Impact of Pocari and Mineral drinks on pulse rate after running 1200 meters with a 5-minute rest interval

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Authors’ contribution:
A. Conception and design of the study; B. Acquisition of data; C. Analysis and interpretation of data; D. Manuscript preparation; E. Obtaining funding


Abstract

Background and Study Aim. Electrolyte drinks are ion replacement drinks in the body that also help as additional energy. Moreover, it is said that this drink is not a drug because it has not been clinically tested so that it is included in the list and also complementary drinks have benefits and side effects for its users. Of course, supplement drinks that isotonic drinks affect dehydration and isotonic drinks can normalize body fluids that have been lost during exercise. The purpose of this study was to determine the difference in the usefulness of Pocari and Mineral for fluids in the body after prolonged exercise.

Material and Methods. This research is an experimental method. The population in this study were Tanjungpura University Sports Students Semester 5 with a total of 18 people divided into 2 groups so each group contained 9 people. In this study, the sample was given physical activity treatment through running 1200 meters. Furthermore, Pcoari and Mineral drinks were given to see the effect on pulse rate. Data analysis was assisted using SPSS 26.

Results. The results show a significance value of 0.173 > 0.05 so it can be concluded that the data results of pocari water and mineral water do not experience significant differences. These results provide information that provides the same impact on pulse rate after physical activity. However, the mean value results show that mineral water (162.56) is smaller than pocari drinks (175.00).

Conclusions. This result has important implications, especially for athletes or individuals engaged in similar sports activities. Consumption of mineral-containing isotonic drinks may be an effective strategy in supporting the body’s recovery after physical exercise, thereby improving overall sports performance.

Introduction

Electrolyte beverages serve as ion-replacement drinks in the body, also providing an energy boost, whereas plain water is devoid of additional elements. Each energy drink exhibits distinct
effects, and it is essential to note that these drinks are not classified as drugs due to the absence of clinical testing. Supplementary drinks, such as isotonic drinks, offer both benefits and potential side effects for consumers. Isotonic drinks play a role in preventing dehydration and reinstating lost body fluids post-exercise (Palar et al., 2021).

Distinguishing the impact of isotonic drinks and coconut water involves considering factors such as urine color, muscle fatigue reduction, and blood sugar level increase, with variations based on coconut water types (Budiman & Ray, 2021). Combating fatigue is crucial for sustaining performance, and research indicates that young coconut water is particularly effective in enhancing hydration and performance during competition (Pradana et al., 2022).

While isotonic and electrolyte beverages contribute to reducing dehydration levels, excessive water consumption is discouraged. It is preferable to opt for mineral water in daily hydration routines (Sulastio et al., 2022). Prolonged stress can adversely affect the body by disrupting the aldosterone gland, responsible for regulating fluid and electrolyte levels. Excessive fluid loss due to stress can lead to a lack of focus (Japeri et al., 2022). Additionally, alum in Pocari Sweat can diminish metal content in brackish water and stabilize pH levels.

Color transformation observed from yellowish water to clear brackish water (Damanik et al., 2022). Assessing alum purity derived from used cans, characterizing alum sourced from discarded beverage cans, and confirming alum acidity are crucial steps in understanding its composition (Mulyatun et al., 2022). Emphasizing the significance of water for optimal nutrition and immune system enhancement is highlighted for overall body health (P et al., 2022). The depletion of body fluids during physical exertion can lead to muscle fatigue. Isotonic water serves as a valuable resource to replenish lost fluids, preventing dehydration (Pramono et al., 2014).

Engaging in prolonged physical activities can result in substantial dehydration. In such instances, replenishing body fluids by consuming mineral water, which also possesses isotonic properties, is recommended (Samodra, 2020). Pocari Sweat is suggested as an option for fluid replacement due to its ion content, providing individuals with the necessary stamina for daily activities (Lukman Hakim & Oktavia Monalisa, 2022). Keeping a stock of Pocari drinks at home is advisable for maintaining fluid balance after daily activities (Fadilah et al., 2021). Pocari drinks are specifically designed to prevent dehydration, ensuring individuals remain energetic and less prone to fatigue (Audila & Saraswati, 2021). The accessibility of Pocari in Indonesia is convenient, as it is readily available at nearby stores (Syaffikarani et al., 2021).

The electrolyte content in Pocari is intended to replenish body fluids post-sports activities (Wijayanto & Iswari, 2021). However, caution is advised against daily consumption, as the sugar content may contribute to weight gain and pose a risk of diabetes (Purwanto, 2021). Understanding the impact of advertising and brand image on consumer purchasing interest in Pocari Sweat products is a vital consideration (Saraswati & Rahmawati, 2021). This study uniquely explores the effects of mineral water and Pocari on post-exercise pulse rate, contributing valuable insights distinct from studies focusing on variables like overall recovery time, muscle fatigue, or other physiological parameters.

**Materials and Methods**

*Participants.*

This research design is divided into 2 groups with different people. The first group gets pocari drinks with a portion of 1 person 1 glass while the second group gets mineral water drinks with the same portion. The population in this study were Tanjungpura University Sports Students Semester 5 with a total of 18 people divided into 2 groups so each group contained 9 people.

*Research Design.*

This research is an experimental method. In this research, it is a way to reveal a relationship between two or more variables and also to look for the effect of one variable on another. Drinks and
food are believed to increase or decrease performance. Honey, sugar, pocari, and other beverages are believed to improve or affect performance. This practical will discuss and prove some of these things in sports. This practice will be better if there is a test for lactic acid neutralization in the blood. The test will only focus on pulse rate changes. The procedure is carried out through the stages: (1) The sample performs a 1200-meter run to get the initial data of achievement, (2) Drink each group that can solution, (3) After that the sample again performs a 1200-meter run, (4) The sample is measured the pulse increase of each person, (5) Observed and recorded what happens to people.

Statistical analysis.

The analysis of data in this study is descriptive, namely the results of the data obtained are analyzed using the SPSS version 26 application. Statistical analysis used includes normality test, and hypothesis testing.

Results

This research aims to evaluate the impact of Pocari and mineral water by conducting a 400-meter run with 3 sets and a 5-minute break after each set, followed by pulse rate measurements within the designated sample group.

Based on descriptive calculations of 18 sample data with different values of mineral water and pocari, mean pocari 175, mean mineral water 162.56, median pocari 180, median mineral water 168, mode pocari 162a mode mineral water 168, std. deviation pocari 14.849 std. deviation mineral water 12.621, minimum pocari 150 minimum mineral water 138, maximum pocari 192, maximum mineral water 178. These results provide information that the pulse rate using mineral water is smaller than that of pocari drinks. The results can be seen in table 1,2 and figure 1.

Table 1. Pulse Rate Result Data of Pocari and Mineral Drinks

<table>
<thead>
<tr>
<th>Name</th>
<th>Pulse Rate</th>
<th>Pulse Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iqbal</td>
<td>168</td>
<td>169</td>
</tr>
<tr>
<td>Agung</td>
<td>186</td>
<td>162</td>
</tr>
<tr>
<td>Risky</td>
<td>186</td>
<td>138</td>
</tr>
<tr>
<td>Arbaan</td>
<td>162</td>
<td>168</td>
</tr>
<tr>
<td>Vitra</td>
<td>189</td>
<td>156</td>
</tr>
<tr>
<td>Anugrah</td>
<td>162</td>
<td>168</td>
</tr>
<tr>
<td>Clara</td>
<td>180</td>
<td>178</td>
</tr>
<tr>
<td>Yuriska</td>
<td>150</td>
<td>174</td>
</tr>
<tr>
<td>Dinda</td>
<td>192</td>
<td>150</td>
</tr>
</tbody>
</table>

Table 2. Descriptive Results of Pocari Pulse Rate and Mineral Water Pulse Rate

<table>
<thead>
<tr>
<th>Result</th>
<th>Pocari Pulse</th>
<th>Mineral Pulse</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Valid</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Missing</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mean</td>
<td>175</td>
<td>162.56</td>
</tr>
<tr>
<td>Median</td>
<td>180</td>
<td>168</td>
</tr>
<tr>
<td>Mode</td>
<td>162a</td>
<td>168</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>14,849</td>
<td>12,621</td>
</tr>
<tr>
<td>Minimum</td>
<td>150</td>
<td>138</td>
</tr>
<tr>
<td>Maximum</td>
<td>192</td>
<td>178</td>
</tr>
</tbody>
</table>
Upon conducting the normality test, it was found that the significance value (p > 0.05), indicating that the data is normally distributed. With normal data distribution, further statistical tests can be performed, as shown in Table 3.

The data presented in Table 4 represents the outcomes of an independent sample test with a significance value of 0.173, which is greater than 0.05. Consequently, it can be inferred that there are no significant differences in the results between Pocari water and mineral water. These findings suggest that both beverages have a similar impact on pulse rates after engaging in physical activity. However, when comparing mean values, it is notable that mineral water (162.56) exhibits a smaller value than Pocari drinks (175.00), as indicated in Table 2.

Table 3. Uji normality in the One-Sample Kolmogorov-Smirnov Test

<table>
<thead>
<tr>
<th>Result</th>
<th>Pocari Pulse</th>
<th>Mineral Pulse</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Normal Parameters&lt;sup&gt;a,b&lt;/sup&gt;</td>
<td>Mean</td>
<td>175.00</td>
</tr>
<tr>
<td></td>
<td>Std. Deviation</td>
<td>14.849</td>
</tr>
<tr>
<td>Most Extreme Differences</td>
<td>Absolute</td>
<td>.215</td>
</tr>
<tr>
<td></td>
<td>Positive</td>
<td>.143</td>
</tr>
<tr>
<td></td>
<td>Negative</td>
<td>-.215</td>
</tr>
<tr>
<td>Test Statistic</td>
<td></td>
<td>.200&lt;sup&gt;b,d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4. Differential Test Results of Pocari Pulse Rate and Mineral Water Pulse Rate

<table>
<thead>
<tr>
<th>Result</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>Pocari Pulse- Mineral Pulse</td>
<td>12,444</td>
<td>24,981</td>
<td>1,494</td>
<td>8</td>
</tr>
</tbody>
</table>

Discussion
Water is one of the drinks consumed by many people. The benefit of water is to carry the heat that arises because the muscles are actively moving, to the skin, to then be discharged from the body through sweat. Most sports people lack drinking water even though the person often does sports regularly but there are still many people lacking to drink mineral water, the impact of this lack of drinking water decreases performance when doing sports, especially an athlete, it is very important to drink mineral water after doing sports or training because the body after doing sports lacks fluids when the body lacks fluids the body will feel weak (Gracia & Tamburian, 2020). Even sports such as skateboarding also care about mineral water, the skateboarding community in Indonesia is still...
lacking to bring mineral water because they care about the style they use, it is recommended that the style they use has a place to store mineral water (Shyafary & Rahman, 2020).

The importance of keeping body fluids from decreasing after we do excessive physical activity can cause the maximum pulse rate the use of mineral water reduces so that there is no disease because when the pulse rate is maximum it can be dangerous (Narindra et al., 2020). Water is useful for replacing fluids due to physical activity because water when given other additives such as glucose will only slow down the delivery of water from the stomach into the bloodstream. When doing physical activity a lot of body fluids are lost through sweat. the benefits of water are that the body temperature can be low and the pulse rate is low during physical activity (Abizar et al., 2021).

The mineral water can also maintain the physical condition so that the immune system is maintained not easily dating the athlete's disease also pays attention to fluids in the body by often drinking mineral water recommended by each athlete so as not to get sick easily (Alit Arsani, 2014). For improving health and fitness there are exercises that are routinely carried out by maintaining health and fitness, there is an intake of drinks, namely mineral water (Saputra et al., 2023). Consuming good and sufficient mineral water for the body can help the process of regulating the balance of the body, in water contained different elements terakndung in water such as calcium, fluoride, magnesium, sulfate, and others. Lack and excess of minerals or elements can have an impact on general health (Kurniawan et al., 2022).

The fast fatigue of the body is due to the lack of drinking water, the importance of water in the body so as not to lose fluid in the body, we must drink more water so that the body does not get tired easily. If the lack of water also causes a decrease in the blood pumped by the heart, so that the oxygen sent to the muscles will also decrease, causing fatigue prematurely. When performing physical activity (exercise) requires oxygen to the muscles that are actively working (Agustin et al., 2022). Let alone weakened muscles, water also serves to relieve pain during menstrual women when menstrual pain is lack of sensitivity to maintain health by drinking enough water. Adequate water consumption can help supply oxygen that binds to hemoglobin and restore blood circulation volume so that blood flow becomes smooth during menstruation and reduce pain (Mulyani et al., 2022).

The growth and development process of each child requires balanced nutrition. Nutritional elements of balanced nutrition include carbohydrates, fats, proteins, vitamins, water and minerals with the right dose. Older people often assume that a healthy child is an obese child. Research provides evidence that there is an association between maternal education, genetics, and diet with the incidence of childhood obesity. The suggestion in this study is for teachers in schools to increase student activity to be more active, for example by inviting students to gymnastics in the morning and being active in sports lessons (Nurhaliza et al., 2023).

**Conclusion**

Based on the results of this study, it can be concluded that the consumption of Pocari and Mineral has no difference in the effect on pulse recovery after physical activity, especially running for 1200 meters with a 5-minute rest interval. However, the group that consumed mineral mineal showed faster pulse recovery compared to the group that only consumed Pocari. These findings indicate that the intake of additional minerals found in isotonic drinks, such as Pocari, may provide benefits in improving the body's physiological recovery process after intensive exercise. These results have important implications, especially for athletes or individuals involved in similar sports activities. The consumption of mineral-containing isotonic drinks may be an effective strategy in supporting the body's recovery after physical exercise, thereby improving overall sports performance. However, it should be noted that the results of this study may be influenced by other factors such as individual condition, training intensity, and environmental factors. Therefore, further research with a more sophisticated experimental design and tighter control of variables may provide a more in-depth understanding of the relationship between mineral water and Pocari consumption and pulse rate recovery after specific physical activities.
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Conflict of Interest And Funding

There is no conflict of interest.

References


Samodra, Y. T. J. (2020). Pengaruh dehidrasi (kehilangan) cairan 2.8% terhadap prestasi lari 400 meter. \textit{Jurnal SPORTIF : Jurnal Penelitian Pembelajaran}. https://doi.org/10.29407/js_unpgrv.v6i2.14484


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