Aerobics Research. *FITNESSGRAM Test Administration Manual*. Dallas, TX: Author; 1987.
40. Association for Research, Administration, Professional Councils, and Societies. AAHPERD Fitness Test Update. *ARAPCS Physical Fitness Council Newsletter*. 1987 Winter; 3(2):4.
41. American Alliance for Health, Physical Education, Recreation, and Dance. *Physical Best: The American Alliance Physical Fitness Education & Assessment Program*. Reston, VA: Author, 1988.
42. Sterling CL. Letter to Plowman SA. 12/20/1993.
43. The President's Council on Physical Fitness and Sports [homepage on the Internet]. Washington, DC: [cited 2005, July 27] The President's Challenge; Active Lifestyle Program. Available from: <http://www.presidentschallenge.org>
44. Pate R, editor. *South Carolina Physical Fitness Test Manual*. 2nd ed. Columbia: South Carolina Association for Health, Physical Education, Recreation and Dance; 1983.
45. Sterling CL. Testimony presented at President's Council on Physical Fitness and Sport Hearing on Youth Fitness. 10/14/1988. Dallas, TX.
46. Cureton, KJ, Warren GL. Criterion-referenced standards for youth health-related fitness tests: A tutorial. *Res Q Exerc Sport*. 1990; 61:7-19.
47. Cooper Institute for Aerobics Research. *The Prudential FITNESSGRAM® Test Administration Manual*. Dallas, TX: The Cooper Institute for Aerobics Research; 1992.
48. Morrow JR Jr, Falls HB, Kohl HWIII, editors. *The Prudential FITNESSGRAM® Technical Reference Manual*. Dallas, TX: Cooper Institute for Aerobics Research; 1994.
49. Welk GJ, Morrow JR Jr, Falls HB, editors. *FITNESSGRAM® Reference Guide*. Dallas, TX: The Cooper Institute; 2002. Available at: <http://www.cooperinst.org/ftgrefintro.asp>. Accessed 7/19/2005.
50. Meredith MD, Welk GJ, editors. *FITNESSGRAM®/ACTIVITYGRAM® Test Administration Manual*. Champaign, IL: Human Kinetics; 2004.
51. Corbin CB, Lindsey R. *Fitness for Life*. 5th ed. Champaign, IL: Human Kinetics; 2005.
52. Minutes of the Prudential FITNESSGRAM® Advisory Council. Jackson Hole, WY. 6/15/1995.
53. Cooper Institute for Aerobics Research. *FITNESSGRAM® Test Administration Manual*. 2nd ed. Champaign, IL: Human Kinetics; 1999.
54. Weston AT, Petosa R, Pate RR. Validation of an instrument for measurement of physical activity in youth. *Med Sci Sports Exerc*. 1997; 29:138-143.
55. Corbin CB, Lindsey R. *Fitness for Life*. 4th ed. Champaign, IL: Human Kinetics; 1995.