OPEN ACCESS
Indonesian Journal of Sport, Health and Physical Education Sciences Vol 3 No 1 (2024) https://doi.org/10.58723/inasport.v3i1.210
Check for updates
Research Article

Differences In The Effect Of Mineral Water On The Pulse Rate Of The 400-Meter Running Experiment

Received : May 27, 2024	Revised : January 18, 2024	Accepted: January 23, 2025	Publish : January 24, 2025

Yulia Emelda, Isti Dwi Puspita Wati, Janna Marie B. Quinto

Abstract:
This research is an experimental descriptive research. The research was conducted with the aim of obtaining data on pulse rate differences in the 2nd set. This study uses a sample of active students of the Department of Sports Coaching Education, class of 2021 totaling 9 people. The results showed that the sample tried to run 400 x 3 with as many as 2 attempts. The data was analyzed by descriptive and differential tests. The results of the study proved that the difference in the pulse rate of the first set was 157.33 beats per minute while the pulse rate of the second set was 166 beats per minute. It can be seen that the difference between the first and second set pulse rates is higher than the second set pulse rate. The lowest minimum score is the first set pulse rate of 132, while the second set pulse rate is 138. So that the data from the first and second sets of pulse rate difference test results are different. The conclusion in this study is the difference between the first set of pulse < the second pulse. (166.00 < 157.33) the pulse of the first set and the pulse of the second set.

Keywords: Mineral Water, Pulse, Sports

1. INTRODUCTION

Mineral water plays a very important role for the body, lack of drinking water can cause a decrease in blood volume or dehydration (Putri & Z, 2020). If we are dehydrated, our body will experience a loss of balance, concentration, more susceptible to diseases, weakness, dry skin, chapped lips, vomiting, diarrhea, darker urine color and can cause kidney failure (Arista & Wahyudin, 2021; Rahmiati, 2020). According to experts (Chairunissa et al., 2021) that water is one of the sources of human needs. Because all living things really need mineral water for daily needs. In addition, water is also a very important source for humans in life, besides air (Wijaya & Sukarni, 2019). The benefits of drinking mineral water are many, and mineral water is very functional to help maintain freshness in the body. And also mineral water rich in this mineral has now been widely used to maintain body health or to avoid dehydration (Salim & et al., 2021).

Therefore, fluid intake is very important, besides that fluid intake also plays an important role as solvents, compounds, molecules, and also serves very important in regulating body temperature. So it is recommended that drinking enough water is equivalent to 2 liters, or equivalent to 8 glasses per day can help maintain the balance of fluids in the body (Arista & Wahyudin, 2021). Physiologically, the pulse rate will be determined, one of which is the elasticity of the blood vessels. Based on pulse, it can be used as a barometer of health and post-workout recovery level. In the human body, there are several vital signs that can reflect clues to human health conditions, including blood pressure, respiration, pulse rate and body temperature.

This pulse rate will change along with the activities carried out, especially exercises with a higher intensity, the pulse rate will adjust. Your pulse will drop if the intensity of your workout also drops, or if you're given the opportunity to take a break. Pulse rate recovery is one example of a very real change after doing physical activity (Pramono et al., 2018). Dehydration also affects the pulse, when dehydrated, the blood becomes thick and the pulse rate will be higher. The purpose of this study is to find out the difference in pulse rate in the 2nd set.

2. MATERIAL AND METHOD

This study is a one-shot study experimental research. This test was carried out in the afternoon by active students of sports coaching education class of 2021, the sample was 9 people. The research materials/tools

used were whistles, stopwatches, glasses, mineral water, pens, and notebooks. This research was carried out in the SSA Pontianak field, on Wednesday, May 17, 2023. The data were analyzed by descriptive and differential tests. The data was processed using SPPS to find the size of the central tendency of the statistics, the presentation of the graph of the basic test and the differential test.

Before running 400 meters, the students warmed up so that unwanted injuries did not occur. After that, students are directed to drink mineral water and count the initial pulse for 10 seconds. Next, they ran 400 meters. Every 400 meters they are directed to measure the pulse for 60 seconds. To continue in the second set of 3-minute recovery students and continue running 400 meters, already in the third set students were directed to measure the final pulse and were given a break time of 5 minutes.

3. RESULT AND DISCUSSION

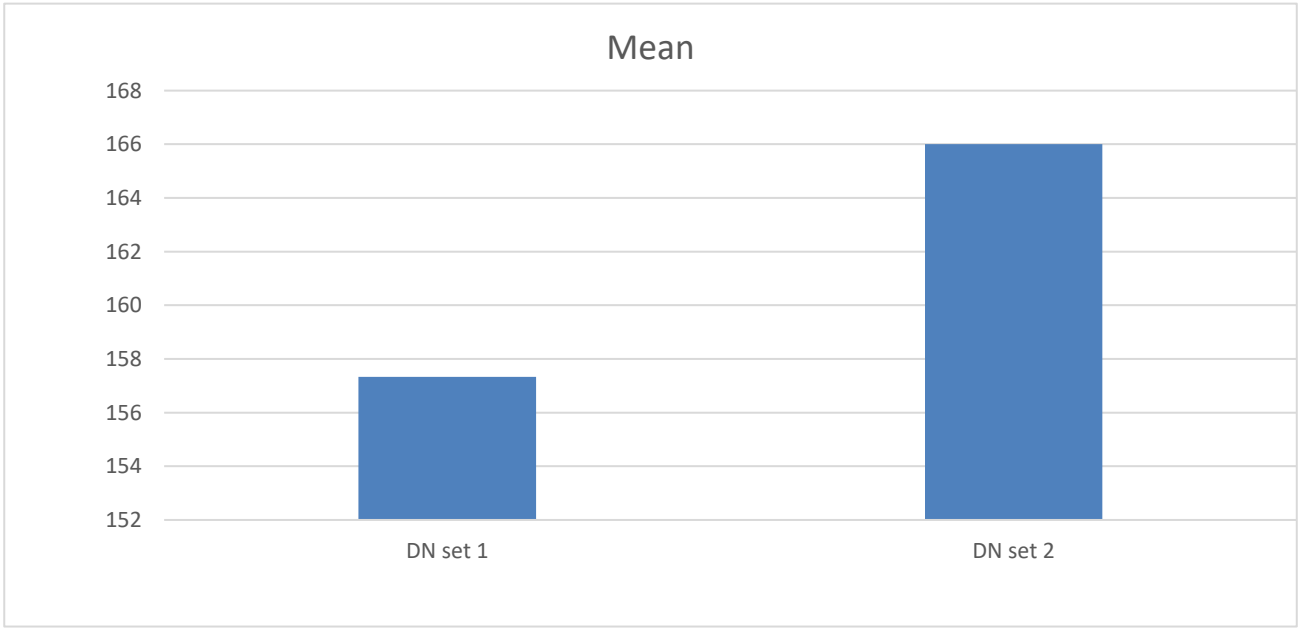
1.1 Result

This test was carried out to find out the difference in pulse between running in the first and second sets with the administration of mineral water carried out by PKO students in the 5th semester, the results after conducting a 400-meter running test.

Table 1. Descriptive of the results of the first set of DN measurements and the second DN

		DNset 1	DNset 2
N	Valid	9	9
	Missing	0	0
Mean		157,33	166,00
Median		162,00	174,00
Mode		168	174
Std. Devitation		14,629	14,387
Minimum		132	138
Maksimum		174	186

Based on table 1 above, the results of 9 sample data with the difference in the pulse rate of the first set and the second pulse, the pulse rate of the first set is 157.33, the median is 162.00, the mode is 168, the std. deviation is 14.629, the minimum is 132, the maximum is 174. and the second set of pulse is 166.00, the median is 174.00, the mode is 174. std. deviation is 14.387, the minimum is 138, the maximum is 186.



Graph 1. First set pulse and second set pulse

Based on table 1 and graph 1 above, from 9 samples that ran 400 x3 x3, it is known that the First Set Pulse Rate with a mean result of 157.33 and the Second Set Pulse Rate is 166.00.

Table 2. Results of data normality calculation

		Set 1 – Set 2
N		9
Normal Parameters[a,b]	Mean	,0000000
	Std. Deviation	13,19196867
Most Extreme Differences	Absolute	,276
	Positive	,115
	Negative	-,276
Test Statistic		,276
Asymp. Sig. (2-tailed)		,046[c]

All data are considered significant if they are above 0.05. It can be concluded that the data is above normal. If the data is normal, a parametric test can be carried out. Parametric tests can be carried out with the T-Test.

Table 3. Results of different test tests

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	DNset1 - DNset2	-8,667	15,906	5,302	-20,893	3,560	-1,635	8	,141

Table 3 above the sig value (2 tailed) with a sample of students obtained = .141. So that the data from the first set of pulse test results and the second set of pulse rate were different. So the pulse of the first set is 157.33 < the pulse of the second set is 166.00 (157.33 < 166.00).

So it is known that the results of the first set of pulse test are 157.33 while the second set of pulse rate is 166.00. It can be known that the pulse rate of the second set is higher. It is known through the lowest minimum score of the first set pulse rate of 132 while the pulse rate of the second set is 138, as well as by the test of the difference in the value of sig (2 tailed) with a sample of students obtained = .141. So that the data from the first set of pulse results and the data from the second set of pulse results experienced differences. The conclusion in this study is that the pulse of the first set > the pulse of the second set. (157.33 < 166.00). means that the first pulse is better than the second pulse. The results of 9 samples with the pulse value of the first set, mean 157.33, median 162.00, mode 168, std. deviation 14.629, minimum 132, maximum 174. And the pulse of the second set mean 166.00, median 174.00, mode174, std. deviation 14.387, minimum 138, maximum 186.

1.2 Discussion

Pulse rate is a physiological variable of the body, which describes the condition of the body in a static and dynamic state. So that through the pulse you can know your heart rate, heart rhythm, and also heart strength. Checking the pulse can be a sign of whether the heart is working properly or not. Because heart health is very important, it is used as an indicator of whether the body is healthy or not. In addition, from the speed of the pulse, it can be known how hard the heart is already working, whether the pulse is working too fast, slow, or even irregular means that there is a disorder in the heart. If the intensity of exercise increases, the frequency of the pulse will increase, but vice versa, if the intensity of the exercise decreases, the frequency of the pulse will decrease (Sandi, 2016). Therefore, the pulse rate is a very important signal in the body, namely in the field of health which is useful for effective and fast evaluation materials and also serves to find out the condition of the body.

According to experts (Zunnur et al., 2017) that blood pressure and pulse rate are important things in human health, because blood pressure or pulse rate is a factor that can be used as an indicator that determines the human cardiovascular system. Mineral water is important to consume based on (amount, function, and impact) on the human body (Salim & Taslim, 2021) Mineral water is very important to consume

based on its amount, function, and effects on the human body (Salim & Taslim, 2021). Because mineral water is part of a need in the body that must be met so that dehydration does not occur (Ariyani et al., 2020; Dhea et al., 2019) The function of mineral water in the human body is as a solvent, maintaining skin moisture (Dhea et al., 2019) one of the effects when the body experiences a lack of drinking will experience a lack of fluids, namely loss of concentration.

Body temperature is one of the indicators when the body is doing moderate-intensity and high-intensity physical activities such as exercise (Susanto, 2020). Therefore, there will be an increase in higher body temperature (Mintarto & Fattahilah, 2019). If it is at an open or hot room temperature, the body indirectly experiences an increase in body temperature and higher pressure on the cardiovascular so that it can result in dehydration due to an increase in environmental temperature that affects performance in the body.

In the human body there are several vital signs that describe clues to human health conditions, including blood pressure, respiration, pulse rate and body temperature (Utomo et al., 2019). Because in the human body there are important organs, namely such as the heart is an organ that is in the human body, the heart also functions as blood circulation throughout the body. One solution to find out the condition of the pulse is on the wrist or neck and calculate the pulse rate by using a stopwatch. The task of the heart is to pump blood into all organs of the body.

Physical condition training can improve physical fitness and increase physiological elements in the body, therefore physical exercise depends more on intensity, duration and frequency. If you do physical exercise with weight or high intensity, there will be an increase in the need for blood that contains oxygen will be greater than before. However, if you experience fatigue or fatigue due to too high activity, it can result in a lack of energy in the human body as a result of too strenuous activity (Sagala et al., 2021).

According to experts (Suwanto et al., 2021) When doing sports activities, there will be an increase in pulse, changes in dehydration status caused by physiological factors of the body in maintaining homeostatic. Pulse measurement will be related to heart flow, because the faster the need for oxygen in the blood increases, the more pulse rate will increase (Suwanto et al., 2021). According to (Hariadi, 2015) If you often do running sports activities, the body will experience physical health and fitness, and also the body will not easily experience fatigue. Because through running sports activities that can also help train the body, not only physically but also spiritually.

4. CONCLUSION

Pulse is a feeling or vibration that is felt when blood is pumped through an artery by a contraction of the heart. It turns out that the pulse rate can also be affected by mineral water drinks, which can cause the pulse rate to rise. In this study, it was known that the pulse rate of the second set was higher than the pulse rate of the first set. Before running 400 meters, the students warmed up so that unwanted injuries did not occur. After that, students are directed to drink mineral water and count the initial pulse for 10 seconds. Next, they ran 400 meters. Every 400 meters they are directed to measure the pulse for 60 seconds. To continue in the second set of 3-minute recovery students and continue running 400 meters, already in the third set students were directed to measure the final pulse and have a five-minute break.

5. ACKNOWLEDGEMENT

We extend our heartfelt gratitude to active students of Sports Coaching Education class of 2021 Tanjungpura University. May this collaboration bring meaningful contributions to the advancement of education in the future.

AUTHOR INFORMATION

Corresponding Authors

Yulia Emelda, Universitas Tanjungpura, Indonesia
https://orcid.org/0009-0007-3625-8723
Email: f1251211029@student.untan.ac.id

Isti Dwi Puspita Wati, Central University of Haryana, India
https://orcid.org/0000-0002-5315-536X
Email: isti.dwi.puspita.w@fkip.untan.ac.id

Janna Marie B. Quinto, Mariano Marcos State University, Philippines
https://orcid.org/0000-0001-8202-7714
Email: jmbquinto@mmsu.edu.ph

REFFERENCE

Arista, L., & Wahyudin, A. A. (2021). Faktor-Faktor Yang Berhubungan Dengan Status Hidrasi Mahasiswa Program Profesi Ners Fakultas Ilmu Keperawatan Universitas Indonesia. Jurnal Ilmu Keperawatan Medikal Bedah, 4(2). https://doi.org/10.32584/jikmb.v4i2.669

Ariyani, S., Asmawit, Utomo, P., & Cahyanto, H. (2020). Peningkatan Kualitas Keasaman (Ph) Pada Sumber Air Untuk Industri Air Mineral Dengan Metode Penyaringan. JURNAL

BORNEO AKCAYA, 6(1). https://doi.org/10.51266/borneoakcaya.v6i1.158

Chairunissa, A. A., Prasetyo, D., & Mulyadi, E. (2021). Pembuatan Air Demineral Menggunakan Membran Reverse Osmosis (Ro) Dengan Pengaruh Debit Dan Tekanan. Jurnal Teknik Kimia, 15(2). https://doi.org/10.33005/jurnal_tekkim.v15i2.2544

Dhea, B., Kristinawati, E., & Ernawati, F. (2019). Pengaruh Konsumsi Air Putih Terhadap Hasil Pemeriksaan Kristal Oksalat Dalam Urin Pada Pasien Rawat Jalan Di Puskesmas Pagesangan. Jurnal Analis Medika Biosains (JAMBS), 6(1). https://doi.org/10.32807/jambs.v6i1.124

Hariadi. (2015). Aktivitas Fisik Atau Olahraga Yang Aman Untuk Kesehatan Dan Kesegaran Jasmani. Generasi Kampus, 2(1). https://doi.org/10.30814/sportarea.v1i1.374

Mintarto, E., & Fattahilah, M. (2019). Efek Suhu Lingkungan Terhadap Fisiologi Tubuh pada saat Melakukan Latihan Olahraga. JSES : Journal of Sport and Exercise Science, 2(1). https://doi.org/10.26740/jses.v2n1.p9-13

Pramono, B. A., Sifaq, A., & Bulqini, A. (2018). Efek Posisi Tubuh Setelah Berlatih Terhadap Masa Pemulihan. JSES : Journal of Sport and Exercise Science, 1(1). https://doi.org/10.26740/jses.v1n1.p25-29

Putri, N. P., & Z, A. F. (2020). Manfaat Air Minum bagi Kesehatan Peserta Didik pada Tingkat MI/SD. Al-Adzka: Jurnal Ilmiah Pendidikan Guru Madrasah Ibtidaiyah, 10(1). https://doi.org/10.18592/aladzkapgmi.v10i1.3622

Rahmiati, R. (2020). Pemeriksaan Kualitas Air Minum Isi Ulang Secara Mikrobiologis. Journal of Natural Sciences, 1(1). https://doi.org/10.34007/jons.v1i1.141

Sagala, S. U. B., Sucipta, I. N., & Tika, I. W. (2021). Pemberian Kudapan (Makanan Ringan) Pada Petani Daun Bawang Prei Untuk Menurunkan Kelelahan dan Beban Kerja Saat Bekerja di Kebun. Jurnal BETA (Biosistem Dan Teknik Pertanian), 10(1). https://doi.org/10.24843/jbeta.2022.v10.i01.p15

Salim, R., & Dkk. (2021). Keberadaan Mineral Penunjang Kesehatan Tubuh Pada Air Minum Isi Ulang. Jurnal Katalisator, 6(2). https://doi.org/10.22216/jk.v5i2.571

Salim, R., & Taslim, T. (2021). Edukasi Manfaat Air Mineral Pada Tubuh Bagi Anak Sekolah Dasar Secara Online. Jurnal Pengabdian Kepada Masyarakat, 27(2). https://doi.org/10.24114/jpkm.v27

Sandi, I. N. (2016). Effect of Physical Exercise on The Pulse Rate. Sport and Fitness Journal, 4(2). http://dx.doi.org/10.3390/jcm7120503

Susanto, F. A. (2020). Pengukuran Suhu Tubuh Online Sebagai Pencegahan Penyebaran Virus Flu Di Lingkungan Kampus. Jurnal Sistem Informasi Dan Bisnis Cerdas, 13(2). https://doi.org/10.33005/sibc.v13i2.2166

Suwanto, Y. A., Lusiana, L., & Purnama, Y. (2021). Perbedaan Denyut Nadi dan Saturasi Oksigen Sebelum dan Sesudah Senam Bhineka Tunggal Ika (SBTI) di Era Pandemi Covid-19. Journal of Sport Coaching and Physical Education, 6(1). https://doi.org/10.15294/jscpe.v6i1.46034

Utomo, A. S., Negoro, E. H. P., & Sofie, M. (2019). Monitoring Heart Rate Dan Saturasi Oksigen Melalui Smartphone. Simetris: Jurnal Teknik Mesin, Elektro Dan Ilmu Komputer, 10(1). https://doi.org/10.24176/simet.v10i1.3024

Wijaya, A. E., & Sukarni, R. B. S. (2019). Sistem Monitoring Kualitas Air Mineral Berbasis Iot (Internet Of Things) Menggunakan Platform Node-Red Dan Metode Saw (Simple Additive Weighting). Jurnal Teknologi Dan Komunikasi STMIK Subang, 12(2). https://doi.org/10.47561/a.v12i2.156

Zunnur, N. H., Adrianto, A., & Basyar, E. (2017). Kesesuaian Tipe Tensimeter Raksa dan Tensimeter Digital Terhadap Pengukuran Tekanan Darah Pada Usia Dewasa. Jurnal Kedokteran Diponegoro, 6(2). https://doi.org/10.14710/dmj.v6i2.18604