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**Nutrition Guidelines for  
the clients of the gym "Shape".**



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## ABSTRACT

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The clients of the Gym "Shape" have different goals of training and in order to achieve them as well as training programs they also require nutrition advice. Customers always have many questions regarding to nutrition and it would be very useful for the gym to make a nutrition guide book available for everyone. According to the gym statistic the muscle hypertrophy, gaining, shredding and losing weight are the most common reasons of people who are training in 'Shape'.

The goal of the questioners is to check the awareness of people regarding to sport nutrition. The main tasks were defining the research aim, identifying the population and samples, collecting the material, piloting survey, carrying out the main survey and analyzing the data. The aim of the research is to collect information from the customers on the nutrition topic, to figure out how aware they are of the importance of eating habits, and the influence of certain nutrients on the body, the quality of performance and the training goal.

According to the result of the questionnaire, 42 % of customers are interested in losing weight. One third of customers are aiming to keep fit. While just 18 % are interested in shredding and 13% are into hypertrophy. So that, the main focus is on those 4 goals people are pursue. The final posters made according to the needs of the clients and help them to improve their knowledge about a correct nutrition while performing in the gym correspondingly to their individual sport goals.

## PREFACE

" Rule of thumb: eat for what you`re going to be doing, and not for what you have done. Don`t take in more than you`re willing to burn off." - Lee Haney

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## 1 INTRODUCTION

Nutrition is the basis of life.

Food is the source of life and pleasure. Food embodies the life process in all its scope and represents the ancient connection that connects all living things, including man, with the surrounding nature. When receiving food, a person not only satisfies the feeling of hunger, but also enjoys it.

The term "nutrition" has a wide meaning: it denotes the entire number of biological phenomena (the intake and transformation of nutrients in the body) underlying the provision of energy and structural substances of any physiological function of the body (Leutholtz & Kreider 2001,21). The problem of nutrition is now one of the main economic and social problems facing humanity (Emmott, 2013, 122-132). In our research we will look deeply in the problem of sports nutrition, figure out which knowledge are important to maintain the right food intake regarding to performance goals, and what could be an obstacle on the way to achievements.

Most athletes underestimate the importance of nutrition in their performance. When asking them how much nutrition influences their performance the answer is often 10- 15 %, when in reality food intake can affect the performance 100% (Austin, B.Sebohar,1977, 17).

Compare our body with a furnace, we can see food as a fuel that is required to keep the organism always working in proper way (Haggard, Greenberg, 1935,22-30). It is also important that fuel is readily available, meaning that nutrients are storing in our body. That is why, the right food intake program should be involved even when a person hasn't started exercising yet.

The metabolism is working as an engine in our body. The quality of work of the engine depends on the quality of products that we eat. For example, fruits protein and grains can increase metabolism and minimize fat stores as well as improving muscle mass. On the other hand, if body is deprived of food, the metabolism is decreasing. Besides of the macronutrients, timing is also very important for restoring muscle functions and body homeostasis. Studies showed that muscle glycogen (carbohydrate stored within the muscles), restores faster when athlete were fed carbohydrate within one hour after exercise than when intake was delayed. (Austin & Sebohar 1977,5).

In order to achieve a high performance and training goals it is important to understand how food elements are functioning in the body. It is, obviously, that carbohydrates, protein and fat bring different responses to our body. The way, time, volume of consumption of those nutrients affects it as well. The ability to manipulate with them will lead to:

- 1) controlling appetite
- 2) enhancing performance during training and competition
- 3) optimizing body composition
- 4) muscle recovery

The idea is to utilize all those macronutrients for achieving the performance and nutrition goals (Borisova 2007, 17).

## 2 PURPOSE OF THE STUDY:

The purpose of the research work is to develop clear nutrition guidelines for clients of the gym 'Shape. The gym is located in Russia, Tula, Villiamsa st. 6. It has two sections: one is where the bodybuilding machines are located and the other one is for aerobic workouts. The main visitors are people of middle age, mostly beginners, who wants to start following healthy lifestyle. The second majority of the visitors are of a more experienced kind, aiming for the certain training goals.

According to the commissioning party opinion, new as well as old customers have some ideas about the workout or get instructions from the gym trainers about the right technique, quantity and quality of exercises, but often do not pay enough attention to their nutrition habits. Consequently, they are not achieving the right results start questioning the reliability of the instructions given by the staff. That is why, it is significant not only to attract attention of the clients to the nutrition topic by creating visual images, but also give them some tips regarding to the correct food intake.

We found it is necessary to solve several tasks: to figure out which nutrition knowledge the customers of the gym are lacking and to fulfill it with help of informative wall posters. Together with the commissioning party the plan for achieving those goals has been made, it includes three phases: analyzing, scientific research and implementation. It is important for the commissioning party not only teach permanent customers about the right food intake but also involve staff workers into the project and provoke their interest. Besides, new contributions may affect new customers flow and positive influence on the atmosphere. From the commissioning party point of view, our project is a good beginning for later innovations. From the conversation with the commissioning party staff, it has been concluded that the approaches which the gym uses are quite old and need some refreshments.

The project is useful not only for the commissioning party but for the authors as well. The knowledge which will be gathered during the process will contribute to the success in the future work placements in a field of sport and nutrition and help to develop as professionals. Our main goals are to learn how to apply the knowledge gathered from the studying and find new information about the topic as well as to develop the most suitable working methods and being capable of finding creative and customer-orientated solutions for the research questions. Besides, we learn how to apply the principals of organizational and time management and maximize personal efficiency in project work.

### 3 NUTRITION SCIENCE

Nowadays the interest towards nutrition and the demand of food is growing very fast, (Emmott S., 2013, 62-63) it associates with possibility of choice, availability of time and fashion towards healthy lifestyle. A lot of current news and many controversial question appear in people's discussion. Besides of the fact that, nutrition is on the pick of the interest among ordinary people, it also one of the main subject of research among the scientists, since nutrition science is directly correlated with chemistry, biology, biochemistry, general hygiene, prophylactic medicine etc. From the biological point of view, the food has a lot of objectives. First of all, it provides with energy sources (energy function). The main food sources of energy are proteins, carbohydrates and fats; Secondly, one of the function is providing the body with building material for various syntheses (plastic function). Such material, first, are amino acids and polyunsaturated fatty acids. Besides, food fill the body with vitamins and minerals. And, finally, providing the body with water (Aranson 1999, 89).

The biological effect provoked by nutrients is also affected by another factors: amount, distribution and time of consuming food. One of the main modern concepts of nutrition is the theory of rational balanced nutrition (Kravchenko 2017, 69). This theory is based on the idea of the need not only to adequately supply the body with energy, but also to maintain proportions between the main food substances and other important nutrients to ensure its normal vital activity. A key role in nutrition belongs to those substances that cannot be synthesized in the body from other components. These include inorganic ions and 24 other organic compounds. These substances are called irreplaceable nutritional factors. (McGuire, 2007, 558)

The science of nutrition covers many questions, of which the following we have considered as paramount regarding to the research theme: Which chemicals contained in the food contribute to vital functions of the body? ; What are the consequences of the absence or, on the contrary, the excess of nutrient intake from food? ; What is the specific biological role of each of the nutrients? ; Which products and in which quantities are required to meet the body's nutritional needs (Kravchenko, 2017, 18).

Rational nutrition is the main factor, which helps to keep metabolism on the right level and enhance energy distribution. Violation of health and working capacity of a person can cause not only a lack of certain irreplaceable factors, but also their excess. The relation of nutrients plays major role in the body composition.

### 3.1 Body composition

The development of fat mass is related to the blood glucose level and big drops and rises in energy intake (Austin, Seebohar, 1977, 4). That is why it's important to combine food and consume carbohydrates together with fat and protein. In this case, the result is a slow and steady supply of glucose to the blood. The combination of carbohydrates (with high fiber content), slow-release proteins, water, and small amount of fat as a meal or snack will result in slow rate of digestion, stable blood glucose level, oxidization of the food as fuel keeping the body energetic during the day.

One of the factor which prevent people from balancing nutrition and consuming more fat than needed is "organism tricks" (Kravchenko, 2017, 20-22).

### 3.2 Appetite control

Proteins, fat and carbohydrates have a different influence on controlling the hunger and appetite. For example, protein can control hunger longer compared with other micronutrients. It happened because protein can influence hypothalamus (brain area which signal food intake). Fat also plays a major role in the satisfaction of hunger and feeling of fullness. Fat that reaches the intestine, slows the emptying of carbohydrates, proteins and fluids, making the gut feel fuller longer. Also, fat usually makes the food taste better and provides us with good emotions about the dish. In that case, if a meal contains too much fat, the brain requires even more fat as signals sending to the brain stimulates it. That is why, consuming too fatty products could be dangerous and lead to uncontrollable eating. Therefore, it is recommended having not higher than 20% of fat in each meal. Plus, the fatty products don't cause the feeling of fullness, that is why the result could be bigger portion until the person feels satisfied (Borisova, 2007, 138).

As for carbohydrates, they help to control the size of the meal and send the signal of fullness and satisfaction to the brain. That is why it is not forbidden to take a little bit of sugar products after the meal, which generate the feeling of fullness (Garrow, 1993, 38-49).

It is important to keep in mind that our organism pretend to be hungry, the reality is that calories consumed are enough for a proper functioning and doing physical activities. Being aware of appetite tricks may prevent from overeating and provoke more satisfaction from the food (Austin,Sebohar,1977, 10-11).

The worst scenario followed by unhealthy appetite is overweight and serious emotional disorders. In this case, on the way to the goal of losing weight it is important to challenge emotional connection to food and pay more attention to biological rather than habitual hunger. The signals of biological hunger could be identified by the following characteristics: stomach pangs, mental signs such us a decrease in cognitive function and concentration. In opposite, the emotional hunger is related to the feeling of obligation to eat when having a vacation or while visiting home, friends, relatives being a “people pleaser” and not be able to refuse food even when organism is not hungry (Morozov, 2014,160).

One of the most important step in losing weight is to stabilize the blood sugar, as high level of blood sugar can lead to uncontrollable eating. The focus must be on lean protein, healthy fat and fruit and vegetables fiber. Also, a reduction of grains can remove unnecessary calories (Leutholtz, 2001, 433-445).

If exercises for 45-60 minutes are combined with cardiovascular and light strength training, there is no high number of calories required to maintain a good level of training. That is why proteins, fat, fruits, grains and starches should be 90% of the total food intake and for an easy training program, it will be enough nutrients. But it is important to notice that this type of nutrition plan is suitable for the athlete only during off - season or early part of preseason training. As this plan provide only enough energy for low intensive exercises, and if training load is increasing, the athlete must change the program (Lichtenstein,2006). To move towards nutrition advice for the athletes following high-intensive training, we will move deeply into the macro and micro nutrients.

### 3.3 Macro and micro nutrients

#### Carbohydrates

Carbohydrates are the source of energy for living beings. Therefore, the amount of carbohydrates in the diet of the athlete will depend on the intensity and duration of training (the more exercise, the more you need to consume carbohydrates). Foodstuff of the athletes must contain complex of carbohydrates. In addition, athletes' nutrition should include

carbohydrates, which ensure a uniform intake of glucose into the bloodstream. Since with an excess of glucose, it is processed and stored as fat. Carbohydrate-rich foods for athletes are - cereals, pasta, cookies, vegetables and fruits, as well as root crops (potatoes, carrots, beets). The daily intake of carbohydrates for athletes is 8 - 10 grams or more per 1 kg of weight. At the same time, simple sugars should account for 35% of the total amount of carbohydrates, and 65% for polysaccharides (Garrow, 1993, 38-46).

During anaerobic work outs the body uses the reserves of ATP and muscle glycogen. Despite of the fact that sugar is also glycogen, it does not give a sudden surge of energy. Meaning that the intake of sugar before anaerobic work does not improve the working capacity (Mihaylov, 2004, 220).

The main sources of carbohydrates in the sports menu should be products from whole or close to it grain, vegetables, fruits and berries. If there are problems with consuming enough carbohydrates, athletes can use special industrially produced carbohydrate supplements. From the mineral elements in sports, the need for phosphorus, iron and magnesium is increasing. The need for phosphorus in this case is due to the work of muscles (skeletal, cardiac), and phosphorus is part of the ATP (the energy condenser in the body). Therefore, the need for phosphorus in athletes is increased by 1.5-2 times. To meet this need, the diet should include cottage cheese, eggs, cereals, fish and meat. Relating to large losses of chlorides with sweat after intensive sports, the daily intake of salt during training can be increased by 1.5-2 times. (Baker, 2005, 64-75)

## Fats

Fats are also necessary element. They are served to generate energy, form cell walls and create a fatty layer. Absolutely refusing the consumption of fats in a diet of sportsmen would be extremely not thought over and harmful. In order for the body to receive the required amount of nutrients, it is necessary to pay attention that the food of the athlete is rich with saturated fats. These are vegetable oils (olive, sunflower, linseed, cotton) and high-quality butter. For athletes, the norms of fat in diets are determined depending on the protein intake. The higher protein intake, the more fat the body is required (Latkov, 2011, 170).

## Water

Water is an important product of the ration of an athlete. The best is simple cold water. Mineral water should be used in the diet of athletes carefully, and fizzy drinks are completely unnecessary. Coffee is better to replace with tea, preferably green. It is useful to add to the diet for the athletes natural juices, dairy and sour-milk products. Drinking alcohol should be extremely moderate. Good wine or beer are sources of carbohydrates, vitamins and flavonoids. A lot of liquid is found in vegetables and fruits. (Latkov, 2011, 171).

## Micronutrients

Nutrition of athletes requires the presence of vitamins and trace elements necessary for growth and development of the body. Vitamins are low-molecular organic compounds with a high biological activity. Their action is manifested when small quantities are taken and is expressed mainly in the strengthening and regulation of vital functions. (Garrow, 1993, 174- 227).

In the body, many vitamins are part of the enzymes that are in cells and tissues and act as coenzymes that actively participate in complex biochemical reactions of the transformation of nutrients at the cellular and molecular levels. (Cheeke, 2014, 27-32)

There is a close relationship between vitamins and hormones, vitamins and the functional state of the central and peripheral nervous system. The lack of vitamins manifests itself in the form of painful disorders of a general and specific nature. The most common symptoms are weight loss, stunted growth, loss of appetite, fatigue and muscle weakness, decreased resistance to infections and regenerative capacity of tissues, impaired activity of the nervous system (Latkov, 2011, 172).

The large physical and mental stresses to which athletes are exposed, and the inevitably arising tension of metabolic processes cause an increased need of the athlete's organism in vitamins (Latkov, 2011, 172). However, it should be remembered that the excess of vitamins in large quantities can have a negative effect on the athlete's body. When playing sports, first of all, the need for ascorbic acid, thiamine, riboflavin, niacin, vitamin A, tocopherol and some others. Important vitamins are found in such foods as athletes, liver,

cereals and bran, milk, green vegetables, carrots, eggs, fish, greens and soy. Mineral substances should also be contained in athletes' foodstuffs, they participate in various processes in the body, including such important for athletes as building proteins, nitrogen metabolism, transport of oxygen in the blood and much more. Therefore, it is recommended to include in the nutrition of athletes' seafood, whole grains, vegetables, red meat, and legume dairy products. (Garrow, 1993, 30-45)

Mineral substances are very important components of food. They take part in the construction of cells, supporting tissues and body juices and in the activity of enzyme systems and hormones. Prolonged deficiency of individual minerals can cause serious disruption in the plastic and other processes in the body. The mineral composition of athletes' food is of great interest from the point of view of providing an acid-base balance in the body that is important for maintaining the constancy of the internal intercellular and interstitial medium that is necessary for the normal course of all life processes. Meanwhile, when playing sports, the reserve alkalinity of the blood falls and there are significant changes in the chemical composition of the muscles (Leutholtz, 2001, 433-445).

A certain level of calcium in the blood is important for maintaining the normal excitability of the neuromuscular system, the normal activity of the heart muscle and blood clotting. Phosphorus takes an active part in the metabolism of proteins, fats and carbohydrates, in biochemical processes occurring in the nervous system and working muscles, in enzymatic activity, is a part of the nuclei of cells, proteins and lipoids. A single and systematic administration of phosphates leads to an increase in the content of phosphocreatine and, in part, glycogen, creating prerequisites for energy supply to muscle activity and improving athletic performance. Therefore, it is advisable to include phosphate salts in separate nutrient mixtures and use products rich in phosphatides and phosphorous proteins. The main role of sodium chloride (table salt) is to maintain the osmotic pressure in the blood and tissue fluids. If it is deficient or if there are large losses, then normal osmotic relationships are violated, tissue dehydration occurs, tissue protein breakdown increases and acidity of gastric juice decreases. With large training loads in a hot climate, the need for salt increases. Iron is a part of hemoglobin, with its deficiency anemia develops, oxidative enzymatic processes associated with the use of oxygen (Leutholtz, 2001, 433-445).

### 3.4 Nutrition supplements for the athletes

Conventional products in their biological, nutritional and chemical properties are complex natural mixtures. A separate group includes products that are sources of biologically active components - vitamins, microelements. Most widely they are represented in fruits, berries, herbs, roots, vegetables, as well as in vegetable oils, liver, fermented milk products. Biologically active substances also include essential amino acids, polyunsaturated fatty acids, phosphatides and other fat-like substances (Latkov, 2011, 172).

Recently, the fruits of sea-buckthorn and sea buckthorn oil have become quite popular. Products of increased biological value are generally considered to be milk and dairy products containing a protein-lecithin complex in a shell covering the fatty bead of milk fat. The main substance of the shells has an active biological effect - a lipotropic effect and normalizes the exchange of cholesterol in the body (Kravchenko, 2017, 20-22).

The appearance and dissemination of the products of increased biological value in the practice of sport is caused by a number of reasons. The main thing is that with the help of the usual food products, even those with a high biological value, there is no way to compensate for the considerable energy costs (up to 6000- 7000 kcal) for athletes and the related consumption of plastic substances. A greater need for vitamins and minerals of athletes is also not always compensated in traditional food. This is because the intensity, duration and multiple times of daily training do not leave time for the normal assimilation of the main food in the gastrointestinal tract and for the full supply of all organs and tissues with the necessary substances. Such changes in metabolism lead to a decrease in the rate of recovery of energy and plastic resources in the body, which affects sports performance and makes more difficult. Such advantages of the products of increased biological value as a pronounced food orientation, high food density, homogeneity, a variety of convenient forms of preparation and transportation, good taste and reliable hygienic qualities make it possible to successfully use them when organizing nutrition for athletes and people actively engaged in mass physical culture. Necessity of using the products of increased biological value during training and competitions is unquestionable. The results obtained made it possible to clearly formulate the specific conditions for the rational use of these food products in the diet of athletes. The products of increased biological value are used in the practice of sport for the solution of the following specific tasks:

- Nutrition at the distance and between trainings;
- Acceleration of the recovery of the body after training and competition;

- Regulation of water-salt metabolism and thermoregulation;
- Correction of body weight;
- Directed development of the athlete's muscular mass;
- Decrease in the number of daily rations during the competition;
- Change qualitative orientation of the daily ration, depending on the orientation of the training load;
- Individualization of nutrition, in conditions of large neuro-emotional stress;
- Urgent correction of unbalanced diets;
- Increase in the number of meals in conditions of multiple trainings (Aranson, 1999, 205)

A special place among products of increased nutritional value is occupied by vitamin and mineral complexes. Most of them can be attributed to pharmacological preparations, because their composition includes synthetic vitamins and salts of varying degrees of purity. However, vitamin and mineral complexes primarily serve to correct the diet, fill the deficiency, and enrich the body of athletes with vitamins, macro- and microelements needed in different sports to create optimal conditions for the mobilization and utilization of the energy substrate, to compensate for salt losses and for activation of protein metabolism. It is known that when adapting to physical stresses on endurance, the loss of iron in the body increases with the simultaneous increase in the need for it for synthesis (in particular, hemoglobin and myoglobin). It is shown that sports anemia is a phenomenon common in the sport of higher achievements and often leads to the loss of physical working capacity. The physiologically optimal method of providing the body with iron is the intake of special food products, where divalent iron is bound to proteins or amino acids (Fogelholm, 1992, 36-44).

Acid-base balance is caused by the content in the tissue and cellular fluids of mineral elements of acidic and alkaline nature. Sources of acid radicals (phosphorus, sulfur, chlorine) are meat, fish, eggs, cottage cheese, cheese, lard, cereals, and alkaline bases (milk, vegetables, fruits, calcium, magnesium, sodium, potassium, iron). With intensive physical loads, acidic compounds accumulate in the blood and, in order to create the necessary

excess of alkaline reserves in the buffer system, they need food rich in them, i.e., vegetables, fruits, milk. Vegetables and fruits should make up 10-15% of the total caloric intake in athletes' nutrition (Borisova, 2007, 132).

### 3.5 Building the athlete nutrition

The diet of athletes, as well as a diet of any person, must contain proteins, carbohydrates, fats, vitamins and minerals. But slight difference from any other person is in quantity of those elements.

When compiling food rations, it is necessary first to consider the nature and volume of training loads. Due to the fact, that the need of the athlete's body in food substances and energy at different periods of the training process, is determined by the structure and content of the training work in each individual microcycle and the peculiarities of metabolic shifts caused by physical and neuro-emotional stresses. In accordance with the peculiarities of metabolic processes with different training regimes, a change in the quantitative and qualitative characteristics of nutrition is required. Work in anaerobic regime requires maintaining the optimal amount of protein in the diet, increasing the proportion of carbohydrates by reducing the amount of fat. After exercise, the main meal should be no earlier than 40-60 minutes. Due to high physical loads, daily two- three-hour training sessions and high energy costs, it is advisable to have four or five meals a day, including first and second breakfasts, lunch, afternoon snack, dinner. Additional food preparations are also possible before, during and after exercise (Rogozkin, 1989, 160).

The big role for the athlete are playing proteins, which are the building material for cells of living organisms. The skin, internal organs, and also the human muscles are made up of protein. In the process of digestion, proteins obtained with food break down into amino acids that are involved in the process of building new proteins (Rogozkin,Pshendin,Shishkina, 1989, 170).

Therefore, it is important that the athletes' foodstuffs contain high-grade proteins, with a high content of amino acids. Meat is digested much longer and is not assimilated by 100%, therefore eggs, poultry meat, lean beef, fish, milk and dairy products, beans and nuts are used as the main protein source. Proteins in these products are the most complete and easily digestible. An adult needs daily 1.3-1.5 g of protein per 1 kg of weight (for work not related to heavy physical labor). Athletes need from 2.0 to 2.5 grams of protein per 1 kg

of body weight per day. Especially a lot of proteins are needed when training for strength, in particular, during the build-up of muscle mass (weightlifters) R In these cases, the protein content in the diet per day is raised to 3.0 - 4.0 g per 1 kg of body weight. Very high demand for protein when running for very long distances, with multi-day cycling races (2.5-3.0 g per 1 kg of weight) (Skurihin, 1985, 240).

According to Rogozkin (1989) to the principles of building athletes' nutrition can be formulated as follows:

- Supplying athletes with the necessary amount of energy, corresponding to its expenditure in the process of physical exertion;
- Adherence to the principles of balanced nutrition, for certain sports and intensity loads, including the distribution of calories by types of basic nutrients, which should vary significantly depending on the phase of preparation for sports competitions;
- Compliance with the principles of balancing the amino acids that make up protein products;
- Observance of rational interrelations in the spectrum of mineral substances, observance of the principles of balance between the quantities of basic nutrients, vitamins and trace elements;
- Selection of adequate forms of nutrition (foods, nutritional substances and their combinations) for periods of intense loads and recovery period;
- Use of the inducing effect of nutrients for activation of aerobic oxidation and conjugated phosphorylation, trans glycosidase processes, biosynthesis of co-enzyme forms, ATP reactions, accumulation of myoglobin and other metabolic processes, which are especially important for providing exercise;
- Use of the influence of nutrients in order to create a metabolic background favorable for the biosynthesis of humoral regulators and the realization of their action (catecholamine, prostaglandins, corticosteroids and others);
- Use of elementary factors to ensure an increased rate of muscle building and increase in strength;

- Choice of adequate meals, depending on the training regime
- The use of nutritional factors for rapid "weighting" of weight when the athlete is being led to a given weight category;
- The development of the principles of individualization of nutrition, depending on the anthropometric, physiological and metabolic characteristics of the athlete, the state of his digestive apparatus, as well as his tastes and habits.

In connection with the above, the most appropriate is the phased organization of nutrition for athletes. At the first stage, athletes should be regulated in the formula of balanced nutrition for a healthy person, considering the available data on the needs of athletes in energy and basic nutrients (Rogozkin, Pshendin & Shishkina, 1989, 155).

#### 4 CORRECT NUTRITION IN COMBINATION WITH THE GYM TRAINING

The nutrition for people who are doing gym training has a number of features compared to the nutrition of those who are not engaged in sports, including people performing heavy physical work. Since sportsmen are characterized by high energy consumption, the food they consume should not only have the necessary energy value, but also contain an increased amount of carbohydrates, since only carbohydrates can undergo anaerobic decay and give a lot of energy per unit of time. Fats and proteins are oxidized only aerobically and when used in intensive loads are used in a limited way (Baker, 2005,11 ).

Gym training is characterized by intense physical activity during training, a high neuro-emotional tension of the struggle, a focus on sports results. The process of achieving such results requires a huge amount of time from the sportsman and includes, as a rule, three or four training sessions per week and the opportunities for rest. Those factors will affect sport performance (Baker, 2005,13-19 ).

The content of the training during one working day is varied: the exercises of speed-strength character are replaced by cyclic work on endurance. The intensity and duration of the work performed depend on the pedagogical task of this training, macro and micro cycle or the whole period. (Mihaylov, 2004, 220).

It is clear, the means and methods of restoring the physical performance of athletes should flow from the nature of the work performed. One of the first and powerful means of recovery is nutrition, it is primarily able to expand the boundaries of the athlete's body adaptation to extreme physical stress. However, among experts there is no common opinion on the strategy and tactics of peoples' nutrition. Perhaps this is due to the lack of accurate information about the physiological and biochemical changes in the athlete's body in conditions of multiple training and over-intense training (Baker ,2005,9-22).

The constantly changing nature of physical activity switches the metabolism from one type (the exchange of protein for power and speed-power work) to another (the exchange of carbohydrates and lipids in endurance work). Existing recommendations on nutrition of athletes in different types of trainings consider the volume and intensity of the load in averaged, integrally-gross manner. This leads to the fact that different training processes are grouped into the energy expenditure group and according to the recommended number of proteins, fats and carbohydrates in the diet (Mihaylov, 2004, 221).

According to our questionnaire, people who are attending the gym constantly, don't have enough information about correct nutrition and importance of it. They can't achieve the results they want, because of the lack of knowledge. After making the research we will be able to give clear instructions to the clients of the gym about what kind of food to eat taking into consideration their goals.

#### 4.1 Weight loss

The method of moderate gradual weight loss involves a low-calorie diet, in which the daily caloric value of food for women is approximately 1200-1400 kcal, and for men - 1400-1600 kcal. The calorie intake can vary according to height, weight and lifestyle (Borisova, 2007, 133).

Clients who keep a low-calorie diet, the amount of fat consumed with food should not exceed 29% of the daily calories of food. Consumed fats by 30-50% should consist of polyunsaturated fatty acids. The amount of saturated fatty acids is limited - their energy value should not exceed 10% of the daily calorie. The source of animal fats can be low-fat fish and chicken, poultry (without skin), and occasional use of lean beef tenderloin is permissible. The cholesterol content in food should not exceed 300 mg per day (Borisova, 2007, 133).

The energy value of proteins in a low-calorie diet is about 15% of the daily calorie content of food. It is recommended to use 1/3 of the daily amount of proteins in form of soy products. Carbohydrates account for 50-60% of the daily calorie intake (Latkov, 2011, 160).

Carbohydrates should be presented in vegetables, sugar, fruits, grains, cereals (Meltzer, 2005, 16). Limited use of pasta made from wheat of solid varieties is allowed.

To enrich the food with calcium, milk or kefir is added to the diet with 0.5-1% fat and completely fat-free cottage cheese. Table salt is limited to 4.5 grams per day. The amount of liquid consumed daily is 1.5-2 liters. It is recommended to use green tea containing a significant amount of catechin, which increase the level of basal metabolism and stimulate postprandial thermogenesis. The use of three servings of green tea a day before the main meals makes it possible to increase the energy expenditure by 80 kcal per day (Borisova,

2007, 137). Its important to limit the use of alcohol. It is recommended to take a daily multivitamin. Keeping a low-calorie diet is very healthy for life (Meltzer, 2005, 64-68).

Accordding to Austin , Seehohar (1977),losing weight nutrition rules can be formulated as following:

- Eating only when there is biological hunger
- Eating food from lean proteins (meat, fish, chicken, eggs, dairy, beans, soy foods, nuts and seeds) and healthy fat column and food from the fruit and vegetables column 90 percent of the time and eat them together at meals and snacks
- Increasing consumption of lean proteins and healthy fat by 25 to 50 per-cent of what we would normally eat
- Allow herself to have misses 10 percent of the time



Picture 1. Represents the type and percentage of food intake according to the athlete goal.

#### 4.2 Muscle gaining

Most of the modern diets used in bodybuilding are not entirely correct. This is due to the desire of each author to invent something new in creating his own diet, however in 99%

of cases these innovations are completely absurd, and sometimes even harmful. Sophisticated methods of cycling, the preference of some specific food products, the difficulty in preparing foods, ridiculous combinations - all these are attempts to bring something new in the bodybuilding nutrition that attracts attention (Borisova, 2007, 136).

Athletes should remember that you need to increase and decrease the amount of food you eat (caloric and volume) gradually, otherwise metabolic disturbances and digestive disorders are possible. The body needs time to adapt to new eating habits (Austin & Sebohar, 1977, 5-8).

The main principles of diet:

- Frequent food intake

The studies have shown that the anabolic effect of eating lasts about 3-4 hours, despite the fact that a high level of amino acids lasts longer when recruiting muscle mass, one should eat quite often: the optimal number of meals is 5-6 times a day. At this frequency, the digestive system is not overloaded, and small portions of nutrients are constantly supplied to the blood, which will feed your muscles throughout the day. If you eat the same amount of food for 3 hours, the absorbed nutrients will come in excess, so the body will begin to deposit them in form of fat, where it is not possible to extract them in a high-calorie diet (Kalinsky, 1985, 146).

It is important to pay attention to the distribution of food consumed during the day. When muscular mass is collected, food volumes should be approximately equal, however, in the first half of the day (before 4 pm), about 70% of all daily food intake. Although recent studies have shown that the daily distribution of portions plays a secondary role (Villepigue, 2001, 23-36).

It is very important never to eat sweet or fatty at night. The food before bedtime should be easily digestible and rich in protein; for this purpose, sour-milk products, vegetables (beans and others), poultry meat, salads, eggs and fish are suitable for it (Kalinsky, 1985, 146).

- High-calorie food

About 70% of the food eaten should be high-calorie, otherwise there is an overload of the digestive system, in addition, the degree of assimilation of nutrients decreases. Nobody denies the usefulness of fruits and vegetables, but when training muscle mass, their mass

fraction should not exceed 30%. Fiber, which is contained in them in large quantities, is not digested and stimulates intestinal contraction, so most of the high-calorie food will not have time to digest (Villepigue, 2001, 23-36).

- Restriction of fats and fast carbohydrates

The consumption of food rich in animal and other saturated fats (fatty meat, fat, margarine, butter, sausages, etc.) should be limited. For muscle growth and energy production, the body primarily uses carbohydrates, so most of the fat in excess nutrient conditions will be deposited in adipocytes (fat cells) (Borisova, 2007, 135-140).

The consumption of fast carbohydrates, the most dangerous of them - sweet (confectionery, sweet fruit, etc.), less dangerous - bakery products should be avoided. Fast carbohydrates can be absorbed very quickly from the digestive tract, resulting in a dramatic increase in blood sugar levels, in response to this organism, transfers glucose to fat (Austin, Sebohar, 1977, 58- 63).

Fast carbohydrates can be consumed after training, when muscles and other organs are able to quickly utilize glucose, in addition, the secretion of anabolic hormone insulin increases, which is of no small importance in the collection of muscle mass (Latkov, 2011, 160).

- Drinking regime

In the recruitment of muscle mass, many metabolic reactions are intensified, which necessitates a greater consumption of water. The optimal amount of liquid on average is (including water, which is contained in the products) - 3-4 liters per day. Do not allow the development of dehydration (dehydration), always drink when thirst occurs

- Food intake before workout.

An athlete needs to eat before training (2 hours before it starts). For this purpose, protein dishes and foods containing slow carbohydrates such as porridges, flour, vegetables, etc. are well suited. Carbohydrates before training are necessary in order to load glycogen depots and provide energy to the muscles and brain during the training. Amino acids will cause anabolism (Bohe, 2001, 1).

- Food intake after workout.

The greatest need for nutrients is observed soon after training. The optimum use of a hydrocarbon-protein cocktail (gainer) immediately after the end of the training, then should be followed by a plentiful meal no later than 1-1,5 hours after training (Aragon, Schoenfeld, 2013). Include in it food that is rich in proteins and slow carbohydrates, it's good to use small amount of fast carbohydrates (sweets). After training, the so-called protein-carbohydrate window opens, during this time the body is located to assimilate a large amount of food, while nutrients are used to restore muscle and renew energy. (Phillips, 2003,50-61)

According to W. Brink (2003) proportions of proteins, fats and carbohydrates :

- The content of carbohydrates is 50-60%. Consumption of only slow carbohydrates.
- The protein content is 30-35%
- The fat content is 10-20%. Do not limit the amount of fat below 10%, this will cause unwanted metabolic changes. Try to consume only vegetable fats. Without restriction, eat fatty fish. Fish oil is very important (Aragon,Schoenfeld, 2013,5-14).

It should be remembered that there is no ideal ratio that would absolutely suit everyone. Therefore, the main task of gaining muscle mass is to find one that will be effective for you personally. Here are the average figures that are suitable for most people, beginners should start with, and you can experiment. Interestingly, the ratio of proteins, fats and carbohydrates suited for both a normal person and an athlete (Karvonen,1983, 10-25).

- The main principles of gaining muscle mass

Muscle mass begins to grow only when the amount of incoming energy in the form of food exceeds the amount of energy expended by the body. In addition, we must remember that the body always tries to maintain homeostasis (constancy of the internal environment), so you can increase the caloric content of the diet by 5, 10 and even 30%, while the mass does not change. Sometimes, to move the mass from the "dead point", you need to increase the caloric content of the daily diet by 50 and even 100% (Brink,2003,23-30)

To determine the amount of food required for you to gain muscle mass, you need to follow a simple technique:

Gradually increase the caloric content of the diet, until the increase in weight will not be 600-800 g per week. If the increase is less, then you need to eat more, and vice versa. For this you need to be weighed at least once every three days. In a month you will be able to adjust your rate. Do not exceed the amount of the increase of more than 800 grams per week, otherwise your body will begin to put a lot of fat (Leutholz, 2001, 433-445)

- Control of fat percentage

Regularly monitor the percentage of body fat. As the 2015 study showed in 58 pairs of twins, the active formation of visceral fat, which is hazardous to health, occurs in men when 20.6% of the body fat is reached, and in women, when it obtains 39.4%. Therefore, with the accumulation of 15-20% of fat in men, it is necessary to stop weight gain and go on a diet for relief with a gradual reduction in fat to 10%, and then you can start a new cycle of mass gain (Brink,2003,33).

#### 4.3 Shredding

Shredding diet is required for people who have a sufficient amount of muscle mass, while not suffering from obesity (Aragon,Schoenfeld, 2013).

First of all, the diet during shredding presupposes a gradual decrease in the calorie content of the diet by 10-20-30%, depending on the progress of fat burning. As the diet is curtailed, there is a need to control your weight and thickness of the fat folds, if there is a tendency to reduce the thickness of the fat layer and body weight by 1-3 kg per month, then you can assume that everything is in order (Cheeke,2014, 256-301).

In the first place there is cutting the diet due to fast carbohydrates and animal fats. It is desirable to exclude these food components altogether. If this is not enough - continue to reduce the amount of carbohydrates and fats (Villepigue,2001, 23-36).

It is important to remember that the diet should be balanced when cutting fat. It is necessary to consume at least 10% of unsaturated fats relative to the total number of calories in the diet (up to 25% of fat in the diet). Eating fatty fish, which is rich in omega-3 fatty acids helps to contribute to the relief. Carbohydrates should be 30-40% and predominantly slow (complex). Slow carbohydrates are found in cereals, flour products from coarse flour and rye, vegetables, nuts and unsweetened fruits. Taking an additional vitamin and mineral complex is very important, because a lack of vitamins can lead to the destruction of

muscles and a weakening of health against a background of low-calorie nutrition (Kravchenko, 2017, 15).

Food consumption should be often - 5-6 times a day, in small portions. It is desirable not to eat 2 hours before the workout and 1.5 hours after training, except for amino acids and protein shakes (Cheeke, 2014, 256-301).

Taking of sufficient proteins is very important for shredding diet. About 60% can be obtained from food, the remaining 40% are recommended to take with sports nutrition. Protein suppresses catabolic processes and protects your muscles, while not interfering with the drying process. For maximum results, it is recommended to take a sports nutrition complex. (Morozov, 2014, 300).

The diet also presupposes control of fluid intake. The total amount of liquid per day should not be less than 2.5 liters. With a lack of fluid, metabolic processes in the body slow down, which in turn slows down weight loss. Also, during dehydration during training, the blood becomes thicker, which increases the burden on the heart. It means that it is necessary drink plenty of water during training, for example one or two sips after each approach (Kravchenko, 2017, 20-22).

It is recommended to include the following products in shredding diet: low-fat meat, lean poultry, eggs, fish and low-fat dairy products such as kefir, cottage cheese, milk; porridge, for instance, buckwheat, linseed, oatmeal, wheat, barley. Brown and wild rice would be on that list as well as beans including beans, peas, lentils, chickpeas, vegetables and fruits. (Morozov, 2014, 305).

#### 4.4 Keeping fit

Rational nutrition is necessary to maintain the normal functioning of a healthy organism, creates the conditions for physical and mental development, ensures high efficiency, promotes disease prevention and enhances the body's ability to withstand the effects of adverse environmental factors (Morozov, 2014, 307).

A healthy balanced diet should strive to include a wide range of different products from the four main food groups (bread, other cereals and potatoes, fruits and vegetables, milk and dairy products, meat, fish and their alternatives) (Skurihin, 1985, 230). The nutrients provided by these products have specific functions in the body.

When organizing the rational nutrition for being fit, the following principles should be taken into account:

- Correspondence of the energy value of the diet to the average daily energy consumption, depending on the age, sex, nature and intensity of physical exertion;
- A balanced diet for essential food substances (proteins, fats, carbohydrates, vitamins and minerals);
- The choice of adequate forms of nutrition (foods, nutrients and their combinations), providing a different orientation of the rations (protein, carbohydrate, protein-carbohydrate), depending on the specific pedagogical tasks and focus of training in certain periods of training athletes (Kalinskiy, Pshendin, 1985, 150) ;
- Distribution of the ration during the day, clearly coordinated with the regime and the nature of training.
- The first rule of balanced nutrition: "Keep the right ratio of nutrients." The balance between the incoming proteins, fats and carbohydrates is very important. Only in this way the body will receive energy from the right sources, and finally, it will stop procrastinating (Morozov, 2014, 307).

## 5 QUESTIONNAIRE

The goal of the questioners is to check the awareness of people regarding to sport nutrition. The main tasks were defining the research aim, identifying the population and samples, collecting the material, piloting survey, carrying out the main survey and analyzing the data.

The aim of our research is to collect information from the customers on the nutrition topic, to figure out how aware they are of importance of eating habits, and the influence of certain nutrients on the body, the quality of performance and training goals.

### 5.1 Developing the questionnaire

A survey is a way of collecting information to compare, describe, explain knowledge, attitude, practices or behavior (Fink,1995, 1). In our case, the date collection was aiming to figure out the amount of knowledge people have about sport nutrition, to help them to fulfill missing information and achieve better results. The outcome is used as a source of information in creating a poster.

Since the survey is measuring the level of knowledge, the questions were concrete and simple without any hidden message. The questions cover sport nutrition topics like micro,macro nutrients, supplements, energy balance and sources, hydration and training meals).

While creating a survey we were trying to avoid blasting words and phrases ( words which can bring certain emotional reflection and answers to the questions regarding to the attitude towards particular objects which are mentioned in the sentences ) ( , two-edges questions ( those which contain 2 and more ideas in the same sentence) ,negative questions( this types of questions could be misunderstood and lead to invalid answers), loaded questions( when topic is embarrassing or controversial for the participants). All of those aspects can disturb the participant from giving appropriate and honest answer (Frink.,1995). While creating the questioner we decided to use closed question form. There are some benefits of it: it was easier to standardize and analyze statistically. Why we choose particularly true/false questions? It's quite easy to score and doesn't require a

lot of time as it is suitable for those who came to the gym to master their skills and not waste time on questioners.

Making sure that the questionnaire is appropriate, it was important to pilot it and give the test out to “potentional respondents” (Frink, 1995, 6-10). People who participating in piloting were the staff of the gym (8 people) and the customers of the gym, (10 people), whose results were analyzed but not included into the actual results test.

The idea was to check the clearness, consistency and clarity of the test. Staff members who possess a greater amount of theoretical knowledge accepted the test and gave us the permission to implement the actual test with clients

The total number of participants was 60 people, aged 22-55, customers who are visiting the gym “Shape”. Customers who were participating in the testing had different experiences in sports as some of them just started exercising recently, and some of them have a long sports history.

## 5.2 Test

The test covers the general questions about the customer’s sports background, their satisfaction of the nutrition habits and information about training. Those details are useful for the poster creation process, in order to understand which information the authors have to emphasize on while creating the posters

Regarding to the questions about nutrition science, as it has been mention above, they will contribute to the decision about the topics (performance goals) of the posters. The least information people have about the topic, the more focus will be on this theme in the poster.

[Figure.2 Questionnaire that has been used in the test](#)

Age	
Sex	
Training type	
Training load (how many time per day)	
Do you plan your food in advance?	

Are you satisfied with your nutrition habits?	
How nutrition is important for training? ( put percent-age number)	

No	Question	True	False
1.Macronutrients	Proteins are the most important source of energy(calories) .		
2.Hydration	Sports drinks are important to consume during practices longer than 60-90 minutes.		
3.Micronutrients and supplements	The vitamin B is important for turning the food you eat into energy.		
4.Energy sources and balance	Feeling tired midway through a workout may be a sign of not eating enough food. (calories)		
5.Training meal	An athlete's pre-training or pre-competition meal should be high in protein		
6.Macronutrients.	Oils from plants, fish, nuts and seeds are considered healthful fats.		
7.Hydration	During exercises in the heat, drinking water is better than drinking sport drinks to maintain hydration		
8.Micronutrients and supplements	Creatine is an effective and safe supplement for athlete to take at any age		
9.Energy Sources and balance.	To gain weight, an athlete had to eat more food(energy)that used for exercises and body functions		
10.Hydration +Macronutrients	Fruit juice is an ideal source of carbohydrate during practice		
11.Macronutrients	Carbohydrates are the main sources of fuel for mental performance		
12.Energy source and balance.	Weight loss occurs from not eating enough, exercising too much or both		

13.Training meal	Consuming a snack or beverage with calories before weight lifting will promote muscle building		
14.Training meal	Refueling immediately after exercises with a sport drink and snack optimize recovery		
15.Macronutrients	Most athletes require about four times more protein than nonathletes		
16. Hydration	How much an athlete sweat during exercises can be measured from the change in body weight before and after exercises.		
17.Micronutrients	White bread has the same number of vitamins and minerals as the whole wheat bread?		

### 5.3 Validity and Reliability.

The validity of the test was ensured because the test gave a useful foundation on which to develop a conclusion about the customer's nutrition knowledge.

The validity of the questionnaire has been proven by the University of Utah of USA, where a similar research has been implemented and similar questions have been asked. The questionnaire is reliable as the people were filling it in before practice so that they didn't have opportunity to check the information somewhere else. The test was created and analyzed with help of the literature of Arlene Fink "How to ask survey questions", "How to report on surveys " and "How to analyze survey data", Williams Fobby "Contracting questions for interviews and questionnaires".

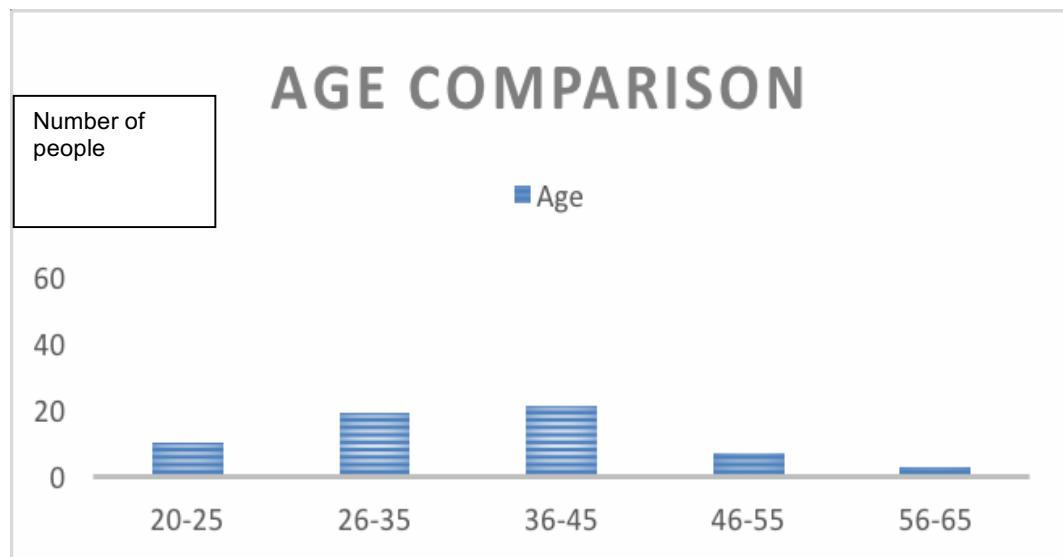
### 5.4 Procedure

The test has been implemented in a quiet atmosphere before the customers started practicing. It was held totally according to the clients will, if they were refusing the participation. But surprisingly, many clients were actively participating and excited results (poster), considering is very useful. The instruments that have been used: pen, paper.

Before the implementation of the test there has been piloting, and some volunteers from the staff member of the gym took part and checked their knowledge. The result has been analyzed, the questionnaire been approved by the commissioning party and the test worked out well. That is why we concluded that a real test can be done the same way. The testing took 3 days in total and people were chosen randomly.

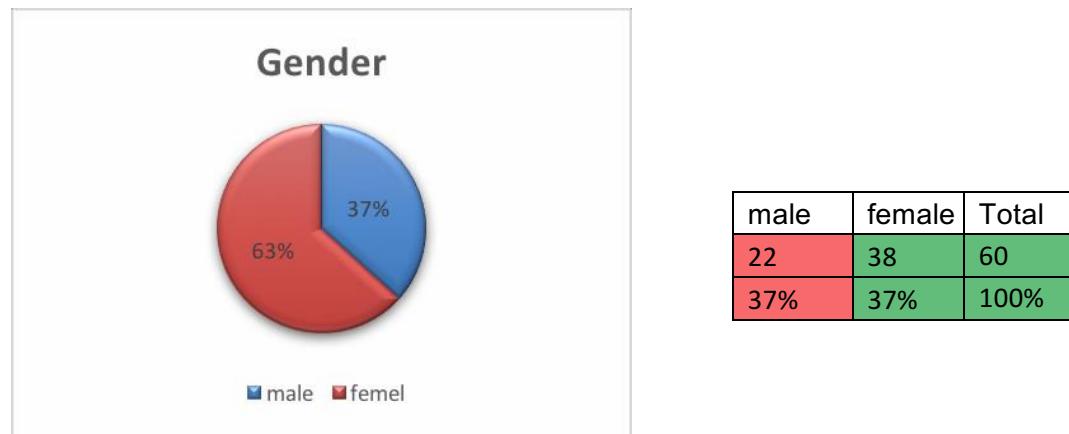
### 5.5 Results:

The results have been obtained and analyzed. The focus was mainly on the knowledge people show in the test and their training programs as well as general questions about age and gender. It is significant to exam which age group we are dealing with in order to include suitable information into the poster.



*Picture 2. The graph represents age comparison of the gym clients'. Blue bars shows the age range.*

According to the results the main age group consists of people from 36-45 years old (21 out of 60), followed by 26-35-year-old people (19 out of 60). Young people of 20-25 years old make up a really small group. Even less customers of the age groups 46-55 and 56-65 were to find in the gym. To sum up, middle aged people are the most often customers of the gym "Shape".



Picture 3 presents the gender comparison. Red color stands for female, blue for male. The figure 1 shows the result as a percentage in a table.

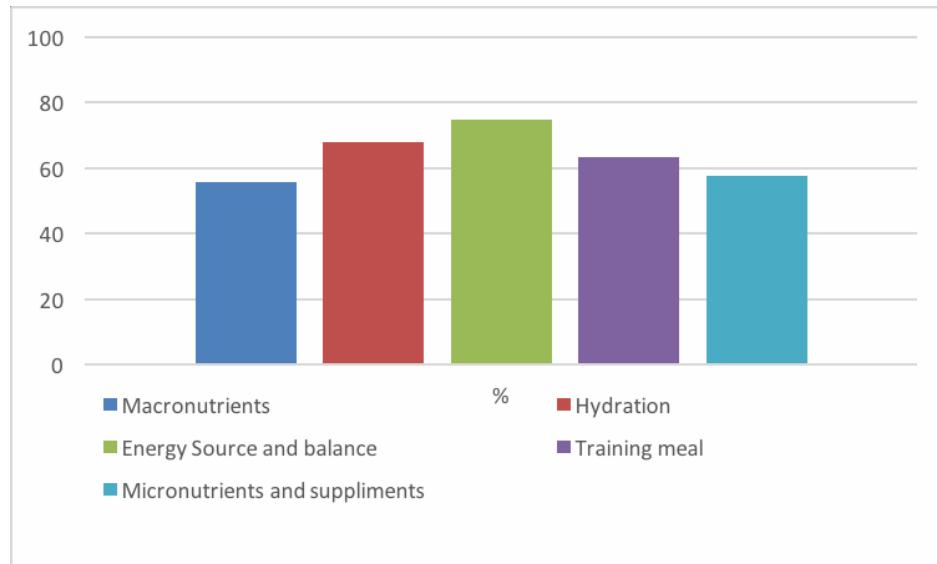
According to the results of the gender comparison, most of the visitors are women (63%), males are just 37%.



Picture 4. The chart shows main training goals customers are following regarding to the outcomes of the test

According to the result of the questionnaire the most people are interested in losing weight (42%). Then, one third of customers are aiming to keep fit. While just 18 % are interested in shredding and 13% are into hypertrophy. The knowledge we are searching

for and the information in the poster will be based on the outcomes of the test. So that, the focus will be on those 4 goals people are pursuing.



**Picture 5. Disciplines of knowledge.** The bars describe the amount of right answers on the topics: **Macronutrients, Hydration, Training meal, Energy Sources and balance.**

According to the results of the test, the customers are aware of the energy source and balance on 75%, meaning that half of the participants are able to understand the concept of eating balanced. The hydration awareness is a bit lower with 67%, while Training meal is even lower on 4% (63%). Apparently, topics of micronutrients, supplements and macronutrients are the least familiar to the customers as only half of them gave the right answers.

#### Other results:

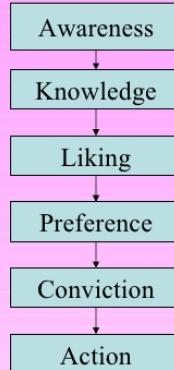
According to the results of the text, 80 percent of the customers consider nutrition as an important topic. At the same time, 70 percent of the population tested replied that they are not satisfied with their nutrition habits and would like to change it. Only 40 percent of people are planning their food in advance.

## Posters

Considering the results, we used the kind information that is suitable for the age and lack of knowledge of the clients. We chose attractive pictures for each goal, and the most important information according to every goal. We decided not to put so much information on the posters because otherwise people wouldn't want to read, and it can seem difficult for them. The big pictures and big letters attract people and they can remind everything easily looking at it all the time. The posters are presented below. The first poster provides with the recommendation regarding shredding. The second one covers information about muscle gaining, the third one gives the recommendation for the weight loss and the last one encourage people to keep fit.

Our main goal is to encode the message in a way so that the reader will understand it and, consequently, adjust his/her behavior. There is a model of response process developed by R.Lavidge and G.Steiner,used by Belch(1998) in thre reserch. The model can be applied in our study, and help to achieve the goal-make customers follow the nutrition guideline.

## Lavidge and Steiner model



Picture 6..

Visual information which will be provided for the customers, hopefully, will catch their attention. But in order to make people like it and convince them to apply the information written on the posters, some tricks must be included.

First of all, customers should feel that the message is forwarding to them, meaning that they must be familiar with the topic. (Belch,1998,130) That is the reason, why posters will

be places on the wall near by those bodybuilding machines, which may be used for achieving curtain performance goal, described on the poster. This way it will be easier to select the main target group and attract the right audience.

Based on the result of the questionnaire, mostly men are interested in gaining weight and shredding while almost all women replied that their training goals are keeping fit and losing weight. There are fundamental differences in the way men and women process information. Women tend to process more extensively, more different pieces of information. "Men tend to rely more on mental shortcuts ..." (Yarborough 2000,9) Based on that, the colors of the posters and the way the information arranged in the posters have been chosen accordingly. The posters with "men" topics (gaining weight and shredding) have dark and sharp colors and more concrete and simplified information. And, consequently, posters for "women" are of light and gentle colors and bigger variety of information. According to Chung & Hoerr (2005), women seem the minimum recommended number of fruit consumption. While, men have been shown to eat less carotenoid-rich foods, such as carrots, spinach, broccoli and other greens than women (Courtenay, 2000,4-5). A research conducted in the US (Courtenay, 2000,2-6) presented that males consume more saturated fat and dietary cholesterol than females. Cholesterol intake of males was substantially higher than recommended levels, while dietary cholesterol of most females of all ages fell within the recommended range for classes of age (Courtenay, 2000,2-7). That meant that there are some "masculine products", which men likely to consume, while they can refuse to have a "feminine nutrition habits". Through "Shredding" and "Gaining weight" we wanted to show that it is manly enough to eat salads, fruits, vegetables etc., if they want to achieve their goals.

According to Belch,(1998) Information should be presented in the most simple way in order to stay in peoples' mind. That is why we limited the content by minimum and included only the most significant knowledge according to the test.

It can be seen from the figure 6 that the worst awareness of people in the topic of macronutrients that is why poster contains a lot of information what kind of macronutrients and when the clients should consume. Quite low awareness of micronutrients and supplements is also reflected, and suitable information included in the posters. 63% of right answers on the topic of training meal is quite satisfactory number, but in order to remind them and keep the knowledge fresh we included training meal issues in posters. People are most knowledgeable in the topics of hydration and energy balance, consequently, we minimized information on those topics.



## 6 CONCLUSION

In summary, the clients of the gym “Shape” would be more efficient regarding to the achievement of the performance goal if they started following nutrition plans. That is the goal we have been pursuing during our project. In this part we would like to introduce how we were generating the idea and evaluate whatever the project succeeded or not.

### 6.1 Idea development

The idea of creating info posters for the gym was developed together with the commissioning party. During our project running we had several meetings with our supervisor from the company and discussed the possibilities, opportunities and ways of presenting the outcome.

The topic itself was initiative of the commissioning party. Lately, instructors started getting a lot of questions from the customers regarding the nutrition topic. Consequently, the main topic was chosen jointly. After brainstorming, the idea was developed, and a plan of implementation created.

The first idea was to make a big poster with all information on it and place it near the entrance. While discussion we concluded that the most rational way would be to split the big poster on small info posters and extend it near the body building machines, regarding to the topic. The posters have simple information which is understandable by everybody and easy to comprehend by the brief look. It is easier to concentrate the attention when there is no information overload, and while doing repetitive movements, customers can read the posters several times so that they remember it better.

### 6.2 Evaluation of our work

During the project we gathered a lot of knowledge on nutrition topic from different sources and combined old and new studies. Through posters we wanted to share the information about nutrition and influence on the gym clients’ nutrition habits. Unfortunately, due to our poor time management we did not figure out yet whatever customers are satisfied by the project or not. Regarding to the commissioning party’s feelings, they are quite satisfied

about the final product, but expected to have it earlier. Our goal was to creative and customer-orientated solutions, but from our point of view, our final work is satisfactory, but not creative enough as wallposter is quite well-known way of presenting information so we did not find a new way. As for maximizing personal efficiency in project work, we were quite productive from time to time, but didn't have sustainable amount of working time.

In our project of increasing awareness of customers about nutrition rules we used a visual approach the posters. But there are many other ways how people are processing and remembering information, for example through practicing or listening. For the future our project could be continued in many ways. We developed some ideas for our commissioning party, which will be listed below.

Nowadays there are plenty of sources where people can get any information they are interested in, but sometimes it is hard to sort it out and not to waste time on useless and trustless articles. That is why, we found it rational to organize lectures about nutrition for the customers of the gym, where they can get important knowledge. At the beginning, it would be wise to have general introduction classes about basics of sport nutrition, later move to more detailed knowledge: how to count own BMI, calorie intake, body composition, calculate the energy value of the dish, to track the biological and energy value of the dish as the product is selected, determine for which meal it will be the best option. Also workshops how to identify right products in the shops and some cooking tricks, as some people might think that healthy food is always not tasty. One of our idea is to compare the results before correct nutrition and after, so that people can see how it works and motivate each other.

For these projects, the gym might need to find the specialists or researchers who can give people valid information and motivate them. We strongly believe that these activities can bring people together, so that while interaction they can learn from each other. As well as practical workshops will motivate customers to follow healthy lifestyle and gather new information. Besides, it can help to expand the number of customers as those activities will be unique in the area.

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## 8 APPENDIXES.

### 1. Questionnaire with the right answers marked

No	Question	True	False
1.Macronutrients	Protein is the most important source of energy(calories) .		*
2.Hydration	Sport drinks are important to consume during practices longer than 60-90 minutes.	*	
3.Micronutrients and supplements	The vitamin B is important for turning the food you eat into energy.	*	
4.Energy sources And balance	Feeling tired midway through a workout may be a sign of not eating enough food. (calories)	*	
5.Training meal	An athlete's pre-training or pre-competition meal should be high in protein		*
6.Macronutrients.	Oils from plants, fish, nuts and seeds are considered healthful fats.	*	
7.Hydration	During exercises in the heat, drinking water is better than drinking sport drinks to maintain hydration		*
8.Micronutrients and supplements	Creatine is an effective and safe supplement for athlete to take at any age		*
9.Energy Sources and balance.	To gain weight, an athlete had to eat more food(energy)that used for exercises and body functions	*	
10.Hydration +Macronutrients	Fruit juice is an ideal source of carbohydrate during practice		*
11.Macronutrients	Carbohydrates are the main sources of fuel for mental performance	*	
12.Energy source and balance.	Weight loss occurs from not eating enough, exercising too much or both	*	
13.Training meal	Consuming a snack or beverage with calories before weight lifting will promote muscle building	*	

14.Training meal	Refueling immediately after exercises with a sport drink and snack optimize recovery	*	
15.Macronutrients	Most athletes require about four times more protein than nonathletes		*
16. Hydration	How much an athlete sweat during exercises can be measured from the change in body weight before and after exercises.	*	
17.Micronutrients	White bred has the same number of vitamins and minerals as the whole wheat bread?		*

## Answers of people, analization

# Shredding

## Nutrition guidelines



### Suitable products

#### Proteins:

- all types of meat without skin and fat
- all types of fish preferable sea fish
- sea food
- Eggs
- Fat free milk,cottage cheese,

#### Carbohydrates:

- oats,porridge
- fruits and vegetables
- beans
- nuts and mushrooms very rare around ones per week
- whole-grain pasta

#### Strictly forbidden:

- smoked meat
- sweets
- white rice
- bananas and grapes
- high-caloric dishes

### Water consumption

As much as possible  
3-4 l per day



### Food consumption timing.

not less than 6 times per day

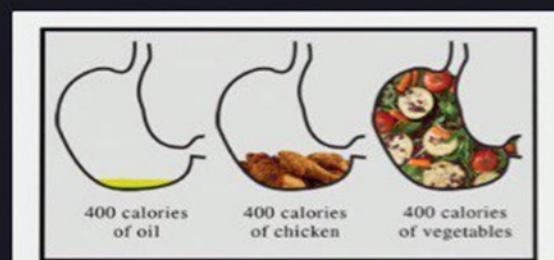


### Before work out

Slow carbohydrates  
Fiber  
Proteins

### After work out

Carbohydrates  
proteins



# Keeping Fit



## Balanced diet

- Bread
- Eggs
- Potatoe
- Meat
- Fish and seafood
- Fruits and Vegetables
- Milk and Dairy Products
- Rice, pasta and porridge
- Water Consumption**
- 1,5 - 2 litres per day**

## Before workout

- Slow Carbohydrates ( rice, oats, porridge, pasta, bread)
- Fibre ( fruits, vegetables)
- Proteins ( chicken, turkey, beef, fish, pork )

## After workout

- Carbohydrates (rice, oats, porridge, pasta, bread)
- Proteins ( chicken, turkey, beef, fish, pork )



## Take Vitamins!

### Vegetables and fruits

- Nuts
- Greens
- Vitamin complexes
- Fish Oil



## FOOD CONSUMPTION TIMING

4 - 5 times per day

Not later than 2 hours before going to bed

Do not take food 1,5 - 2 hours before workout

Source: [piktochart!](http://piktochart.com)

# Muscle Gaining

## Nutrition Guidelines



### What to eat?

- beef
- beetroot
- brown rice
- eggs
- cottage cheese
- cantaloupe
- organic milk
- spinach
- apples
- Greek yogurt
- Ezekiel bread
- Wheat germ
- chicken breast



### What NOT to eat?



- saturated fat : fatty meat, margarine, butter, sausages

- fast carbohydrates: confectionery, sweet fruit

### Drinking and eating regime

- - 3-4 liters of water per day
- 5-6 times

### Food before work out

- -protein dishes
- slow carbohydrates such as porridges, flour, vegetables, etc

### Food after work out

- -a hydrocarbon-protein cocktail (gainer)
- fast carbohydrates (sweet).
- foods rich in proteins and slow carbohydrates



# Weight Loss Nutrition Guidelines

**Nutrition & Weight Loss**

## TYPES OF PRODUCTS

### Proteins:

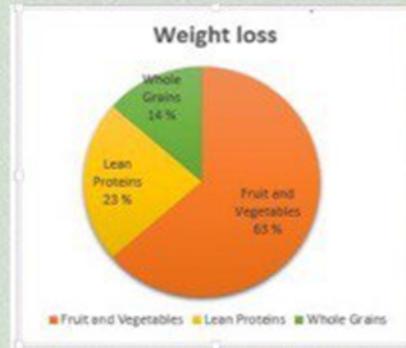
- \* Cottage cheese, kefir
  - \* Eggs
  - \* Beans
- \* Lean meat - chicken, beef, turkey
- \* Fish and seafood

### Carbohydrates:

- \* Whole Grains: rice, Oats
- \* Vegetables
- \* Fruits

### Unsaturated Fats:

- \* Avocado
- \* Olive oil
- \* Nuts



## Daily calorie intake

Decrease calorie consumption 10-20% from normal calorie intake.

It is very easy to calculate daily calorie intake according to individual parameters by using online tools.

## Water Consumption

2 - 3 litres per day

## Before workout

Slow Carbohydrates (rice, oats, whole grain pasta)

Fibre (fruits, especially banana, vegetables)

Proteins (chicken, turkey, beef, fish.)

## After workout

Carbohydrates( oats, rice, banana)

Proteins( low fat cottage cheese, low fat milk)

## Very important tips

**Remember to reduce or cut completely all sugars, saturated fats, fast carbohydrates( bread, floury products)**

**high consumption of micronutrients rich food**

**Vitamins: Potassium, Magnesium, Calcium**



## FOOD CONSUMPTION TIMING

**Less portion , more frequently**

**5 - 6 times per day**

**Not later than 2 hours before going to bed**

**Do not take food 1.5 - 2 hours before workout**