

P. A. C. E. R.

Progressive Aerobic Cardiovascular Endurance Run

Manual



About the PACER

The Progressive Aerobic Cardiovascular Endurance Run (PACER) is a multistage shuttle run created by Leger and Lambert in 1982. The PACER is designed to measure aerobic capacity, which is characterized by endurance, performance, and fitness. The objective of the PACER is to run as long as possible while keeping a specified pace. Students run back and forth across a 20-meter space at a pace that gets faster each minute. A point is scored for each 20-meter distance covered. The test is easier in the beginning but progressively gets more difficult. In comparison to distance running, the PACER is a more effective, fun, and easy way to measure aerobic capacity that encourages participation from all youth and is relatively easy to score and administer.

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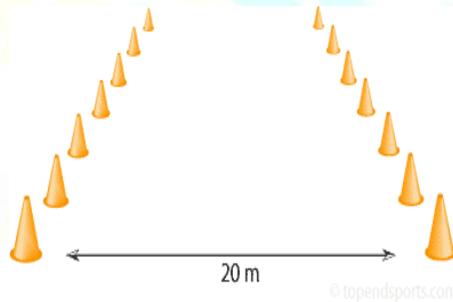
The Basics

What will I need?

- 20 meters of open space
- Marker cones and/or tape
- Measuring tape
- PACER CD
- CD player
- Copies of the score sheet
- Pen/pencil
- A designated cool-down area with water

Setup:

- Use tape or cones to mark two parallel lines, 20 meters apart.



- Divide students into small groups or pairs

Quick Tip

It's a good idea to practice the PACER 1 or 2 times before the administration of the test. The students will feel more comfortable with the process, and there will be less confusion on test day!

Procedure

Step 1: Make sure that the 20-meter course is marked with cones and tape and each of the lanes are divided.

Step 2: Ensure that you have enough copies of either the group administration score sheets or the individual score sheets.

Step 3: Review the PACER instructions with the students. See sample script on page 6.

Step 4: Instruct the first group of students to stand at the **START** line.

Step 5: Begin the CD and listen for the word **START**, this signifies that the test has begun and the students should be running.

★ *Walking is permitted as long as the student maintains the “pace.”*

Step 6: Students will run from the **START** line to the **END** line and touch the **END** line with their foot before the **BEEP** sounds on the **CD**.

Step 7: At the sound of the **BEEP** the students must turn around and run back to the other end.

★ *If students reach the line before the beep sounds, they must wait at the line until they hear the beep and then run back to the other end.*

Step 8: When the **TRIPLE BEEP** sounds students should turn around and run to the other end whether they are at the line or not. The only difference between the **BEEP** and the **TRIPLE BEEP** is that the **TRIPLE BEEP** sounds at the end of each minute and also alerts students that the pace will increase.

Step 9: Students continue running back and forth from the **START** line to the **END** line until they have completed the PACER or they have had two misses.

★ *If the students fails to reach the line by the time the **BEEP** sounds then that is counted as a miss. If a student has achieved two misses then they have completed the PACER and should go to the cool-down area. Please refer to page 7 for scoring instructions.*

Step 10: Thank and praise the students for their participation and then instruct the students to continue to walk and stretch in the designated cool-down area after they finish.

Procedure (cont.)

When to Stop the PACER

Scenario One:

The **first** time a student does not reach the line by the **BEEP**, the student **stops** where he or she is and **reverses direction**, heading back toward the opposite line. The **second** time he or she fails to reach the line by the **BEEP**, the test is complete.

★ *After two times where the individual fails to reach the line by the beep the test is complete. The two failed attempts to reach the line do not need to be consecutive.*

Scenario Two:

If a student remains at one end through **TWO BEEPS** the test is complete and the student goes to the cool-down area.

Procedure (cont.)

Important points to cover when providing instructions for the PACER:

- *Remind students that the PACER is not a race.*
- *Inform students that they should turn around immediately after they hear a beep whether it is a triple beep or a single beep.*
- *Make sure that students understand the difference between a triple beep and a single beep.*
 - *Triple beep means that the speed is going to increase*
- *Remind students that if they reach the line before the beep then they should wait behind the line until they hear the beep.*
- *Be sure to remind students that if they do not reach the line before the beep sounds the second time that they should go towards the cool-down area.*
- *It will be helpful to play the cd for students so they are familiar with the instructions and the tones.*
- *Refer to the sample script on page 8 for an example of how to incorporate these points, when you are instructing your students on the PACER.*

Sample Instructions Script

“Hello Students! Today we are going to do some running; this is not a race. We want to see how long you can run:

“First: At the sound of the beep, you will run to the other end of this distance. Make sure when you get to the other end, you stand behind the line.”

- Ask the students “What do you do at the sound of the beep?”

“Then when you hear the beep again, I want you to run back to the opposite side and wait behind that other line.”

- Ask the students “What do you do at the sound of the beep?”

(PLAY THE CD FOR THE STUDENTS TO LISTEN TO, NOTING THE TRIPLE BEEP.)

“Did everyone hear the triple beep? That means the pace will get faster and you will have to run faster to get to the other side before the beep sounds again.”

- Ask the students “What do you do when you hear the triple beep?”
- Ask the students, “What does the triple beep mean?”

“Two things to remember: 1) First, if you do not reach the line by the time the beep sounds, stop where you are, turn around and run back to the opposite line. This gives you a chance to try to get back on pace. 2) But, if you do not reach the line by the time the beep sounds a second time, you’re done! You should walk to the cool down area and get some water.”

- Ask the students “What do you do if you don’t make it to the line before the beep one time?”
- Ask the students “What do you do if you don’t make it to the line before the beep two times?”

Scoring

★ *Remember: One “lap” is one 20-meter distance*

Scoring for Individual Administration

- ✓ The scorer crosses off the lap number on the PACER score sheet that the student has completed.
- ✓ If the student fails to reach the line before the beep, the scorer places a circle around the lap number. This counts as one “miss”.
- ✓ If the child fails to reach the line before the beep the second time, another circle is placed around the lap number that was not completed. This will be counted as the second “miss”. After “two misses” the child has completed the test.
- ✓ DO NOT continue to score after the child has two misses.
- ✓ The number of completed laps is the student’s score on the PACER. The total score will be the number of laps completed before the “second miss”.
- ✓ See figure 1.1 for an example

Scoring for Group Administration

- ✓ There should be a ratio of no more than 2-3 children per scorer.
 - If the children are older, you can have them pair up and score each other.
- ✓ If there are multiple score keepers, they should stand in the middle of the area where the PACER is being conducted, so that they will be able to see when the student crosses the line. Each scorekeeper should score the two or three children that are the closest to them so that they will be able to see when each child crosses the line.
- ✓ If one student fails to reach the line before the beep, the scorer places a mark such as a star, next to the student’s name. This counts as one “miss”.
- ✓ The second time the child fails to reach the line before the beep, the last completed lap is recorded. For example fails to reach the line on lap 3, lap 2 is recorded on the score sheet
- ✓ See Figure 1.2 for an example.
- ✓ Continue to mark the laps for each remaining student until they have achieved “two misses”.
- ✓ DO NOT continue to score after the child has failed to reach the line before the beep twice (i.e., if the child has two misses.)

Sample Score Sheets

The circles mean that the student did not make it to the line before the beep.

The lines signify that the laps were completed.

Figure 1.1 Individual Score Sheet

Min	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	

Lane	Student name	Laps completed
1	Jessica Karle	7

Michael missed the beep at lap 10, but he is not done with the PACER because he only had one miss.

Figure 1.2 Group Score Sheet

Sandy missed the beep at lap 6 and lap 15. So the number of laps completed is 14.

Min	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	

Lane	Student name	Laps completed
1	*Sandy Lewis	14
2	*Michael Gonzales	

* Means that the student missed a lap

What do the PACER scores mean?

The scores on the following graph represent the health norms for individuals aged 10-17, organized by gender, based on the number of laps completed in a 20 meter PACER. The **Low End Score** represents the minimal level of fitness that could provide health benefits, if maintained into adulthood. The **High End Score** is the point where an increase in fitness no longer contributes significantly to further health benefits. .

Health Norm Ranges for the PACER for ages 10-17+

Age	Boys		Girls	
	Low end	High end	Low end	High end
10	23	61	7	41
11	23	72	15	41
12	32	72	15	41
13	41	83	23	51
14	41	83	23	51
15	51	94	32	51
16	61	94	32	61
17	61	106	41	61
17+	72	106	41	72

Developmental Considerations

Special Considerations for Use with Children aged 5-9

The PACER setup will be the same for all ages, but there are some adjustments to consider in administration and scoring with younger children.

Administration

- ✓ An adult should participate in the PACER with the child/children (i.e. an adult runs the 20 meters with the child)
- ✓ The children can continue to participate in the PACER as long as they want. However after the “second miss” the scorer must discontinue scoring.
- ✓ The instructions to younger children should be simple and specific. See example on page 11.

Scoring

- ✓ The scorer crosses off the lap number on the PACER score sheet as the child completes each lap.
- ✓ Circle missed laps if they fail to reach the line by the beep.
- ✓ After the second “miss” the child can continue to participate, but the scorer no longer needs to keep track of completed laps.

Sample Instructions Script for Younger Children

“Hello Students! Today we are going to do something really fun! We are going to do some running, but it’s not going to be a race. We just want to see how long you can run.

Don’t worry. Ms./Mr. _____ will be running with you.

Now I want you guys to listen carefully because there are some rules!

Rule number one, when you hear the beep you will start to run right next to Ms./Mr. _____. When you get to the other end wait behind the line.

- Ask the students “what do you do at the sound of the beep?”

“Then when you hear the beep again, I want you to run back to the other side and wait patiently behind the line.”

- Ask the students “what do you do at the sound of the beep?”

(PLAY THE CD FOR THE STUDENTS TO LISTEN TO, NOTING THE TRIPLE BEEP.)

“Did everyone hear the triple beep? That means you will run a little faster but still right next to Ms./Mr. _____ .

- Ask the students, “What do you do when you hear the triple beep?”
- Ask the students, “What does the triple beep mean?”

“Ok now if you don’t reach the line by the time you hear the beep I want you to turn around and go run right back to the opposite line. Don’t worry.

Ms./Mr. _____ will be helping you. Okay. Let’s practice.”

- Ask the students, “What do you do if you don’t reach the line by the beep?”

Frequently Asked Questions

Where can I get the materials needed for the PACER?

Project RISE will provide these materials for you. Just go to www.nova.edu/projectrise to request materials!

Can I use the 15-meter version of the PACER?

No. We are using the 20-meter version of the PACER.

What do I do after the triple beep?

The triple beep simply indicates that the pace will increase, there is no scoring involved.

What do I do after the first miss? How do I score that?

After the first miss, place a circle around the missed lap if scoring an individual or a star by the students' names if scoring a group of children. The children continue to participate in the PACER after the first miss. Please refer to pages 3, 7, or 8 for more detailed instructions.

What if the child does not make it to the line before the beep sounds?

Then it is scored as a "miss". If this is the second time that this has happened then the child should discontinue the PACER and the last lap completed should be written as the child's score.

What do I do after the second miss? How do I score that?

After the second miss, the child discontinues the PACER and goes to the designated cool-down area. The last completed lap will be the child's score. Please refer to pages 7-8 for examples and further instructions.

What if I don't have the space to conduct the PACER?

Keep in mind that the PACER can be conducted both indoors and outdoors, so there is some flexibility in where the test can be conducted. If do not have sufficient space contact Project RISE.

Do I really need to do a practice day?

*A practice run of the PACER is **highly** recommended! The practice will not only help you to identify places for improvement but also the children get used to the process. We have found that providers who do not have a practice day have many more problems with administering and scoring the PACER.*

What if I have younger kids? Is there a different procedure?

Yes, the administration and the scoring will be a different. Please refer to page 10 for more detailed instructions.

Help! I can't keep the kids focused on the task. What do I do?

There are few suggestions for this dilemma:

- *If the kids are older then you can have them pair up and score each other.*
- *Make sure that there is enough staff involved in the PACER. If this suggestion is not feasible then have small groups of children participate in each PACER trial where there is a ratio of at least one staff member to every three children.*

How can I get in touch with Project Rise?

Phone: (954) 262-5756

Toll-free: (800) 541-6682 ext. 25756

E-mail: ProjectRISE@nova.edu

Website: www.nova.edu/projectrise

Where do I find the forms online?

The forms are located on www.nova.edu/projectrise under Evaluations. After you click the Evaluations tab, click Program Outcomes scroll down until you see PACER continue scrolling until you reach the bottom of the page, where you will see copies of the score sheets.



Appendices

PACER Individual Form	18
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All forms in the appendices can be found online at www.nova.edu/projectrise

Comment [1]: Should be changed when the new page for Downloadable documents is created

The PACER Individual Score Sheet

Score-keeper: _____ Group: _____ Date: _____

Laps (20-meter lengths)

<i>Min</i>	<i>Laps</i>													
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	142	144	
15	145	146	147	148	149	150	151	152	153	154	155	156	157	

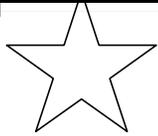
<i>Lane</i>	<i>Student name</i>	<i>Age</i>	<i>Laps completed</i>

Office use: Circle:

- Pre-test
- Mid-test
- Post-test

Student age: _____

Adapted from FITNESSGRAM/ACTIVITYGRAM Test Administration Manual, Fourth Edition by the Cooper Institute, 2005, Champaign, IL: Human Kinetics.



Congratulations on Completing the PACER!!



This certifies that

Has successfully completed the Progressive Aerobic Cardiovascular Endurance Run (PACER) and has demonstrated an exceptional commitment to fitness.

Signature: _____

Date: _____

