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STUDY AND ANALYSIS OF ENERGY CONSUMPTION OF THE MACRONUTRIENTS AND ENERGY EXPENDITURE OF THE HIGHLY QUALIFIED FREESTYLE WRESTLERS

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Abstract. This article deals with the importance of rational nutrition in restoring physical fitness ability of highly qualified freestyle wrestlers, matters of the process of their nutrition consumption, the order of nutrients which they consume, as well as the calorie content of the nutrients they eat are proportional or disproportional to the energy they spend. Proper organization and regulation of rational nutrition is of paramount importance in the lives of athletes, particularly for those who are involved in freestyle wrestling. The daily food intake of freestyle wrestlers should be organized in such a way that their bodies should be provided with the necessary nutritive components to maintain the body's structure and systems.

Key words: Martial arts, freestyle wrestling, functional ability, weekly diet, average arithmetic, chronometric-tabular method.

Introduction. Martial arts are one of the fastest developing and most popular sports in developed countries today. If martial arts meet the acquired demands people will have many opportunities, such as how to foster self-discipline, socialization skills, encourage physical activity, learn to set and achieve goals, increase self-esteem, instil a sense of respect, encourage non-violent conflict resolution, improvement in other areas of life. When it comes to the types of martial arts, we put the freestyle wrestling as the first priority. Normal and rational nutrition plays a crucial role in the lives of those who are enrolled in these sports to achieve high results and the perfect formation of body

composition. Rational nutrition ensures the proper growth and development of the body, ability to withstand the harmful effects of the external environment, improvements on body's functional capacity, and it can assist enhance athletic performance [4,5]. Proper organization and regulation of rational nutrition plays an important role in the lives of athletes, especially those who are involved in freestyle wrestling. The daily food intake of freestyle wrestlers should be organized in such a way that their body is provided with the essential nutrients and energy. The results of highly qualified freestyle wrestlers in competitions directly depend on the energy components of food that they consume during periodization, therefore on the basis of the experience of developed countries, the development and recommendation of a special, rational diet with a high density and calorie that has a positive impact on athletes' high performance and results, compensates their lost energy, constitutes one of the most burning issues.

Literature review:

The scientists and famous researchers working in the field of this scientific problem are still carrying investigation and they are publishing scientific articles in prestigious journals, for instance:

An article called *"How much protein can the body use in a single meal for muscle building? Implications for daily protein distribution"* was published by Brad John Schoenfeld and Alan Albert Aragon who provided information on the role of protein in the structure of body muscles according to the food they consume [6].

Two o scholars T. Colin Campbell and Thomas M. Campbell II discussed the principles of proper nutrition, bone formation, against cancer, other diseases and headaches in their book called *"The China study: The Most Comprehensive Study of Nutrition Ever Conducted and the Startling Implications for Diet, Weight Loss and Long-term Health"* [7].

One of the scholars Dan Benardot, PhD, RD, FACSM who is the author

of *“Advanced Sports Nutrition”* conducted research on the athlete’s rational diet, the nutrients used by coaches and athletes during highly intensive periodization, the body’s need for protein, pre and post sports training nutrition, carbohydrate intake before exercise, and its breakdown during matches and sport trainings [8]. *The scientific work* , *“Sports Nutrition For Wrestling”* published by Cole Tucker, supplies information on the manifestation of carbohydrates and fats as energy and protein as fuel, the role of vitamins, minerals and supplements in physical exercise, pre- and post-workout nutrition and regular weight control [9].

An article of *“Macroelements, water, and electrolytes in sports nutrition”* that was published by Judy A. Driskell, Ira Wolinsky deals with the importance of essential nutrients, adequate fluid intake, and energy drinks in the exercise process [10].

Another scientists Natalie Digate Muth and Michelle Murphy Zive studied a number of scientific works on calorie needs, macronutrients, dietary nutrients, vitamin and minerals consumed by athletes, the scientific work called *“Sports Nutrition for Health Professionals”* also gives important information on this problem [11].

According to the analyses, many scientific researches have been done in developed countries on rational nutrition for highly qualified freestyle wrestlers, but the issues concerning the development of effective and special nutrition for the problem being analysed in this article have not been sufficiently studied in Uzbekistan.

Research Methodology:

This article analysis scientific and methodological literature, observations, interviews, surveys, mathematical-statistical analysis, chronometric tabular method of determining daily energy expenditure, method of calculating the calories of macronutrients consumed daily. **Analysis and**

results: The research was organized at the Jizzakh Specialized Boarding School of Olympic Reserve, and the energy expenditure and nutrition consumption of 18-20-year-old highly qualified wrestlers were studied and analysed. Firstly, we determined the daily energy expenditure of qualified young freestyle wrestlers according to their daily lifestyle. To do this, we used a chronometric table that presents twenty-four hours of work done in order to calculate energy expenditure, and we explained the ins and outs of research that we were going to conduct, as well as requested that qualified young freestyle wrestlers had to write down the routines, types of exercise they did during the whole day in detail. The chronometric table that we mentioned above had been utilized in the book "*Physical Education and Sports Hygiene*" by Alexey Alexievich Minkh [12].

TABLE 1

DAILY ROUTINE TIME TABLE CHART OF QUALIFIED YOUNG FREESTYLE WRESTLERS

| t/r | Movement activities | Time spent | Duration | Physical activity coefficient | Total energy expenditure (kcal) |
|-----|----------------------------------|--|-------------|-------------------------------|---------------------------------|
| 1 | Wake up | 06 ⁰⁰ -06 ³⁰ | 30 | 0.0183 | 0.549 |
| 2 | Wash up | 06 ³⁰ -06 ⁴⁰ | 10 | 0,033 | 0.33 |
| 3 | 1 – Breakfast | 06 ⁴⁰ -07 ⁴⁰ | 60 | 0,023 | 1.38 |
| 4 | 1 – Sport training | 08 ⁰⁰ -09 ³⁰ | 90 | | |
| 5 | 2 – Breakfast | 09 ⁴⁰ -10 ¹⁰ | 30 | 0,023 | 0,69 |
| 6 | Ritual | 10 ¹⁰ -10 ²⁵ | 15 | 1.3 | 19.5 |
| 7 | Lessons (1-couple) (2-couple) | 10 ³⁰ -11 ⁵⁰ 12 ⁰⁰ -13 ²⁰ | 80 80 | 0,0241 0,0241 | 1.928 1.928 |
| 8 | 1 – Lunch | 13 ²⁵ -14 ⁰⁰ | 35 | 0,023 | 0.805 |
| 9 | Lessons (3- couple) | 14 ¹⁰ -15 ³⁰ | 80 | 0,0241 | 1.928 |
| 10 | Independent learning | 15 ⁴⁰ -16 ³⁰ | 50 | 0,0183 | 0.915 |
| 11 | Afternoon tea | 16 ⁴⁰ -17 ⁰⁰ | 20 | 0,033 | 0.66 |
| 12 | 2 – Sport training | 17 ⁰⁰ -19 ¹⁵ | 135 | – | – |
| | Dinner | 19 ³⁰ -20 ⁰⁰ | 30 | 0,023 | 0.69 |
| 13 | Spiritual events | 20 ¹⁰ -21 ³⁰ | 80 | 0.025 | 2 |
| 14 | Go to sleep | 22 ⁰⁰ -06 ⁰⁰ | 480 | 0.0155 | 7.44 |
| | Total: | | 1305 | | 40.74 |

Note: The table above represents the daily routine of qualified young freestyle wrestlers, does not include the calorie expenditure of them during sport trainings.

We observed that qualified young freestyle wrestlers did these movement activities throughout the day. According to the schedule of their daily routine, the activities done by them were multiplied by the coefficient of physical activity, and 15% of the total volume was taken for neglected actions and metabolism, then the result was added to the remaining volume. All the results that we obtained were summarized, and made their daily energy expenditure more exact [13]. To calculate the average daily energy expenditure of the qualified young freestyle wrestlers, we had to clarify their average weight and height, therefore we used the arithmetic mean:

$$A = \frac{a_1 + a_2 + a_3 + \dots + a_n}{n}$$

Picture 1. Arithmetic mean formula

- 1). A – the mean;
- 2). a_1 – the first value;
- 3). a_2 – the second value;
- 4). a_3 – the third value;
- 5). a_n – the last value
- 6). n = the number of value;

TABLE 2

WEIGHT (KG) AND HEIGHT (SM) INDEXES OF QUALIFIED YOUNG FREESTYLE WRESTLERS

| № | Full name | Age | Height (sm) | Weight (kg) |
|----------|---------------------------|------------|------------------------|------------------------|
| 1 | Shokirjonov Sunnat | 18 | 180 | 78 |
| 2 | Salimov Shokhruhmirzo | 18 | 178 | 69 |
| 3 | Khujamqulov Mirziyo | 18 | 192 | 98 |
| 4 | Abdukhalilov Temur | 18 | 165 | 64 |
| 5 | Abdullayev Akobir | 18 | 169 | 68 |
| 6 | Usganov Khujamurod | 18 | 172 | 69 |
| 7 | Khaydarov Islom | 18 | 175 | 70 |
| 8 | Abdullayev Mukhammadkodir | 18 | 166 | 68 |
| 9 | Mamadaliyev Jaloliddin | 19 | 177 | 72 |
| 10 | Kushboqov Shakhzod | 19 | 161 | 58 |

| | | | | |
|-----------|----------------------|----|-----|----|
| 11 | Komilov Jakhongir | 19 | 178 | 76 |
| 12 | Sariboyev Shokhruh | 19 | 178 | 79 |
| 13 | Mamayokubov Ibrohim | 19 | 175 | 73 |
| 14 | Usmonkulov Sardor | 20 | 180 | 98 |
| 15 | Makhmudov Jasur | 20 | 181 | 87 |
| 16 | Khudoyberganov Murod | 20 | 172 | 67 |

The average weight and height for 18-year-old qualified freestyle wrestlers were 73 kg and 175 cm respectively. The average daily energy expenditure (*without non-participation index in intensive trainings*) was 3420 kcal.

$$\underline{40.74 \times 73 = 2974 \text{ kcal}} \quad \underline{2974 \times 0,15 = 446 \text{ kcal}} \quad \underline{2974 + 446 = 3420 \text{ kcal}}$$

The average weight and height for 19-year-old qualified freestyle wrestlers were 72 kg and 174 cm correlatedly. The average daily energy expenditure (*without non-participation index in intensive trainings*) was 3372 kcal.

$$\underline{40.74 \times 72 = 2933 \text{ kcal}} \quad \underline{2933 \times 0,15 = 439 \text{ kcal}} \quad \underline{2933 + 439 = 3372 \text{ kcal}}$$

The average weight and height for 20-year-old qualified freestyle wrestlers were 84 kg and 178 cm correspondingly. The average daily energy expenditure (*without non-participation index in intensive trainings*) was 3983 kcal.

$$\underline{40.74 \times 85 = 3463 \text{ kcal}} \quad \underline{3463 \times 0,15 = 520 \text{ kcal}} \quad \underline{3463 + 520 = 3983 \text{ kcal}}$$

The calculation above conveys the daily energy expenditure of qualified freestyle wrestlers on the schedule of daily routine set by Jizzakh Specialized Boarding School of Olympic Reserve. To calculate the energy that was expended during sport trainings, we used an online calculation program. It is called “*Captain Calculator*”. This program is designed to solve not only mathematical and economic problems, but also many problems in the field of physical education and sports on the basis of formulas entered into the system. With the help of the program, we had an opportunity to calculate the energy expenditure of qualified young freestyle wrestlers that were enrolled in the process of sport trainings. For this purpose we determined the athlete's body weight (kg) and the MET (*Metabolic equivalent of task*) of the chosen sport, and it accounted for "6" in freestyle wrestling [14].

ENERGY EXPENDITURE PER MINUTE = (MET x WEIGHT (KG) x 3.5) / 200

By using that formula, we determined the energy expenditure per minute, then multiplied the result by the duration of the sport training, as a result, we obtained an index of the energy expended in the process of sport trainings by qualified freestyle wrestlers. To calculate the average energy expenditure during the whole day, we added the expending energy during physical exercises with the energy that was utilized according to the daily routine. During the research that was being conducted at the Jizzakh Specialized Boarding School of Olympic Reserve, 90 and 135-minute sport trainings were organized for freestyle wrestlers twice a day.

18-YEAR-OLD QUALIFIED FREESTYLE WRESTLERS' ENERGY EXPENDITURE PER MINUTE:

$$(6 \times 73 \times 3.5) : 200 = 7.7 \text{ kcal}$$

$$7.7 \times 90 = 693 \text{ kcal} \quad 7.7 \times 135 = 1040 \text{ kcal} \quad 693 + 1040 = 1733 \text{ kcal}$$

$$\text{Average daily total energy expenditure per day: } 3420 + 1733 = 5153 \text{ kcal};$$

19-YEAR-OLD QUALIFIED FREESTYLE WRESTLERS' ENERGY EXPENDITURE PER MINUTE:

$$(6 \times 72 \times 3.5) : 200 = 7.6 \text{ kcal}$$

$$7.6 \times 90 = 684 \text{ kcal} \quad 7.7 \times 135 = 1026 \text{ kcal} \quad 684 + 1026 = 1710 \text{ kcal}$$

$$\text{Average daily total energy expenditure per day: } 3372 + 1710 = 5082 \text{ kcal};$$

20-YEAR-OLD QUALIFIED FREESTYLE WRESTLERS' ENERGY EXPENDITURE PER MINUTE:

$$(6 \times 85 \times 3.5) : 200 = 8.9 \text{ kcal}$$

$$8.9 \times 90 = 801 \text{ kcal} \quad 8.9 \times 135 = 1202 \text{ kcal} \quad 801 + 1202 = 2003 \text{ kcal}$$

$$\text{Average daily total energy expenditure per day: } 3983 + 2003 = 5986 \text{ kcal}.$$

It was observed that the average daily total energy expenditure of qualified freestyle wrestlers during both training period and daily routine was around 5000-5160 kcal for 18-19-year-olds and 5900-6000 kcal for 20-year-olds.

TABLE 3

WEEKLY MENU RECOMMENDED BY JIZZAKH SPECIALIZED BOARDING SCHOOL OF OLYMPIC RESERVE FOR QUALIFIED YOUNG FREESTYLE WRESTLERS

| 02.03.2020. | Products list | The norm | Calorie | 03.03.2020. | Products list | The norm | Calorie |
|--------------------|----------------------|-----------------|----------------|--------------------|----------------------|-----------------|----------------|
| 1-Breakfast | Bread | 150 g | 358 | 1-Breakfast | Bread | 150 g | 358 |
| | Cheese | 50 g | 113 | | Honey | 30 g | 94 |
| | Condensed milk | 30 g | 96 | | Condensed milk | 255 g | 361 |
| | Porridge with milk | 255 g | 361 | | Sausage | 70 g | 182 |
| | Sweet tea | 200 ml | 76 | | Sweet tea | 200 ml | 76 |
| | | <i>Total:</i> | <i>1004</i> | | | <i>Total:</i> | <i>1071</i> |
| 2-Breakfast | | | | 2-Breakfast | | | |
| | Bread | 100 g | 239 | | Bread | 100 g | 238 |
| | Egg | 100 g | 126 | | Egg | 100 g | 126 |
| | Honey+raisin+nut | 110 g | 594 | | Sweet tea | 200 ml | 76 |
| | Tea | 200 ml | - | | Cheese | 50 g | 113 |
| | | <i>Total:</i> | <i>959</i> | | | <i>Total:</i> | <i>553</i> |
| Lunch | | | | Lunch | | | |
| | Bread | 200 g | 476 | | Bread | 200 g | 476 |
| | Mampar | 450 g | 306 | | Soup | 450 g | 366 |
| | Greens, garlic | 5 g | 3 | | Greens, garlic | 5 g | 3 |
| | Jarkop | 220 g | 562 | | Goulash | 220 g | 511 |
| | Salad | 100 g | 76 | | Salad | 100 g | 76 |
| | Juice | 200 ml | 135 | | Juice | 200 ml | 165 |
| | Banana | 150 g | 130 | | Banana | 150 g | 130 |
| | | <i>Total:</i> | <i>1688</i> | | | <i>Total:</i> | <i>1727</i> |
| Afternoon tea | | | | Afternoon tea | | | |
| | Lemon tea | 200 ml | 97 | | Fruit tea | 200 g | 107 |
| | Cake | 60 g | 261 | | Chocolate | 60 g | 225 |
| | <i>Total:</i> | <i>358</i> | | <i>Total:</i> | <i>332</i> | | |
| Dinner | | | | Dinner | | | |
| | Bread | 150 g | 358 | | Bread | 150 g | 358 |
| | Plov | 380 g | 898 | | Moshkichiri | 330 g | 589 |
| | Salad | 100 g | 75 | | Salad | 100 g | 75 |
| | Greens, garlic | 5 g | 3 | | Greens, garlic | 5 g | 3 |
| | Tea | 200 ml | - | | Tea | 200 ml | - |
| | Sour milk | 200 ml | 60 | | Sour milk | 200 ml | 60 |
| | <i>Total:</i> | <i>1394</i> | | <i>Total:</i> | <i>1085</i> | | |
| | Overall: | 5403 | | Overall: | 4768 | | |

| 04.03.2020. | Products list | The norm | Calorie | 05.03.2020. | Products list | The norm | Calorie |
|--------------------|----------------------|-----------------|----------------|--------------------|----------------------|-----------------|----------------|
| 1-Breakfast | Bread | 150 g | 358 | 1-Breakfast | Bread | 150 g | 358 |
| | Condensed milk | 30 g | 96 | | Condensed milk | 30 g | 96 |
| | Cheese | 50 g | 113 | | Porridge with milk | 255 g | 361 |
| | Milk pasta soup | 255 g | 384 | | Sausage | 70 g | 182 |
| | Sweet tea | 200 ml | 76 | | Sweet tea | 200 ml | 76 |
| | | <i>Total:</i> | <i>1027</i> | | | <i>Total:</i> | <i>1073</i> |
| 2-Breakfast | | | | 2- Breakfast | | | |
| | Bread | 100 g | 239 | | Bread | 100 g | 238 |
| | Egg | 100 g | 126 | | Baked fish | 100 g | 132 |
| | Sweet tea | 200 ml | 76 | | Sweet tea | 200 ml | 76 |
| | Sausage | 70 g | 182 | | Mandarin | 80 g | 44 |
| | | <i>Total:</i> | <i>623</i> | | | <i>Total:</i> | <i>490</i> |
| Lunch | | | | Lunch | | | |
| | Bread | 200 g | 476 | | Bread | 200 g | 476 |
| | Mastava | 450 g | 294 | | Soup | 450 g | 331 |
| | Greens, garlic | 5 g | 3 | | Greens, garlic | 5 g | 3 |
| | Dimlama | 220 g | 473 | | Chikhanbili | 220 g | 413 |
| | Salad | 100 g | 75 | | Salad | 100 g | 77 |
| | Juice | 200 ml | 165 | | Juice | 200 ml | 165 |
| | Mandarin | 80 g | 44 | | | <i>Total:</i> | <i>1465</i> |
| | <i>Total:</i> | <i>1530</i> | | | | | |
| Afternoon tea | | | | Afternoon tea | | | |
| | Fruit tea | 200 ml | 135 | | Lemon tea | 200 g | 97 |
| | Waffle | 60 g | 323 | | Cookie | 60 g | 261 |
| | <i>Total:</i> | <i>458</i> | | <i>Total:</i> | <i>358</i> | | |
| Dinner | | | | Dinner | | | |
| | Bread | 150 g | 358 | | Bread | 150 g | 358 |
| | Pea soup | 330 g | 602 | | Plov | 380 g | 898 |
| | Salad | 100 g | 77 | | Salad | 100 g | 75 |
| | Greens, garlic | 5 g | 3 | | Greens, garlic | 5 g | 3 |
| | Tea | 200 ml | - | | Egg | 100 g | 126 |
| | Sour milk | 200 ml | 60 | | Sour milk | 200 ml | 60 |
| | | <i>Total:</i> | <i>1100</i> | | | <i>Total:</i> | <i>1520</i> |
| | Overall: | 4738 | | Overall: | 4906 | | |

| 06.03.2020. | Products list | The norm | Calorie | 07.03.2020. | Products list | The norm | Calorie |
|---------------|--------------------|---------------|-------------|----------------|------------------------|---------------|-------------|
| 1-Breakfast | Bread | 150 g | 358 | 1-Breakfast | Bread | 150 g | 358 |
| | Sausage | 70 g | 182 | | Honey | 30 g | 94 |
| | Porridge with milk | 255 g | 382 | | Porridge with milk | 255 g | 361 |
| | Sweet tea | 200 ml | 76 | | Cheese | 70 g | 113 |
| | Condensed milk | 30 g | 96 | | Sweet tea | 200 ml | 76 |
| | | <i>Total:</i> | <i>1094</i> | | | <i>Total:</i> | <i>1002</i> |
| 2-Breakfast | | | | 2-Breakfast | | | |
| | Bread | 100 g | 239 | | Bread | 100 g | 239 |
| | Egg | 100 g | 126 | | Sausage | 70 g | 182 |
| | Honey+raisin+nut | 110 g | 594 | | Egg | 100 g | 126 |
| | Tea | 200 ml | - | | Sweet tea | 200 ml | 76 |
| | <i>Total:</i> | <i>959</i> | | <i>Total:</i> | <i>623</i> | | |
| Lunch | | | | Lunch | | | |
| | Bread | 200 g | 476 | | Bread | 200 g | 476 |
| | Cabbage soup | 450 g | 329 | | Lagman soup | 450 g | 270 |
| | Greens, garlic | 5 g | 3 | | Greens, garlic | 5 g | 3 |
| | Goulash soup | 220 g | 511 | | Stroganoff | 220 g | 597 |
| | Salad | 100 g | 75 | | Salad | 100 g | 76 |
| | Juice | 200 ml | 165 | | Juice | 200 ml | 165 |
| | Mandarin | 80 g | 44 | | Apple | 70 g | 67 |
| | <i>Total:</i> | <i>1603</i> | | <i>Total:</i> | <i>1654</i> | | |
| Afternoon tea | | | | Afternoon tea | | | |
| | Fruit tea | 200 ml | 135 | | Lemon tea | 200 g | 97 |
| | Chocolate | 55 g | 225 | | Waffle | 60 g | 323 |
| | <i>Total:</i> | <i>360</i> | | <i>Total:</i> | <i>420</i> | | |
| Dinner | | | | Dinner | | | |
| | Bread | 150 g | 358 | | Bread | 150 g | 358 |
| | Pearl barley soup | 330 g | 679 | | Pearl barley with milk | 330 g | 548 |
| | Salad | 100 g | 76 | | Salad | 100 g | 77 |
| | Sour milk | 200 ml | 60 | | Sour milk | 200 ml | 60 |
| | | <i>Total:</i> | <i>1174</i> | | | <i>Total:</i> | <i>1043</i> |
| | Overall: | 5190 | | Overall | 4742 | | |
| | | | | : | | | |

The result is : the average calorie of the weekly diet recommended for 18-20-year-old qualified freestyle wrestlers at the Jizzakh Specialized Boarding School of Olympic Reserve was 4958 kcal during the research.

TABLE 4

A TABLE THAT IS INTENDED FOR COMPARISON THE AVERAGE DAILY ENERGY EXPENDITURE OF THE QUALIFIED FREESTYLE WRESTLERS WITH THEIR AVERAGE DAILY FOOD INTAKE CALORIES THEY OBTAIN FROM THE WEEKLY DIET.

| № | Full name | Age | Height (cm) | Weight (kg) | Average energy expenditure (kcal) | Average calorie of the weekly diet | Difference (kcal) |
|----------|---------------------------|------------|--------------------|--------------------|--|---|--------------------------|
| 1 | Shokirjonov Sunnat | 18 | 180 | 78 | 5120 | 4958 | -162 |
| 2 | Salimov Shokhruhmirzo | 18 | 178 | 69 | | | |
| 3 | Khujamqulov Mirziyo | 18 | 192 | 98 | | | |
| 4 | Abdukhalilov Temur | 18 | 165 | 64 | | | |
| 5 | Abdullayev Akobir | 18 | 169 | 68 | | | |
| 6 | Usganov Khujamurod | 18 | 172 | 69 | | | |
| 7 | Khaydarov Islom | 18 | 175 | 70 | | | |
| 8 | Abdullayev Mukhammadkodir | 18 | 166 | 68 | | | |
| 9 | Mamadaliyev Jaloliddin | 19 | 177 | 72 | 5006 | 4958 | -48 |
| 10 | Kushbokov Shakhzod | 19 | 161 | 58 | | | |
| 11 | Komilov Jakhongir | 19 | 178 | 76 | | | |
| 12 | Sariboyev Shokhruh | 19 | 178 | 79 | | | |
| 13 | Mamayokubov Ibrohim | 19 | 175 | 73 | | | |
| 14 | Usmonkulov Sardor | 20 | 180 | 98 | 5893 | 4958 | -935 |
| 15 | Makhmudov Jasur | 20 | 181 | 87 | | | |
| 16 | Khudoyberganov Murod | 20 | 172 | 67 | | | |

Conclusion and Recommendations.

When the results of the research were analysed by using mathematical statistics method and compared with the caloric intake consumed via food and beverage per day, the average energy expenditure of 18-year-old qualified freestyle wrestlers was 5120 kcal, but the average caloric intake from the weekly diet was 4958 kcal.

(average 162 kcal deficiencies); when it comes to the average energy expenditure of 19-year-old qualified freestyle wrestlers, it was 5006 kcal but the average caloric intake from the weekly diet was 4958 kcal (average 48 kcal deficiencies); in terms of the average energy expenditure of 20-year-old qualified freestyle wrestlers, it was 5893 kcal but the average caloric intake from the weekly diet was 4958 kcal (average 935 kcal deficiencies) according to their individual characteristics.

1). It is suggested that 55-65% of the qualified freestyle wrestlers daily food intake should consist of carbohydrate products that are 2.5 gr at least, but the norm is 3-4 g per pound of body weight. Carbohydrates, along with protein-rich substances, should be consumed 2-2.5 hours before and 30-60 minutes after sport trainings. Since excellent sources of carbohydrates include breads, pasta, cereals, fruits and vegetables, it is highly recommended that the qualified freestyle wrestlers' food intake should be based on the values of carbohydrate products in the "Glycaemic index".

2). Protein is used for growth and repair of all the cells in our body. As good sources of protein are meat, fish and poultry, many plant foods, such as beans and nuts are good protein sources, too. However, nuts are also high in fat, they should be eaten only in small quantities. 12-15% of the qualified freestyle wrestlers' daily food intake should consist of protein products that are 0.5-1 gr per pound of body weight.

3). Everyone needs a little fat in their diets, and there is no exception for freestyle wrestlers too. Fat should make up about 20-30% of the calories they eat on a daily basis. Most of the fat they consume is naturally found in foods (*meats, nuts, and dairy products*) or added during the preparation of food (*e.g. fried foods*). Sources of additional fat include margarine, peanut butter and salad dressings.

Therefore, it is of paramount importance to develop and implement a special diet with low volume, high density and energy that will fully cover the energy expended by qualified freestyle wrestlers during the sport trainings.

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