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The Effectiveness of Nutritions Ergogenic Modified to the Local Endurance of Pamong Praja Police Personnel in Denpasar

I Wayan Ambartana¹, Anwar Mallongi², Ni Made Yuni Gumala¹, Ni Made Dewantari¹, Lely Cintari¹, I Ketut Kencana¹, I G.A. Ari Widarti¹

¹Department of Nutrition-Health Polytechnic, Ministry of Health, Denpasar Bali,
²Department of Environmental Health, Faculty of Public Health Hasanuddin University

ABSTRACT

As the spearhead of securing local regulations issued by local governments /regents/ mayors, the existence of Pamong Praja Police in Indonesia is very vital. Besides having a good character, a Pamong Praja Police personnel must have a qualified physical fitness in relation to the tasks they perform. In carrying out its duties, Pamong Praja Police personnel often physical contact with people who do not agree with the wishes of the government. Therefore, the physical fitness of Pamong Praja Police personnel must always be well preserved. The best way to maintain optimal physical exercise is to exercise a routine and intake of nutritious foods.

Muscular Endurance is a durability that shows the ability of a muscle or a group of muscles in performing their tasks for a long time. Examples: weight training/weight training, drill jab practice many times in boxing, punch in wrestling

The purpose of this study is to determine the effectiveness of nutritions ergogenic modified to the local endurance of Pamong Praja Police personnel in Denpasar. The population is all of Pamong Praja Police personnel in Denpasar City who served in the field. The sample is determined by the Cochran formula. Sampling using Simple Random Sampling technique by drawing members of population (lottery technique). The type of research is Quasi Eksperimen and the design used is pre test-post test design. Testing data to determine the relationship between variables using Wilcoxon Signed Ranks Test and data processing using SPSS program.

The results showed that there was influence of modified Nutrient Ergogenic to endurance of arm muscle but no effect on stomach muscle endurance at sample of Pamong Praja Police personnel in Denpasar City.

The benefits of research that can provide input to the Local Government of Denpasar in terms of the role of regulation of food intake and sport activities in order to improve the local endurance of Pamong Praja Police personnel in Denpasar City, especially for personnel who served in the field.

Keywords: Nutrition, Ergogenic nutrition, Modified ergogenic nutrition, Local endurance, Pamong Praja Police

INTRODUCTION

The term ergogenic is derived from the Greek word ergo, which is defined to increase the potential of

Corresponding author:
I Wayan Ambartana
e-mail: wayanambartana@yahoo.co.id
Exercise of physical condition plays a very important role to maintain or improve the degree of physical fitness. To promote and maintain health, all healthy adults aged 18 to 65 year need moderate-intensity aerobic (endurance) physical activity for a minimum of 30 minutes on five days each week or vigorous-intensity aerobic physical activity for a minimum of 20 minutes on three days each week. The process of physical exercise is done carefully, repeatedly with the proper regulation of workload causes the physical fitness of a person is increasing. This will cause a person to become physically skilled, strong and efficient in his movement.²

Proper physical and physical exercise regulation will not work well in improving physical fitness if without proper dietary adjustment, especially the regulation of carbohydrate intake as a source of energy.³ Based on the above description, researchers interested in conducting research to get answers how much effectiveness of ergogenik modified nutrition to the local endurance of Pamong Praja Police personnel in Denpasar City.

MATERIALS AND METHOD

The type of research used was Quasi experimental research with randomize pre test-post test design.⁴ This research is located in Pamong Praja Police personnel Office of Denpasar City. The population in this research is Pamong Praja Police personnel of Denpasar City both men and women who served in the field, while the research sample is part of the population whose number is determined by Cochran formula.⁵ Furthermore, sampling from the population using Simple Random Sampling technique lottery technique (lottery technique), so that the end result obtained the exact number of research samples. Furthermore, the selected sample is used as research object. Local endurance data with Test Push Up and continued with Test Sit Up. Number of Push Up and Sit Up that can be done each for 1 minute in comparison with the standard so obtained the category of local endurance.⁶

Weight data obtained by weighing the weight using the scales with a capacity of 250.0 kg and a precision of 0.1 kg. Body height data were obtained by measuring sample height using mikrotoice with a capacity of 200.0 cm and a precision of 0.1 cm, in upright position without footwear, facing the measuring officer.⁷

Treatment

Modified nutrient ergogenic giving is by giving dietary carbohydrate loading modified⁸ as follows:

a) Seven days before the post test or the first day of treatment is given medium-intensity exercise to spend glycogen deposits

b) On days 2-4 a high-protein, high-fat, high-carbohydrate diet to meet energy needs, but prevent glycogen filling

c) On days 5-7 before the post test is given a high carbohydrate diet (70% of total energy) to maximize glycogen into the muscle that is depleted of glycogen. At this time the exercise is reduced to reduce the use of muscle glycogen and ensure maximum savings on post test day (day 8)

Implementation of Measurement and Exercise

Four days before the pre-treated treatment is the measurement of local endurance with sit up test and push up test. The result is then compared with the standard so that the local endurance data is obtained before the treatment.

On the 1st day of treatment, medium impact training was given with push ups and sit ups for 1 minute each, samples also jogging and running each for 20 minutes. On the 2nd day until the 4th day of treatment, they were given push up and sit up exercises for 1 minute each, then samples doing 2 types of exercise every day (jogging, healthy walking, running and gymnastics). On the 5th and 6th days, each of them is given a physical fitness exercise for 5 minutes and a healthy walking for 5 minutes. On Day 7 no training is given. Implementation of exercise in the morning before working hours. On the 8th day post test.⁶

Processing and analysis of data

Data processing

The collected data is processed by computer, then the result is presented in table form and narrated. To determine the local endurance that is the number of sit ups and push ups that can be done in 1 minute compared with the standard⁶ so obtained the category of local endurance sample.
Data analysis

To determine the effect of ergogenic modified nutrient to the local endurance of Pamong Praja Police personnel in Denpasar City, Wilcoxon Signed Ranks Test was used using SPSS program.

RESULTS AND DISCUSSION

Body Mass Index (BMI)\(^9\) is a simple way to monitor the nutritional status of adults, especially those related to deprivation and overweight. With this BMI can be determined weight and risk.

Table 1: Distribution of Weight-Loss Category Based on BMI Value

<table>
<thead>
<tr>
<th>Weight Category</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal (BMI=18,50-24,99)</td>
<td>11</td>
<td>20,0%</td>
</tr>
<tr>
<td>Pre Obesity (BMI=25,00-29,99)</td>
<td>29</td>
<td>52,7%</td>
</tr>
<tr>
<td>Obesity Class 1 (BMI=30,00-34,99)</td>
<td>15</td>
<td>27,3%</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>100,0%</td>
</tr>
</tbody>
</table>

From Table 1 above, based on the calculation of Basal Metabolism Index (BMI) value of body weight (in kilograms) versus the height quadrate (in Meter units) it can be seen that most of the sample, ie 29 (52,7%) heavy category his body includes pre-obesity.

Sports Habits

From the results of interviews were all regular samples of exercise, this is because the leadership requires that every member to always exercise for physical fitness is maintained. In the office, samples every Friday morning there is gymnastics activities, or a healthy walking and every time there are activities Kesamaptaan. While the sports are occupied outside the office are diverse, there are volleyball (13.3%), jogging (46.7%), gymnastics (26.7) and yoga, futsal, soccer and push up each 6.7%.

Regarding the time and frequency of exercise, most of the samples stated that the length of time in a single exercise is for 60 minutes as much as 46.7% and most also stated that the frequency of exercise in a week as much as 2 times that is as much as 73.3%.

Correlation Analysis

1). Basal Value Metabolism Index (BMI)

The table below presents the BMI Value with Formula: Weight (Kilogram Unit) divided by Height squared (Meters Unit). This data is BMI data before and after treatment.

<table>
<thead>
<tr>
<th>BMI Categories</th>
<th>Before n</th>
<th>Before %</th>
<th>After n</th>
<th>After %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal (18,50-24,99)</td>
<td>11</td>
<td>20,0%</td>
<td>26</td>
<td>47,3%</td>
</tr>
<tr>
<td>Pre Obesity (25,00-29,99)</td>
<td>29</td>
<td>52,7%</td>
<td>26</td>
<td>47,3%</td>
</tr>
<tr>
<td>Obesity Class 1 (30,00-34,99)</td>
<td>15</td>
<td>27,3%</td>
<td>3</td>
<td>5,4%</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>100,0%</td>
<td>55</td>
<td>100,0%</td>
</tr>
</tbody>
</table>

Based on statistical analysis using Wilcoxon Signed Ranks Test with \(\alpha = 0,05\), the mean value (\(\mu\)) BMI before treatment was 25,6453 and after treatment was 25,2807, with Sig value (2-tailed) = 0,001 smaller of \(\alpha (0.05)\), so this value is strong evidence to reject Ho: \(\mu \) Before = \(\mu \) After treatment. So the conclusion of the mean before and after treatment is not the same, meaning there is influence of treatment to body weight of sample.

The decrease of BMI after treatment with the application of ergogenic nutrition was modified combined with the sport activity arrangement in the sample of Pamong Praja Police personnel of Denpasar City is not apart from the obedience of each sample to follow the rules given during the first 4 days of consecutive treatment ie reducing the carbohydrate intake and increasing the sport activity.

This decline in BMI values is a reflection of weight loss, and weight loss can occur in the event of breakdown of stored glycogen in the body. The breakdown of glycogen especially glycogen in muscle occurs when carbohydrate intake is reduced with increased exercise activity.\(^1\)

The decline in BMI values also indicates that carbohydrate loading for Carbohydrates Loading on days 5 to 7 days (for 3 days) does not necessarily
increase sample weight. The process of increasing muscle glycogen deposits with a high carbohydrate diet usually lasts six days.\textsuperscript{12}

2). Local Muscle Endurance

a. Abdominal Muscle Endurance

Abdominal muscle endurance is measured by performing Sit Up movements repeatedly for 60 seconds. Abdominal muscle endurance measurements can be presented in Table 3 below.

**Table 3: Distribution of Abdominal Muscle Endurance - Before and After Treatment**

<table>
<thead>
<tr>
<th>Category</th>
<th>Before</th>
<th></th>
<th></th>
<th>After</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialties</td>
<td>4</td>
<td>7.3%</td>
<td>4</td>
<td>7.3%</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>4</td>
<td>7.3%</td>
<td>8</td>
<td>14.6%</td>
<td></td>
</tr>
<tr>
<td>Quite</td>
<td>4</td>
<td>7.3%</td>
<td>7</td>
<td>12.7%</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>10</td>
<td>18.1%</td>
<td>18</td>
<td>32.7%</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>33</td>
<td>60.0%</td>
<td>18</td>
<td>32.7%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>100.0%</td>
<td>55</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

Based on Table 3 above there is an increase in abdominal muscle endurance in each category, except in Special Category there is no increase or decrease. Along with the increase in the other categories, the opposite occurs in the Low category, which is 27.3% decrease.

Using the Wilcoxon Signed Ranks Test analysis with $\alpha = 0.05$, the mean value ($\mu$) of abdominal endurance before treatment was 4.2000 and after treatment of 3.7333, with Sig value (2-tailed) = 0.323 more magnitude of $\alpha$ (0.05), so this value is strong evidence to accept Ho: $\mu$ Before = $\mu$ After treatment. So the conclusion is mean value before and after the treatment is the same, meaning there is no effect of treatment on abdominal muscle endurance.

The muscles in the abdomen are muscles that are generally not often driven and rarely used for heavy loads. In an untrained person, moving the abdominal muscles by doing repeated sit ups (repetitions) with a certain amount of time within a few days can cause abdominal pain especially 2-3 days after sit up exercise, this is also stated by 53, 3% of the sample. The sample felt a painful stomach so uncomfortable doing sit up test. Perceived pain caused the frequency of sit up pre and post test tends to remain (stagnant) that there are as many as 26 samples (47.3%), and some even decreased by 4 samples (7.3%).

b. Arm Muscle Endurance

The endurance of the arm muscle is measured by performing Push Up motion repeatedly for 60 seconds. The results of the arm muscle endurance measurements can be presented in Table 4 below.

**Table 4. Distribution of Arm Muscle Endurance - Before and After Treatment**

<table>
<thead>
<tr>
<th>Category</th>
<th>Before</th>
<th></th>
<th></th>
<th>After</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Super</td>
<td>18</td>
<td>32.7%</td>
<td>33</td>
<td>60.0%</td>
<td></td>
</tr>
<tr>
<td>Specials</td>
<td>0</td>
<td>0.0%</td>
<td>15</td>
<td>27.3%</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>18</td>
<td>32.7%</td>
<td>0</td>
<td>0.0%</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>7</td>
<td>12.7%</td>
<td>4</td>
<td>7.3%</td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>12</td>
<td>21.9%</td>
<td>3</td>
<td>5.4%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>100.0%</td>
<td>55</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

Based on Table 4 above there is an increase in the number of samples with Super Categories, and Special Category respectively of 27.3%, and there is a decrease in the number of samples with Bad Category, Medium and Good each of 16.5%, 5.4 % and 32.7%.

By using Wilcoxon Signed Ranks Test analysis with $\alpha = 0.05$, the mean value ($\mu$) of arm muscle endurance before treatment was 2.8667 and after treatment of 1.7333, with Sig value (2-tailed) = 0.007 more magnitude of $\alpha$ (0.05), so this value is strong evidence to reject Ho: $\mu$ Before = $\mu$ After treatment. So the conclusion of the mean value before and after the treatment is not the same, meaning there is effect of treatment on arm muscle endurance.

Carbohydrate loading is a strategy to increase the amount of calories stored in the muscle by regulating the food intake, especially the source of calories with the aim of improving performance. Some athletes use this Carbo-Loading technique to get around their muscles to be able to store extra glycogen before the competition. Carbo-Loading can make muscles store glycogen nearly twice the normal amount that can be accommodated.\textsuperscript{13}

Seeing the results of this study shows the successful
implementation of Carbohydrate Loading regardless of other factors that play a role. Of the 55 samples whose BMI decreased, 44 samples of which muscle endurance increased. This shows the process of emptying glycogen deposits through the application of the modified nutritional ergogenic intake method successfully.

The results of this study in accordance with the theory proposed by Jeukendrup which states that carbohydrates increase the capacity of resistance, especially simple carbohydrates, thereby reducing fatigue due to long exercise.\(^{14-17}\)

Similarly, Roscamp who reported the results of his study that a diet high in carbohydrates can improve performance by 2 to 3%, increased muscle glycogen content early will delay fatigue approximately 20% in exercises lasting more than 90 minutes.\(^{18}\)

**CONCLUSION**

The mean value endurance of abdominal muscles before and after treatment is the same, meaning there is no effect of treatment on stomach muscle endurance in a sample of Pamong Praja Police personnel in Denpasar City who served in the field.

The mean value endurance of arm muscle before and after treatment is not same, meaning there is influence of treatment to endurance of arm muscle in sample of Pamong Praja Police personnel in Denpasar City who served in field.

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