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Assessment

This assessment experiments the effects of cardiovascular and muscular endurance exercises on the heart, whilst completing a fitness session with the goal of maintaining a heart rate of 70% of maximum bpm.

PT Yourself Assignment

Year 9 HPE, Term 3 2020

Exercise is an essential part of everyday life in order to maintain a healthy physical and mental wellbeing. Without exercising daily, your chances of heart diseases and problems, obesity, osteoporosis, muscle atrophy and other long-term issues increase. Experts suggest that a minimum of thirty minutes of physical activity per day is necessary to stay healthy and avoid any of the problems listed above. As well as improve your overall fitness and wellbeing (Mayo Foundation for Medical Education and Research, 2020).

Need to have a bit of a topic sentence here before you jump into telling me about fitness components and their importance e.g. When planning a well-rounded exercise program, it is important to understand physical fitness and how different training can impact the body in different ways. This can be done through understanding a term call fitness components. To continue on, fitness components are divided into two different categories; health-related components and skill-related components. The five health-related components are cardiovascular endurance, muscular endurance, muscular strength, body composition and flexibility (reference). Whilst, the skill-related components are agility, balance, coordination, power and speed. The health-related fitness components are generally important to maintain a healthy physicality and the skill-related fitness components are usually more necessary to participate and excel in specific sports and activities.

Moreover, muscular endurance is the duration in which your muscles can last whilst completing prolonged physical activity. Muscular endurance is also used in cardiovascular endurance activities, with cardiovascular endurance being how well the heart, blood vessels, lungs work while supplying oxygenated blood to the muscles during a longer period of physical activity. Exercises that generally uses both muscular endurance and cardiovascular endurance are running, cycling, swimming or any other aerobic activities. Finally, muscular and cardiovascular endurance are fitness components that are often tested in many similar or the same exercises.

Aim:

The aim of this assignment is to maintain HR at 70% of Max HR to observe how the workout targets muscular endurance and cardiovascular fitness and how these exercises effect our HR.

Method:

1. Determine maximum heart rate using this equation:

220 – Your age = max heart rate (bpm)

1. Determine target (70%) heart rate using this equation:

MHR x 70/100 = target heart rate (bpm)

1. Design a workout proposal
2. Set out circuit (if necessary)
3. Complete the following workout with a 15-second break in between every exercise.
4. Record heart rate every 30 seconds.
5. Graph results

Proposal:

|  |  |  |  |
| --- | --- | --- | --- |
| **Proposed workout** | | | |
| **Name:** | | **Target HR:** \_\_\_\_144\_\_\_\_\_ **bpm** | |
| **Time** (min) | **Exercise** | | **Intention of exercise** |
| 0.5 | Run – | | Running is an exercise performed to improve cardiovascular endurance and strengthen the leg muscular region (hamstrings, quadriceps, calves etc.) at the same time. Running can be considered as both cardiovascular and muscular endurance. Running also increases the heart rate so it was put at the start of the session to raise the heart rate quickly. |
| 0.5 | Burpees | | Burpees are completed to work and strengthen the whole body. Burpees use both cardiovascular and muscular endurance as they put pressure on the heart rate, whilst working muscle groups for an extended period of time. Burpees tend to raise the heart rate quite sufficiently so this exercise was performed close to the start of the circuit to help raise the heart rate faster. |
| 0.5 | Bicycle – sit ups | | Bicycle-sit ups are done to target the abdominal muscular region. This exercise utilizes muscular endurance as the abdominals are being engaged throughout the whole exercise. It was selected to be in this spot of the circuit as burpees (the previous exercise) are an exercise that tend to raise the heart rate, so this exercise should lower it back in the region of 70% of max. heart rate. |
| 0.5 | Run | | Running is an exercise performed to improve cardiovascular endurance and strengthen the leg muscular region (hamstrings, quadriceps, calves etc.) at the same time. Running can be considered as both cardiovascular and muscular endurance. Running also increases the heart rate so it was put in this section of the circuit to raise the heart rate back up after the bicycle-sit ups that lower the heart rate. |
| 0.5 | Push ups | | Push ups are an exercise performed to focus on strengthening the upper body region, particularly: the deltoids, triceps, pectorals, serratus anterior and abdominals. Push ups are classified as a muscular endurance exercise that lower the heart rate. This exercise was positioned after running as it lowers the heart rate after the run, which raises it. |
| 0.5 | Sit ups | | Sit ups are performed to strengthen and work on the abdominal muscular region. They are a muscular endurance exercise that doesn’t generally raise the heart rate much. Sit ups were placed in this part of the circuit as the heart rate would still be in a higher region from the run performed earlier. |
| 0.5 | Run | | Running is an exercise performed to improve cardiovascular endurance and strengthen the leg muscular region (hamstrings, quadriceps, calves etc.) at the same time. Running can be considered as both cardiovascular and muscular endurance. Running also increases the heart rate so it was put in this section of the circuit to raise the heart rate back up after the sit ups that lower the heart rate. |
| 0.5 | break | | Breaks a placed in between a certain amount of exercises to give the body a rest and lower the heart rate. |
| 1 | Run | | Running is an exercise performed to improve cardiovascular endurance and strengthen the leg muscular region (hamstrings, quadriceps, calves etc.) at the same time. Running can be considered as both cardiovascular and muscular endurance. Running also increases the heart rate so it was put in this section of the circuit to raise the heart rate back up after the break that lower the heart rate. |
| 1 | Burpee | | Burpees are completed to work and strengthen the whole body. Burpees use both cardiovascular and muscular endurance as they put pressure on the heart rate, whilst working muscle groups for an extended period of time. Burpees tend to raise the heart rate quite sufficiently so this exercise was performed closely after a break in the circuit to help raise the heart rate faster again. |
| 1 | Sit ups | | Sit ups are performed to strengthen and work on the abdominal muscular region. They are a muscular endurance exercise that doesn’t generally raise the heart rate much. Sit ups were placed in this part of the circuit as the heart rate would still be in a higher region from the run and burpees performed earlier. |
| 1 | Push ups | | Push ups are an exercise performed to focus on strengthening the upper body region, particularly: the deltoids, triceps, pectorals, serratus anterior and abdominals. Push ups are classified as a muscular endurance exercise that lower the heart rate. This exercise was positioned closely after high-heart rate exercises to help lower it again. |
| 1 | break | | Breaks a placed in between a certain amount of exercises to give the body a rest and lower the heart rate. |
| 1 | Crunches | | Crunches are an exercise that target the upper region of the abdominals. Crunches are classified as a muscular endurance exercise as they cause the abdominals to constantly contract without putting excessive pressure on the heart and lungs. Crunches were performed at the end of the circuit to help lower the heart rate even more. |

Results:

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Heart rate recordings (beats per minute)** | | | | | | | | | |
| 0.5 min | 1 min | 1.5 min | 2 min | 2.5 min | 3 min | 3.5 min | 4 min | 4.5 min | 5 min |
| 173 | 170 | 161 | 181 | 176 | 162 | 178 | 166 | 184 | 187 |
| 5.5 min | 6 min | 6.5 min | 7 min | 7.5 min | 8 min | 8.5 min | 9 min | 9.5 min | 10 min |
| 175 | 172 | 166 | 144 | 147 | 144 | 127 | 120 | 133 | 129 |

Table Heart rate Recordings

Graph Heart Rate throughout Physical Activity

Discussion:

The data represented in *Graph 1 Heart Rate throughout Physical Activity* shows that the target heart rate of 144 bpm was only reached twice throughout the entire ten minute circuit. 144 bpm was reached at the seven minutes and eight minutes mark, which was when the student performing the circuit was completing running and burpees. The data shows a trend of the bpm increasing up until the five minutes mark, which is where the bpm starts to decrease. Furthermore, the lowest and highest bpm recorded throughout the circuit were drastically different; 120 bpm and 187 bpm.

These results could have occurred for a number of reasons, one being that the cardiovascular endurance exercises were performed too closely together. If there was more muscular endurance exercises and less cardiovascular endurance exercises the heart rate would have been able to stay closer to the target heart rate. Another reason for the results unsuccessfulness was the first five minutes were performed at a higher intensity than the last five minutes, which were performed at a quite low intensity. This change in energy exertion caused the bpm in the first half of the circuit to show higher numbers (averaging at 173.8 bpm) than the second half (averaging at 158.4 bpm).The results also could have differed if the circuit was performed by a ‘fitter’ or less-fit person, as their bodies’ would react differently to each exercise.

If this experiment was to be done again, there should be more breaks in between exercises and less cardiovascular-heavy endurance exercises that raise the heart rate more. For example, rather than two breaks (one of 30 seconds and the other of one minute), there should be four breaks of 30 seconds to help moderate the heart rate levels. Oppose to having four runs in the circuit, there should have been only two performed at a moderate intensity. Another adjustment to the circuit, should be that the whole circuit is completed at the same moderate pace and intensity, so that the heart rate doesn’t spike really high at the start and drop lower at the end to create a pattern that ranges closer to the aim heart rate (70% of max.). Accordingly, the experiment was only achieved the goal in two of the thirty-second increments in the circuit, with the rest of the circuit unable to reach the aim of 70% of maximum heart rate deeming it unsuccessful.

This discussion is very good! If you wanted to you could also look to mention the following when talking about making improvements. You could look at having a better balance between these two fitness components allows the body to maintain a steady heart rate so if you don’t have a good balance then the heart rate isn’t steady. The muscular endurance activities look to maintain a steady heart rate because the requirement for oxygen is low whereas the cardio activities look to raise the heart rate because the demand for oxygen is high causing the heart to beat faster. With this in mind you can look to choose exercises accordingly to obtain results closer to the Target HR.

Reference List:

Mayo Foundation for Medical Education and Research (2020). *‘Healthy Lifestyle Fitness’.* Retrieved from <https://www.mayoclinic.org/healthy-lifestyle/fitness/expert-answers/exercise/faq-20057916#:~:text=As%20a%20general%20goal%2C%20aim,may%20need%20to%20exercise%20more.>