PENGARUH PEMBERIAN MINUMAN KARBOHIDRAT-ELEKTROLIT TERHADAP DENYUT NADI DAN TEKANAN DARAH SAAT BERAKTIVITAS

INTISARI

Ameliora Dwi Astani[1], Istiti Kandarina[2], Perdana Samekto[2]

Latar Belakang: Aktivitas fisik merupakan segala bentuk kegiatan yang membutuhkan energi dalam pelaksanaanya. Dalam pelaksanannya aktivitas fisik dikelompokkan ke dalam tingkatan aktivitas fisik, yakni intensitas ringan, sedang, hingga berat. Peningkatan intensitas dalam aktivitas fisik dapat mempengaruhi tubuh yang ditunjukkan dengan berbagai mekanisme respon fisiologis. Salah satu respon fisiologis tersebut adalah keseimbangan cairan terkait dengan proses pengeluaran dan pemasukan cairan, yang nantinya berpengaruh terhadap respon lain seperti sistem kardiovascular. Faktor-faktor seperti jenis minuman, kandungan, dan jumlah cairan perlu diperhatikan terkait keseimbangan cairan saat beraktivitas. Sehingga dapat mencegah perubahan respon fisiologis yang berlebihan.

Tujuan: Tujuan penelitian ini adalah untuk mengertahui dampak dari pemberian jenis cairan dengan kandungan elektrolit dan karbohidrat terhadap status hidrasi dengan parameter denyut nadi dan tekanan darah.

Metode: Penelitian ini merupakan penelitian kuantitatif eksperimental dengan desain penelitian *Randomized Control Crossover Trial*. Subyek merupakan siswa SMA kelas X dan XI di SMA Tunas Kelapa Kota Samarinda Kaltim sejumah 32 orang. Variabel yang diteliti meliputi tekanan darah sistol dan diastol, denyut nadi, serta persen air tubuh. Pengukuran tekanan darah diambil dengan menggunakan spghmomanometer aneroid, denyut nadi dengan palpatasi, serta persen air tubuh dengan *Bioelectrical Impedance Analysis*. Variabel aktivitas fisik yang digunakan adalah lari selama 15 menit. Uji statistik menggunakan uji perbedaan *Mann Whitney*.

Hasil: Hasil menunjukkan tidak terdapat perbedaan yang bermakna ($p>0,05$) antara tekanan darah sistolik dan diastolik, denyut nadi, serta persen air tubuh pada sebelum dan sesudah berolahraga di kedua pemberian minuman. Namun, terdapat perbedaan yang bermakna ($p=0,04$) pada rerata tekanan diastolik saat berolahraga dengan nilai yang lebih tinggi pada pemberian elektrolit karbohidrat.

Kesimpulan: Pemberian jenis minuman dehidrasi selama berolahraga dapat mengurangi respon fisiologis berlebihan secara nyata jika diberikan dalam jenis cairan, jumlah, dan waktu pemberian yang tepat.

Kata Kunci: tekanan darah diastolik, tekanan darah sistolik, denyut nadi, cairan elektrolit-karbohidrat.

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[1]Mahasiswa Gizi Kesehatan
[2]Dosen Prodi Gizi Kesehatan FKKMK UGM

EFFECT OF A CARBOHYDRATE-ELECTROLYTE BEVERAGE, ON HEART RATE AND HEART PRESSURE IN EXERCISE

ABSTRACT

Ameliora Dwi Astani[1], Istiti Kandarina[2], Perdana Samekto[2]

Background: Physical activity is a kind of activities that need energy for their performance. It is devided into three stages, such as low intensity, moderate intensity, and high intensity. These intensity stages could affect the body'a physiological response. One of the physiological responses is body fluid balance. Which is related to fluids input and ouput. It is also affect another physiological responses such as cardiovascular system. Some factors such as type of beverages, beverage's ingredients, and the amount of fluid need to be considered to maintain the body fluid balance while doing physical activity. So, it can prevent excessive change in physiological response.

Objective: The purpose of this study is to understand the effect of carbohydrate and electrolyte contained in beverage on hydration status, which used heart rate and heart pressure as the indicator of hydration status

Method: This quantitative experimental study used RCT to X and XI grade students in Tunas Kelapa High School Samarinda (n=32). Data were collected using sphygmomanometer aneroid to measure heart pressure, palpatation technique to measure heart rate, and Bioelectrical Impedance were used to measure percent body water. Physical activity that used in this study is 15 minutes running test. Data were analyzed using Mann-Whitney Test.

Result: There were no significant differences (p>0,05) between systole, diastole, heart rate, as well as percent body water in pre- and post- exercise carbohyrate electrolyte beverages (ECHO) and plain water. But a significant difference (p = 0,04) between diastolic mean rate in exercise with a greater number in carbohydrate beverage (ECHO) was found in this study. There was also found an increase of systolic, diastolic pressure, as well as heart rate both in ECHO and plain water in exercise phase.

Conclusion: The optimal rehydration fluid for exercise which contain certain type of nutrition correct amount of fluid, and timing of consumption can prevent excessive physiological response.

Key word: Systolic blood pressure, diastolic blood pressure, heart rate, carbohydrate electrolyte beverage

[1]Undergraduate Student of Nutrition and Health Department, Faculty of Medicine, Public Health, and Nursing, Gadjah Mada University
[2]Lecturer of Nutrition and Health Department, Faculty of Medicine, Public Health, and Nursing, Gadjah Mada University.