

Physical Fitness along the Natchez Trace Parkway



On-Site Lesson:

Your Target Heart Rate Zone (Code:PEHS)

- ▶ **Grade:**
9th – 12th Grades
- ▶ **Subject Areas:**
Physical Education
- ▶ **Setting:**
Scenic Trail
- ▶ **Duration:**
60 Minutes
- ▶ **Skills:**
Intermediate Math
Cross Country
Training
- ▶ **TN Objectives:**
1.2.6, 2.1.1, 2.1.4,
2.1.6, 3.1.3, 4.1.9,
4.2.7, 4.2.14,
6.1.1, 6.1.2
- ▶ **Vocabulary:**
Heart Rate
Maximum Heart
Rate
Target Heart Rate
Zone

Summary: Students will be put through a jog on a nature trail of the parkway and learn the importance of stretching and exercising in their target heart rate zone.



Materials Needed: Notebook, Pen or Pencil, Stopwatch or Wristwatch (optional), Students should be wearing gym clothes and appropriate shoes. Worksheet for each student.

Instructional Information

TN Objectives: 1.2.6 Demonstrate competency in the basic skills of adventure/outdoor education activities. 2.1.1 Understand and identify safety procedures. 2.1.4 Define skill-related physical fitness. 2.1.6 Understand the importance of a proper warm-up and cool-down to avoid injury and enhance physical performance. 3.1.3 Engage in proper warm-up and cool-down procedures. 4.1.9 Identify resting, maximum, target and recovery heart rate. 4.2.7 Differentiate health-related and skill-related physical fitness. 4.2.14 Differentiate low, moderate, and high intensity exercises (e.g., low – 60% of maximum heart rate, moderate 70-75% of maximum heart rate, 80-90% of maximum heart rate). 6.1.1 Identify positive aspects of participation in various physical activities. 6.1.2 Appreciate participating in individual and/or group physical activities.

Learning Objectives: The students will be able to: Determine their pulse, maximum heart rate (MHR), and target heart rate (THR) zone, and gain an understanding of what it is like to exercise at their own THR and the importance of doing so.

Teacher Set: The students will determine their pulse and record their data. Then, the students will determine their MHR. After determining their

MHR, each student will determine their THR zone by using their MHR and record their data. The students will then be put through a mild stretching exercise. Finally, the students will then participate in a jog along the trail to the end of the trail or to a designated stopping point along the trail. The teacher will follow along behind the students by walking, unless the teacher would like to jog as well, to make sure everyone participates. The teacher should also encourage those who have fallen behind in the jog to keep continuing. Upon finishing the jog, the students will now check their pulse and determine if their heart rate is in their THR zone. The teacher should walk the trail or course before admitting students on the trail or course to determine if they feel it is a safe and desired site for the activity and remind the student of trail safety regulations. For more information call the Natchez Trace Parkway at 1-800-305-7417 or log online to www.nps.gov/natr

Teacher Overview: See Teacher Information Sheet.

Student Instruction: The teacher will tell the students that they will each determine their own pulse, or heart rate, their predicted maximum heart rate, and their target heart rate zone. The

teacher will then discuss what each briefly are and their importance in exercising. The teacher should then tell the students that they will be go on the trail for a jog but first they will be put through a light stretch to loosen themselves up. The teacher should discuss the general importance of stretching before exercising. After stretching the students will now go on the jog, at their own pace, along the desired trail or designated course. When asked by the students how hard do they need to run, a good idea for the teacher to tell the students that if they can jog and comfortably talk at the same time then they are not jogging hard enough, and if they get out of breathe very quickly then they are running too hard.

Student Task: The students will use a sheet of paper from their notebook to put their name, and other required identifying information on it. They should then be asked if they already know how to find their pulse, or heart rate. At this time the teacher will help those students who do not, find their pulse. They will then be asked to count the number of pulses while the teacher takes the stopwatch, or wristwatch, and counts off 15 seconds. The students should then take the number of pulses and multiply by four. On the sheet of paper they will write down that information. After the students have finished, the teacher should now discuss what the MHR is and its importance and give the students the formula to find their predicted MHR. The students will also figure out what their own MHR is and record that information on their sheet of paper. After doing so, the teacher will define what the THR zone is and its importance to exercising. The teacher will instruct the students how to find their THR zone by using their MHR. The students will then record that information on to their sheet of paper. The students will now be put through some light stretches led by the teacher that the teacher has chosen, preferably from the “Teacher Information Sheet”. The students will then be told to carefully jog the trail or course, designated by the teacher, and at there on pace, but it must at least be a mild jog. Also before they begin their jog, they should be instructed as to where to the jog will end and that upon finishing they will then calculate their heart rate again by checking their pulse the same way they first calculated their heart rate, but they will be doing so on their own by counting off fifteen seconds this time, and to record that information on their sheet of paper and note to themselves if their recently checked heart rate is within their THR zone.

For additional math practice, and for the sake of “keeping the students in check”, the teacher may instruct the students to calculate what percentage their heart rate is out their MHR after they are finished with the jog and calculating their second heart rate.

Teacher Closure: The teacher should have everyone to take a moment to catch there breathe. The students should now be asked if their recently measured heart rate was within their THR zone. If their heart rate was within their THR zone, then inform the students that they exercised within that zone. The teacher can now discuss with the students what it was like to exercise in their THR zone, if they were able to reach it. If they were not able to do so, inform them that they now will have some understanding of what it would be like to exercise in their target zone. The teacher should remind the students of the importance of exercising and doing so in their THR zone. Then, the teacher should also remind the students that they need to have all information on their sheet of paper.

Student Assessment: The students will be evaluated on their participation in the calculations of the various heart rates as well as the period of stretching and jogging.

Suggestions for re-teaching: The teacher can make sure that the students know that the overall idea of the lesson was the importance of training in their THR zone. Review the idea when the students are assigned to other types of exercises. The students can take this knowledge and apply it to anytime they workout or exercise on their own.

Extension: It may be a good idea for the teacher to have the students pair off with someone who they feel will is in about the same shape as they are or will keep the same pace as they do. This way no one will be on a section of the trail alone.

Teacher Information:

Determining Pulse or Heart Rate

Your pulse is your heart rate, or the number of times your heart beats in one minute. Pulse rates vary person to person. Your pulse is lower when you are at rest and increases when you exercise. Determining one's pulse can help determine and evaluate an effective exercise plan for every person.

How to Determine Pulse

1. Place the tips of your index and second fingers on the palm side of your other wrist, below the base of the thumb. Or, place the tips of your index and second fingers on your lower neck, on the side of the windpipe, preferably on the same side of the neck as the hand in which you are using.
2. Press lightly with your fingers until you feel the blood pulsing beneath your fingers. You might need to move your fingers around slightly up or down until you feel the pulsing.
3. Count the beats you feel for 15 seconds. Multiply this number by four to get your heart rate (pulse) per minute.

Determining Maximum Heart Rate (MHR)

The maximum heart rate is the highest your pulse rate can get before being at a risk. To calculate someone's predicted maximum heart rate, which is what you will use to save time, use this formula:

$$220 - \text{One's Age} = \text{Predicted Maximum Heart Rate}$$

Example: a 20 year old person's predicted maximum heart rate is 200 beats per minute.

This is only a predicted maximum heart. If someone has a heart condition, their maximum heart rate may be significantly lower than the average person. Be cautious to putting these people through a lot of physical activity.

Determining Target Heart Rate (THR) Zone

The most benefits in exercising are gained when training in the target heart rate zone. Usually this is when your exercise heart rate (pulse) is 50 percent to 80 percent of your maximum heart rate. The body burns a large number of calories at this time and the majority of them are all fat calories. It is not advised to train above 85% of your maximum heart rate. This increases both cardiovascular and orthopedic risk and does not add any significant extra benefit. Only do so if you are in great shape or have been told to do so by a doctor.

To determine your target heart rate zone take the MHR and multiply by .50 and then multiply the MHR by .80. These two figures will now establish the boundaries for one's THR zone. A calculator will probably come in handy at this time.

Example: A 20 year old person's MHR is 200 beats per minute. Their target heart zone will be 100 to 160 beats per minute.

Stretching and Its Importance

Stretching is very crucial before and after any work out. Stretching before a workout fights off any unnecessary muscle strain, cramping, or other damaging to muscles when the muscles are worked hard without being warmed up first. It is also important to stretch after workout because this can help prevent muscles from getting uncomfortably sore and allows for them to grow and become stronger, and stretching everyday improves flexibility.

Stretches For Running or Jogging

1. Arm Stretch

Start by stretching your arms even though that there seems no need to do so because arms seem unneeded in running. By just pumping your arms while jogging or running can cause someone to pull a muscle in their arms. With the opposite arm, grab your elbow and bring it across the front of your body and hold it there for 10 seconds. Then do the opposite arm for 10 seconds.

2. Touch Your Toes

Next should be the old faithful stretch by bending down to touch your toes. It is important to keep your knees straight. Another important thing to remember is to just bend down as far as you can without it causing pain. Avoid bouncing while stretching as well. Bouncing can actually cause the muscles to be confused on how much they need to stretch with simple tasks and that can put you at a high risk for strain or cramps. Hold this stretch for 10 seconds.

3. Heel to Buttocks

One more stretch that should be done before a general running exercise is the heel to buttocks. Lift one of your feet up behind you and reach back and gently grab and pull your foot up to your buttocks by using the arm on the same side of the body as the foot you are grabbing. Hold this stretch for 10 seconds and then do the same on the other side of your body.

4. Drop the Heel

This stretch is great to help loosen the calf muscles. Loose calf muscles help to prevent tendonitis in the Achilles. Stand on a curb or step. Inch one of your legs backwards until your heels are hanging off the curb or step. Drop that heel down to the ground until there is slight discomfort. Hold this stretch for 10 seconds then do the opposite heel the same way.

Benefits of Physical Activity

1. Helps lower and maintain your body weight and body fat.
2. Builds and maintains healthy muscles, bones, and joints.
3. Helps fight off chronic illness such as heart diseases and osteoporosis
4. Increases energy.
5. Helps build proficient mental focus.
6. Reduces the risk of breast cancer by up to 60%.
7. Reduces depression.
8. Decreases stress levels\

Name: _____

Date: _____

Class: _____

Exercise and Heart Rate

Current Heart Rate: _____

Predicted MHR: _____

THR Zone: _____ to _____

After The Stretch and Jog Exercise...

Heart Rate: _____

Does this heart rate fall in your THR zone?(circle one)

Yes or No

If so, what was it like to exercise in your THR zone? If not, what do you feel you can do to reach and exercise in your THR zone?

Formulas:

Heart Rate= (Number of
Pulses counted in 15 sec.) x 4

MHR-
220-your age= Predicted
MHR

THR Zone-
1st number= (MHR) x 0.50
2nd number= (MHR) x 0.80