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Impact Of Oxygenated Water On The Acceleration Of Pulse Rate Reduction After Physical Activity

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Abstract

This study examines how drinking oxygenated water decreases the pulse rate after physical activity in Physical Education Health and Recreation students. The research method is utilized in experimental research with Pretest-Posttest Control Group Design. Two groups were formed: a control group and an experimental group of 20 UNUGIRI Health and Recreation Physical Education Study Program students. Sampling is accomplished randomly (Random Sampling). The pulse rate is measured before and after running for 20 minutes. The analysis revealed a significant difference between the provision of oxygenated drinking water (experimental group) and normal drinking water (control group) on the acceleration of pulse rate reduction after running activities. The significance value obtained was 0.057, indicating a significant difference between the two groups. The average pulse of the experimental group was 89.44, while the average pulse of the control group was 98.33. The administration of drinking water with an oxygen content has a positive effect on the decrease in the pulse rate after physical exertion. Subjects who consumed oxygenated drinking water after a 20-minute run had a faster pulse rate decrease than those who consumed non-oxygenated drinking water. The conclusion of this study displays that the provision of oxygenated drinking water positively affects the decrease in pulse rate after physical activity in health and Recreation physical education students. Oxygenated drinking water is an effective alternative to accelerate pulse recovery after intense physical exertion. This research provides a better understanding of the benefits of oxygenated drinking water in maintaining health and accelerating physical recovery after sports activities.

Keywords: *Oxygenated Drinking Water, Decreased Pulse, Physical Activity*

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INTRODUCTION

Physical activity significantly improves cardiovascular fitness, strengthens muscles, improves energy balance, and maintains a healthy weight (Aliriad, Priadana, et al., 2023; Aliriad, Soegiyanto, et al., 2023). When accomplishing physical activity, the body needs adequate oxygen to complete energy needs. Oxygen plays an important role in aerobic respiration, in which nutrients are converted into energy needed by the body's cells (Franklin et al., 2022; White et al., 2013). The pulse rate, the number of heartbeats per minute, is an important indicator for evaluating a person's cardiovascular activity and fitness level. A high pulse after physical exertion signals stress on the cardiovascular system and the need for a longer recovery. They lowered the pulse to normal after physical exertion to balance the body's recovery process.

During physical activity, the body produces energy by converting glucose into ATP (adenosine triphosphate) through aerobic respiration (Choi et al., 2021; Netzer et al., 2023). However, the body will switch to anaerobic respiration if the need for oxygen is not fulfilled, such as during intense physical activity. Anaerobic respiration produces ATP without needing oxygen, producing lactic acid as a by-product. The accumulation of lactic acid in the muscles can lead to fatigue and increased pulse.

Oxygenated drinks have become increasingly popular among athletes and physically active people (Pratama & Bafirman, 2020). This drink is claimed to increase oxygen supply to the body's cells, accelerate recovery, and improve physical performance. In oxygenated beverages, oxygen is dissolved in water at a certain pressure and temperature, thus allowing oxygen to be more easily absorbed by the body.

Intense physical activity can increase oxygen demand in the body (Krismawati et al., 2019; Sumantri, 2021). Oxygenated drinks have become increasingly popular among athletes and physically active people(Pratama & Bafirman, 2020). The Oxygenated drink is claimed to increase oxygen supply to the body's cells, accelerate recovery, and improve physical performance. In oxygenated beverages, oxygen is dissolved in water at a certain pressure and temperature, thus allowing oxygen to be more easily absorbed by the body.

Intense physical activity increases oxygen demand in the body (Krismawati et al., 2019; Sumantri, 2021). Adequate oxygen levels are important to maintain the body's health and ensure the organs' proper functioning. However, after physical exertion, the body needs time to recover and return the pulse to a normal level.

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Humans need oxygen for the body's respiratory and metabolic processes. The body's sufficient oxygen can be fulfilled through normal breathing, but oxygen levels can be reduced during physical activity (Almy & Sukadiyanto, 2014). Physical activity leads to decreased fluid, and the body tries to balance the temperature due to the energy expended. Lack of oxygen during physical activity converts aerobic respiration into anaerobic respiration, which triggers the heart to deliver oxygen and nutrients to needy organs faster.

Lack of body fluids can also emerge during physical exertion, leading to dehydration. Dehydration can impair concentration reaction speed, increase body temperature, and slow energy production. Even a lack of water, as much as 1% of body weight, can affect the brain and cognitive ability, while a lack of fluid, as much as 2%, can weaken the short-term decision-making ability, focus, and memory. It is crucial to balance body fluids after physical activity by drinking water to change the loss of body fluids. Oxygenated water is the ideal type to change the loss of body fluids. Oxygenated water has a higher oxygen content than normal drinking water, about 7-10 times.

The previous study showed the potential benefits of oxygenated drinks in helping the body recover faster after physical activity. Oxygenated drinking water has a higher oxygen content than normal drinking water

(Budiman & Ray, 2021; Muhyi, 2015). Previous research has shown that oxygenated drinking water can positively affect oxygen supply throughout the body, dissolving nutrients and distributing them. Lack of body fluids after physical activity can lead to dehydration, negatively affecting concentration, reaction speed, body temperature, and energy production (Bahri et al., 2012; Samudera & Ashadi, 2019). Several previous studies have explored the effects of oxygenated beverages on sports performance. Oxygenated drinks can accelerate the decrease in pulse after physical exertion compared to regular drinks (Sulaeman, 2022).

Due to the significant impact of oxygenated water on fulfilling body fluids needs, this research examines whether oxygenated water can accelerate the lowering of the pulse rate after physical exertion in individuals. The research also analyzes the effectiveness of oxygen levels in accelerating pulse recovery compared to regular drinks after physical

exertion. Specifically, this study aims to determine the effect of oxygenated beverages and examine the provision of beverages to accelerate the decline in pulse rate

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after physical activity in health and recreation physical education students. Hopefully, this study can provide a better understanding of the benefits of oxygenated drinking water in maintaining health and accelerating physical recovery after sports activities.

METHODS

The research utilizes experimental research with a Pretest-Posttest Control Group Design (Andriani et al., 2017). The research design involves dividing research subjects into control and experimental groups (Aliriad, Adi, et al., 2023; Aliriad, Da'i, et al., 2023; Endrawan & Aliriad, 2023). This design aimed to compare the two groups' effect of oxygenated water on the pulse decrease after physical activity. The research subjects in this study were 20 students of the Physical Education Health and Recreation Program UNUGIRI. Sampling was accomplished using the Random Sampling technique. The subjects were randomly selected from the population following the research's inclusion criteria.

The criteria for extremely high oxygen content from laboratory tests show that the oxygen content in Oxygen Water reaches 10 times the saturated oxygen content in normal water. Water naturally contains 10 ppm of oxygen (parts per million = 10 milligrams per liter). At lower temperatures (e.g., in a refrigerator), the oxygen content can increase to a maximum of 15 ppm. The benefits of oxygenated drinking water include the prevention of kidney and urinary stones, the prevention of bile deposits, the reduction of toxins in the blood, the increase in metabolism, the relief of the heart, and the stabilization of blood pressure. The study procedure began with Pulse measurements in all subjects before running for 20 minutes. In the following step, the subjects were randomly divided into two groups. The control group will be treated with normal drinking water, while the experimental group will be treated with oxygenated drinking water. Once the drink is administered, all subjects will be rested for 5 minutes to allow time for the body to react to the drink consumed. After rest, the pulse rate will be measured again in both groups. The recorded Pulse Data will be analyzed using statistical methods. Descriptive calculations will reveal each group's average pulse value before and after physical activity (Sandi, 2016). In addition, inferential statistical calculations will also be performed to test for significant differences between the control group and the experimental group.

The contrast analysis utilizes the significance value (p-value) to statistically determine the difference between the two groups. Suppose the p-value is less than the

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previously determined significance level. The value means a significant difference between administering oxygenated drinks and normal drinking water and a decrease in the pulse rate after physical exertion.

The method of this study was designed to examine the hypothesis that the administration of oxygenated drinks can accelerate the decrease in pulse rate after physical exertion. This research uses a robust experimental study design to provide a more precise understanding of the effect of oxygenated beverages on pulse and recovery after physical activity.

RESULTS

The results of descriptive calculation analysis revealed a significant difference between the provision of oxygenated drinking water (experimental group) and normal drinking water (control group) on the acceleration of Pulse reduction after running for 20 minutes in UNUGIRI Health and Recreation Physical Education students. The value of significance (p-value) obtained by 0.057 indicates that the difference has almost reached the level of significance previously determined.

Table 1. Pulse rate results (bpm)

Sample	Pretest	Posttest
Sample 1	90	97
Sample 2	88	99
Sample 3	90	98
Sample 4	87	97
Sample 5	89	99
Sample 6	90	97
Sample 7	89	100
Sample 8	91	98
Sample 9	88	99
Sample 10	87	98
Sample 11	90	100
Sample 12	89	98
Sample 13	90	99
Sample 14	99	97
Sample 15	90	98
Sample 16	87	99
Sample 17	89	97
Sample 18	91	98
Sample 19	89	99
Sample 20	88	97

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Table 2 shows the results of the analysis of differences between the two groups. The experimental group treated with oxygenated drinking water had an average pulse rate of 89.44, while the control group treated with plain drinking water had an average pulse rate of 98.33. There is an average difference of 8.89% between the two groups. The research analysis of the sample pulse rate is revealed in Table 2 below.

Table 2. Analysis Of Differences

	N	Group	Mean	Difference	Sig.
Pulse rate	10	Experiments Group	89,44	8,89	0,057
	10	Control Group	98,33		

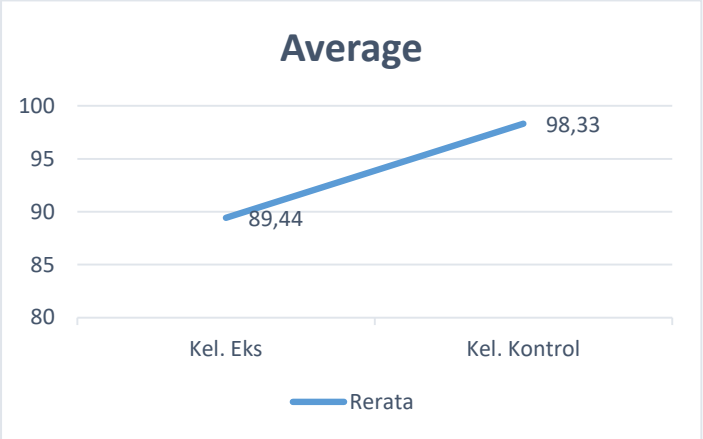

Figure 1. Difference Between Experiments Group and Control Group

Figure 1 illustrates the mean difference between the experimental and control groups. Graph Data showed that administering oxygenated beverages significantly reduced pulse rate in UNUGIRI Health and Recreation Physical Education students. The average pulse rate of the experimental group (89.44%) was lower than the average pulse rate of the control group (98.33%). This study also involved several related variables that need to be considered. The independent variable in this study was the type of drink treated, specifically oxygenated drinking water and normal drinking water.

The dependent variable is a decrease in the pulse rate after 20 minutes of running activity. In addition, factors such as gender, age, and fitness level of the subject can also be confounding variables that need to be considered in the analysis of the results. The results of this study support the hypothesis that the administration of

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oxygenated drinks can accelerate the decrease in pulse after physical exertion. Oxygenated drinks provide additional oxygen to the body, speeding up recovery and reducing the time it takes to return to a normal pulse after intense physical activity. However, it should be borne in mind that the obtained significance value (0.057) is close to the previously specified significance level. Therefore, the results of this study need to be further confirmed with additional studies involving a larger number of subjects and taking into account disruptive factors that may have influenced the results. Overall, the study provides impressive preliminary evidence on the effect of oxygenated beverages on decreased pulse rate after physical activity. These results may provide a better understanding of the importance of oxygen in the body's recovery after physical activity and provide practical implications in t sports and health.

DISCUSSION

Based on the results of research on the provision of oxygenated beverages, the decrease in pulse rate can be faster because of the additional oxygen supply that helps in the recovery of the body (Yulianto et al., 2022). The results of this study are also consistent with previous findings correlating physical activity to a decrease in pulse rate. Intense physical activity can increase the pulse rate as the body responds to increased oxygen demand (Satria et al., 2023). Previous studies have shown that oxygenated beverages can improve oxygen supply throughout the body (Netzer et al., 2023). It can provide additional benefits for the respiratory process and muscle recovery and decrease the pulse rate after physical activity (Budiman & Ray, 2021). The higher oxygen content in oxygenated beverages allows oxygen to be more effectively transported into the blood and distributed throughout the body (Awwal, 2019; Muhyi, 2015). As a result, the body's recovery processes can be accelerated so the pulse can return to normal levels more quickly.

Research results have also shown that a faster decrease in pulse rate after physical activity may be associated with improved cardiorespiratory fitness (Andrastea et al., 2018). By consuming oxygenated beverages that accelerate the decrease in pulse, individuals can optimize their exercise and obtain greater health benefits. In the context of Health and Recreation Physical Education students, improved cardiorespiratory fitness can provide an advantage in carrying out their duties and responsibilities as aspiring professionals in the field of sports and health.

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Oxygenated drinking water can also be an attractive alternative for individuals with difficulty completing their body's oxygen needs (Kusuma, 2020; Tirajoh et al., 2016). For example, individuals with certain health conditions or living in areas with poor air quality may face challenges getting enough oxygen through regular breathing. In this case, oxygenated drinks can be a useful option to obtain the additional oxygen supply needed by the body.

The influence of administering oxygenated drinks on the decrease in the pulse after physical exertion has different needs. Age, gender, fitness level, and health conditions can influence the body's response to oxygenated beverages (Knowles et al., 2018; Kurniawan et al., 2020). Therefore, consult a health professional before adopting oxygenated beverages as part of the exercise or recovery routine.

Overall, the results of this study provide a deeper understanding of the effect of giving drinks with oxygen levels on the decrease in pulse rate after physical activity. By speeding up the body's recovery process, oxygenated drinks can be a strategy that can improve exercise performance, speed recovery, and overall well-being. However, more research is needed to corroborate these findings, elucidate the mechanisms involved, and identify the populations most benefit from using oxygenated beverages.

CONCLUSION

The administration of oxygenated drinks significantly affects the acceleration of the decrease in the pulse rate after physical exertion. Subjects who consumed oxygenated drinking water had a faster pulse decrease than those who consumed normal water. Supplemental oxygen administration through oxygenated beverages helps improve oxygen supply throughout the body, accelerate muscle recovery, and optimize cardiorespiratory performance. This research provides an important contribution to enriching our understanding of the benefits of oxygenated beverages in physical activity. Oxygenated drinks can be an interesting alternative for individuals who want to speed up their body's recovery after exercise.

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