8. Test Item Descriptions

P.A.C.E.R.

The **P.A.C.E.R** (Progressive Aerobic Cardiovascular Endurance Run) a paced, 20-meter shuttle run that is set to music and is increasing in intensity as time progresses. The P.A.C.E.R. is a multi-stage 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—easier at the beginning and more difficult at the end.

Test Objective

The objective of the test is to run as long as possible back and forth across a 20-meter space[2] at a specified pace that gets faster each minute. The purpose of the test is to measure cardio-respiratory or aerobic endurance (VO_2 max). The P.A.C.E.R. is a good indicator of the ability of the circulatory and respiratory systems to supply oxygen to functioning muscles, in other words the capacity to perform activities using large muscle groups over an extended period of time. The importance of cardiorespiratory fitness lies in the fact that heart disease is a leading cause of death in our society.

Equipment and Facilities

- Stopwatch.
- Accurately measured 20-meter distance on a non-slippery and flat surface free of debris (see Appendix C). A 15-meter course may be substituted if necessary (be sure to apply standards for 15-meter test).
- A device with sufficient volume and a digital copy of the cadence (i.e., downloaded mp3 [or similar] file or CD copy).
- Measuring tape, marker cones, pencils, copies of score sheets (found in the appendix).

Test Preparation for Students

Students should receive ample instruction on pacing and practice in running for distance. Emphasis should be placed on developing the fastest pace that can be sustained for the full distance covered.

When to Stop

The first time the student does not reach the line by the beep, the student stops where he/she is and reverses direction immediately, attempting to get back on pace. The test is completed for a student the next time (second time) he/she fails to reach the line by the beep. The two corrections do not have to be consecutive; the test is over after two total corrections. Students completing the test should continue to walk and stretch in a designated cool-down area. A student who remains at the end of the testing area through two beeps (does not run to the other end and back) should be scored as having two corrections, and therefore, their test is over.

Scoring

A lap is one 20-meter distance (from one end to the other). The scorer records the lap number by crossing off the corresponding lap number on the P.A.C.E.R. score sheet (Appendix C1).

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[2] A 15-meter version of the test can be used by teachers with smaller-sized facilities. Specifications for the 15-meter version are included in the appendices.

The recorded score is the total number of laps completed by the student.

Laps with form corrections (laps not completed by the next beep) are not considered correctly performed and should not be counted in the student's number of completed laps.

For test management purposes within the time constraints of class schedules, it is suggested that the duration of the P.A.C.E.R. test be limited to 20 minutes.

Important:

Schools should administer either the P.A.C.E.R. or the Mile Walk/Run, not both. While schools may change the aerobic capacity (**VO_2 max**) assessment they administer from year to year, they must use a single assessment for administration during a school year (no switching within a school year).

One-Mile Run/Walk

Test Objective

The objective of the test is to cover the distance of one mile in as short a time as possible. The purpose of the test is to measure cardiorespiratory or aerobic endurance. The one-mile run/walk is a good indicator of the ability of the circulatory and respiratory systems to supply oxygen to functioning muscles, in other words the capacity to perform activities using large muscle groups over an extended period of time. The importance of cardiorespiratory fitness lies in the fact that heart disease is a leading cause of death in our society.

Equipment and Facilities

- Stopwatch.
- Accurately measured mile on a level surface (see Appendix B).

Test Preparation for Students

Students should receive ample instruction on pacing and practice in running for distance. Emphasis should be placed on developing the fastest pace that can be sustained for the full distance covered. A warm-up time should precede the test.

Test Performance

Students are instructed to run/walk one complete mile in the fastest time possible.

Scoring

Record the minutes and seconds it takes for each student to complete the distance of one mile.

Important:

Schools should administer either the P.A.C.E.R. or the Mile Walk/Run, not both. While schools may change the aerobic capacity (**VO_2 max**) assessment they administer from year to year, they must use a single assessment for administration during a school year (no switching within a school year).

Back-Saver Sit-and-Reach

Test Objective

Maintaining adequate joint flexibility is important to overall health. Testing one leg at a time helps to identify any asymmetry in hamstring flexibility while avoiding hyper- extension of both knees. The purpose of the sit-and-reach test is to measure predominantly the flexibility of hamstring muscles. Normal hamstring flexibility allows rotation of the pelvis in forward bending movements and posterior tilting of the pelvis for proper sitting. The objective of the test is to reach the specified distance on the right and left sides of the body.

Equipment

The back-saver sit and reach test requires a 12" x 12" x 12" box, with a measuring scale placed on the top of the box that extends toward the student. The 9-inch mark on the scale is 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 (See Appendix D for box specifications). Makeshift apparatuses are permitted as long as the 9-inch mark of the ruler is at the edge and the 'zero' is toward the student.

Test Description

Testing one leg at a time, students sit with one knee bent (with that foot flat on the floor) and one leg straight, with the foot of the straight leg against the box. The student then reaches forward with both hands to the farthest point he/she can reach on the measuring scale.

Starting Position

The student sits facing the box without shoes. The foot line is at 9 inches, with the zero end of the measuring device closest to the student. One leg is extended, with the foot placed flat against the end of the box. The other knee is bent, with the sole of the foot flat on the floor. The instep is positioned in line with, and 2 to 3 inches to the side of the straight knee. The knee of the extended leg should remain straight and the hips must remain square to the box.

Test Performance

The arms are extended forward over the measuring scale with hands placed one on top of the other. With palms down, the student reaches directly forward (keeping back straight and head up) with both hands along the scale four times and holds the position of the fourth reach for at least one second. 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 half-inch reached, to a maximum of 12 inches. To achieve the Health Fitness Zone, the student must meet the standards on both the right and left sides.

90° Push-Ups

Test Objective

The purpose of this test is to measure upper-body strength and endurance. The right-angle, or 90°, push-up is recommended as a test of upper-body strength and endurance. Muscle fitness is required for people of all ages in order to perform daily living and recreational activities with vigor and undue fatigue. The objective of the test is to complete as many 90° push-ups as possible at a specified pace.

Equipment

- It is necessary to acquire or prepare a recording of a consistent cadence of one push- up every three seconds (1.5 seconds up and 1.5 seconds down). A cadence recording of two minutes will allow the completion of 40 push-ups (See Appendix G for cadence recording instructions).
- A right-angle marker (See Appendix E for instructions).
- Push-ups may be performed on a mat.

Test Description

Measuring upper body strength and endurance, students lower the body to a 90° elbow angle and push up. Set to a specified pace, students complete as many repetitions as possible.

Starting Position

- The student assumes the prone position (face down).
- Hands are placed slightly wider than shoulder width with fingers stretched out.
- Legs are straight and parallel.
- Feet cannot be resting against an object.
- The back is straight.
- The head is positioned so the student is looking slightly in front of his or her hands.

Pre-Test Observation/Marking

Have students lower themselves to the appropriate right-angle position. This allows the student to feel and the teacher to sight the correct position. The use of a right-angle marker, set in front of the student's elbow as a guide, allows for a more accurate sighting (position will vary for each student).

Test Performance

The test begins in the up position.

The test administrator starts the cadence and signals the students to begin. Students may continue until they wish to stop or have made two form corrections.

Students begin performing push-ups according to the cadence. The correct push-up is performed to a pace of one complete push-up every three seconds (1.5 seconds down and 1.5 seconds up, with no hesitation). Push-ups are continuous, with the muscles in a constant state of contraction and no resting. Emphasis is placed on the arm and shoulder muscles remaining engaged throughout the assessment.

Scoring
Record the total number of correctly performed push-ups. One complete push-up begins and ends in the up, or straight-arm, position.

Incorrect push-up performance, referred to as a form correction, includes:

- arching or sagging of the back;
- not achieving the right angle at the elbow during the down phase;
- not achieving the straight arm position during the up phase;
- knees touching the floor; or
- being off cadence.

The test is terminated when the student has any two corrections.

Push-ups with form corrections are not considered correctly performed and should not be counted in the number completed by the student.

Curl-Ups

Test Objective

The partial curl-up measures abdominal strength and endurance. Abdominal fitness is important to good health because low levels are associated with bad posture and lower back pain in later years. The test objective is to complete as many curl-ups as possible up to a maximum of 75 at a specified pace.

Equipment

It is necessary to prepare or secure an audiotape or use a consistent cadence of one curl-up every three seconds (1.5 seconds up and 1.5 seconds down), which is 20 curl-ups per minute. A cadence recording of 3 minutes will allow the completion of 60 curl-ups. (See Appendix G for cadence recording instructions.)

- A gym mat and a measuring strip are needed for every two students. The strip may be made of cardboard, tape, rubber, smooth wood, or any similar thin, flat material, and should be 30-35 inches long. For 5-9 year olds, a 3-inch wide strip is required. For 10 year olds and up, the strip should be 4.5 inches wide. (See Appendix F for curl-up strip specifications.)
- A piece of paper, 8.5 X 11 inches, is also required.

Test Description

Measuring abdominal strength and endurance, students lie down in a supine position with knees bent and feet unanchored flat on the floor. The knees and feet should be slightly apart and arms straight and parallel to the trunk with palms of hands resting on the mat. After the student has assumed this position, a partner is to place the measuring strip on the mat under the tested partner's legs so that the fingertips are just touching the nearest edge of the strip. The shoulders should be relaxed and un-hunched before the strip is placed. The partner also places a piece of paper under the tested partner's head. This is to provide an easily observable touching of the head to the mat on each repetition, as the paper will make a crinkling sound when the back of the head contacts it.

Set to a specified pace, students complete as many repetitions as possible to a maximum of 75 at the specified pace/cadence.

Test Performance

The student assumes the starting position. The test administrator starts the cadence and signals the student to begin.

Keeping heels in contact with the mat, the student is to curl up slowly, sliding fingers across the measuring strip until fingers reach the other side. Then the student uncurls until the head crinkles the paper on the mat. Movement should be slow and gauged to the audible cadence of 20 curl-ups per minute, or one curl-up every three seconds.

Scoring
The score is the total number of correctly performed curl-ups within the time limit. A curl-up is complete each time the student's head returns to the mat.

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 both sides of the measuring strip for a completed repetition.

The test is terminated when the student has performed any two corrections.

Curl-ups with form corrections are not considered correctly performed and should not be counted in the number completed by the student.

Standards for Health-Related Fitness Zones

I = Needs Improvement Zone *(does not meet health-related standard)*
F = Health Fitness Zone *(meets health-related standard)*
H = High Fitness Performance Zone *(exceeds health-related standard)*

Boys

Age	20-meter PACER			15-Meter PACER			One-Mile Run/Walk			Sit-and-Reach			90^0 Push-Ups			Curl-Ups		
Zone	I	F	H	I	F	H	I	F	H	I	F	H	I	F	H	I	F	H
8	0-22*	23-61*	>61*	0-29*	30-80*	>80*	>12:30*	12:30-10:00*	<10:00*	0-7	8		0-4	5-13	>13	0-5	6-20	>20
9	0-22*	23-61*	>61*	0-29*	30-80*	>80*	>12:00*	12:00-9:30*	<9:30*	0-7	8		0-5	6-15	>15	0-8	9-24	>24
10	0-22	23-61	>61	0-29	30-80	>80	>11:30	11:30-9:00	<9:00	0-7	8		0-6	7-20	>20	0-11	12-24	>24
11	0-22	23-72	>72	0-29	30-94	>94	>11:00	11:00-8:30	<8:30	0-7	8		0-7	8-20	>20	0-14	15-28	>28
12	0-31	32-72	>72	0-41	42-94	>94	>10:30	10:30-8:00	<8:00	0-7	8		0-9	10-20	>20	0-17	18-36	>36
13	0-40	41-83	>83	0-53	54-108	>108	>10:00	10:00-7:30	<7:30	0-7	8		0-11	12-25	>25	0-20	21-40	>40
14	0-40	41-83	>83	0-53	54-108	>108	>9:30	9:30-7:00	<7:00	0-7	8		0-13	14-30	>30	0-23	24-45	>45
15	0-50	51-94	>94	0-66	67-123	>123	>9:00	9:00-7:00	<7:00	0-7	8		0-15	16-35	>35	0-23	24-47	>47
16	0-60	61-94	>94	0-79	80-123	>123	>8:30	8:30-7:00	<7:00	0-7	8		0-17	18-35	>35	0-23	24-47	>47
17	0-60	61-106	>106	0-79	80-138	>138	>8:30	8:30-7:00	<7:00	0-7	8		0-17	18-35	>35	0-23	24-47	>47
17+	0-71	72-106	>106	0-93	94-138	>138	>8:30	8:30-7:00	<7:00	0-7	8		0-17	18-35	>35	0-23	24-47	>47

Girls

Age	20-meter PACER			15-Meter PACER			One-Mile Run/Walk			Sit-and-Reach			90^0 Push-Ups			Curl-Ups		
Zone	I	F	H	I	F	H	I	F	H	I	F	H	I	F	H	I	F	H
8	0-6*	7-41*	>41*	0-8	9-54*	>54*	>12:30*	12:30-10:00*	<10:00*	0-8	9		0-4	5-13	>13	0-5	6-20	>20
9	0-6*	7-41*	>41*	0-8	9-54*	>54*	>12:30*	12:30-9:30*	<9:30*	0-8	9		0-5	6-15	>15	0-8	9-22	>22
10	0-6	7-41	>41	0-8	9-54	>54	>12:30	12:30-9:30	<9:30	0-8	9		0-6	7-15	>15	0-11	12-26	>26
11	0-14	15-41	>41	0-18	19-54	>54	>12:00	12:00-9:00	<9:00	0-9	10		0-6	7-15	>15	0-14	15-29	>29
12	0-14	15-41	>41	0-18	19-54	>54	>12:00	12:00-9:00	<9:00	0-9	10		0-6	7-15	>15	0-17	18-32	>32
13	0-22	23-51	>51	0-29	30-67	>67	>11:30	11:30-9:00	<9:00	0-9	10		0-6	7-15	>15	0-17	18-32	>32
14	0-22	23-51	>51	0-29	30-67	>67	>11:00	11:00-8:30	<8:30	0-9	10		0-6	7-15	>15	0-17	18-32	>32
15	0-31	32-51	>51	0-41	42-67	>67	>10:30	10:30-8:00	<8:00	0-11	12		0-6	7-15	>15	0-17	18-35	>35
16	0-31	32-61	>61	0-41	42-80	>80	>10:00	10:00-8:00	<8:00	0-11	12		0-6	7-15	>15	0-17	18-35	>35
17	0-40	41-61	>61	0-53	54-80	>80	>10:00	10:00-8:00	<8:00	0-11	12		0-6	7-15	>15	0-17	18-35	>35
17+	0-40	41-72	>72	0-53	54-94	>94	>10:00	10:00-8:00	<8:00	0-11	12		0-6	7-15	>15	0-17	18-35	>35

*Indicates experimental performance standard, based on expert opinion

6/11/09