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The Reality of Healthy Nutrition in the Muscular Development Among Bodybuilders

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Abstract

The study aimed to know the reality of healthy nutrition in the muscle development of bodybuilding practitioners, and for this purpose we used the descriptive approach on a sample of 100 university students involved in bodybuilding clubs, chosen in an intentional way, and to collect data we used the questionnaire, and the results concluded that bodybuilding practitioners do not have full awareness of rational consumption in their diets that they eat daily for the sake of muscle development, that bodybuilding practitioners are not aware of the basics of distributing the training load in the sports program that they follow during training sessions for muscle development, and from this we can say that the reality of healthy nutrition in muscle development for bodybuilding practitioners is still far from the correct practice.

Introduction :

Hippocrates, the father of medicine, states: “Let your food be your doctor”, and nutrition is one of the most important factors affecting health and a person's ability to work and exercise, and the quantity and composition of the food needed for a person depends on age, duration and type of work, the type of sport he practices and other factors ... The development of nutrition programs must take into account not only the body’s needs for proteins, sugars and fats, but for vitamins and minerals as well, meaning that nutrition contains all the nutrients in specific proportions. (Hussein Ahmad Heshmat, Mohammad Salahdin Mohammad, 2009, p 185)

Studies and research have confirmed the importance of food for athletes, and these studies have found a relationship between the nutrition system and sports’ performance, and this is confirmed by Dr. Abdul Razzaq, through his interest in the importance of nutrition for athletes, as he says: It is not possible to separate between nutrition and training in terms of importance within the life of an athlete, as it is a system in which no one can separate its components (nutrition, training, rest), just as every component complements each other, and without it, it is difficult to improve the athlete’s performance. (Bushire Houari, 2020, p 158), this is consistent with what Sifi Belkacem and others have said, that the experimental group that combined diet and exercise program achieved an acceptable fat distribution and improved cardio-respiratory capacity better than the group that adhered to the diet only or applied physical activity only. (Sifi Belkacem and others, 2020, p 265)

Nutrition constitutes 60% of importance in the life of an athlete, and it appears more clearly in individual sports than in team sports (Bahaa Al-Din Salama, 2000, p 11), as is the case in bodybuilding, which is loved by many young people, in which all the characteristics are embodied. Highness and pride in the human soul, this is what this game provides, and to a distinguished degree compared to other games, because it is a true expression of activity, vitality and a beautiful, harmonious body, in addition to this, this sport has many and multiple components that require a full understanding of it, because workers in this field do not have to count Training programs that include only specific muscle groups, but with what is reflected in these programs in terms of different physical reactions, so testing the exercise, its type, intensity, volume, suitability to the muscle and body type is an important thing.

From this standpoint, we find the person who controls the rational consumption of his food and its quality on the one hand and in the studied activity to generate the necessary energy, replace the damaged tissues and maintain the vital balance on the other hand, will increase the level of his activity and his

athletic performance, whether he is a professional or amateur athlete, for these reasons the topic of nutrition has recently received great attention, and for years it became a stand-alone science in various fields of sports training and in various disciplines, this one wants to gain additional weight and the other wants to lose excess weight, while we find that awareness of the culture of sports nutrition, which is an important factor in maintaining health on the one hand, and the continuity of standardized training on the other hand, contributes to achieving good results (athletic achievement).

Based on our field experience, we will try through this study to shed light on undergraduate students practicing in bodybuilding, to know the area of their diet and the level of what this system meets in terms of nutritional needs according to the stated goal and the distribution of the load in the training sessions, because the nutritional factor can have a positive effect and thus it raises the level of athletic performance, and it can also have an adverse effect on food in the event of an imbalance in nutrients that leads to an imbalance in the athletic performance process, therefore, we must necessarily know the most important basic nutritional principles and their value for the athlete. (Marwan Abdel-Majeed Ibrahim, Youssef Lazem Kemash, 2010, p 9)

From this proposition, we will try to find logical answers to the reality of healthy nutrition in muscle development for bodybuilding practitioners.

- Are bodybuilders fully aware of rational consumption in the diets they eat daily for muscle development?
- Are bodybuilding practitioners aware of the ABCs of training load distribution in their sports program during training sessions for muscle development?

2. Method and Materials:

2.1. The sample and methods of selection:

The sample of our study consisted of one group of 100 university students (men) aged 21-36 years old, who were involved in bodybuilding clubs in the municipality of Batna, which was chosen in an intentional way, where the actual participation of athletes in the club was not less than a year. Our research sample has characteristics that we have defined as follows:

2.1.1. According to the specialization:

Table N° (01) shows the distribution of the sample by specialization

Specialty	Number	Percentage %
Medicine	10	10 %
technology	10	10 %
Industrial protection and safety	10	10 %
Science and technology of physical and sports activities	10	10 %
Nature and life sciences	10	10 %
Mathematics and computer science	10	10 %
Pharmacy	10	10 %
Architectural and urban engineering	10	10 %
veterinary sciences	10	10 %
Earth and universe sciences	10	10 %
Total	100	100 %

2.1.2 According to age:

Table N° (02) shows the distribution of sample members according to the age variable

Age	Number	Percentage %
21 years old	13	13 %
22 years old	13	13 %
23 years old	18	18 %
24 years old	11	11 %
25 years old	07	07 %
26 years old	03	03 %
27 years old	06	06 %
28 years old	08	08 %
29 year old	06	06 %
30 years old	05	05 %
31 years old	04	04 %
32 years old	01	01 %
34 years old	03	03 %
35 years old	01	01 %
36 years old	01	01 %
Total	100	100 %

2.2.The homogeneity of the sample:

In order to verify the homogeneity, the statistical method (Coefficient of variation) was used in the questionnaire used in the study, and the following table shows us the arithmetic mean, standard deviation and mode, and it becomes clear to us that the value of the Coefficient of variation (0.69) lies between (-1,+1) Thus, the sample is homogeneous, the value of the Coefficient of variation (0.69) is within the normal distribution(-

1,+1).

Table Nº (03) shows the homogeneity of the sample members

The Tool	Measuring unit	Arithmetic mean	Mode	Standard deviation	Coefficient of variation
A questionnaire	Degree	7.14	1	1.35	0.69

2.3. Study procedures:

2.3.1. The Approach:

In response to the nature of the topic and the existing problem, we relied on the descriptive method, which is concerned with collecting accurate scientific descriptions of the intended phenomenon and a description of the current situation and its interpretation. (Boudawood Abdel-Yamam, Ata Allah, 2008, p 123)

2.3.2. Tools for collecting data and information:

Arab and foreign sources and references, in addition to personal experiences over more than ten years in the field of bodybuilding.

Questionnaire:

We have designed a questionnaire which consists of 25 questions, in which the student answers them by putting a mark (x) in the field "yes" or "no", or choosing the correct answer or giving his own opinion. The questionnaire is divided into two axes:

- The first axis is about bodybuilding practitioners who are fully aware of rational consumption in the diets they consume daily for the muscle development required by their sport and it consists of 19 questions.
- The second axis, about bodybuilding practitioners aware of the ABCs of the distribution of the training load in the sports program that they follow during training sessions for the muscle development required by their sport, and it consists of 6 questions.

2.4. The scientific foundations of the tool:

2.4.1. Honesty: To verify the validity of the questionnaire, it was presented to a group of experts for the purpose of judging it, which is called the veracity of arbitrators, the number of experts was five, as I asked them to express an opinion on the suitability of the questionnaire for what it was prepared for and the linguistic wording of the vocabulary and the notes presented were as follows:

- Ensure that the terminology used should be understood by the student.
- Suitable for each study topic.
- Switching some vocabulary with others more accurate and clear.
- Start with general questions and then move on to the study questions.

And through the notes provided, I conducted a pilot test on the questionnaire by presenting it to 10 individuals outside the study sample before it was finally approved and asking them to comment on it and explaining the questions and terms that are not understood, if any, and in light of these observations, we modified the questionnaire based on the previous suggestions, and thus the questionnaire became valid.

2.4.2. Stability: To calculate the stability of the questionnaire, the method of application and re-application was relied on by applying the questionnaire to 10 bodybuilding athletes outside the research sample and re-applying it 3 days after the first application. The correlation coefficient for the axes' statements ranged between the first and the second application between 0.856 and 0.964 and this indicates the stability of the questionnaire.

2.5. Statistical Tools:

- Chi-squared test.
- Pearson correlation coefficient.
- Percentage.

3. Results:

Table N° (04) shows the results of the first partial hypothesis

Qutestions	N°	Answer	percentage	Statistical decision
2,3,7,9,12,23	6	True	(64-85) %	Expressive
4,6,11,13	4	Equal	(45-55) %	Not Expressive
1,5,8,10,14,15,22,24,25	9	False	(79-97) %	Expressive

The values in Table N° (04) indicate that bodybuilding practitioners are not fully aware of rational consumption in their diets that they consume daily for the sake of muscle development required by their sport, with wrong answers to the first question in which the following recurrences are recorded:
(55) Carbohydrates, (23) Fats, (70) Proteins, (26) Vitamins, (10) Mineral salts (11) Water, and 28 unanswered repetitions on the part of the students, with a calculated Chi-squared, it was estimated at 363.66, which was greater than the tabular Chi-squared, which was estimated at 12.59, and this is evidence of the presence of significant differences indicating that the study sample individuals were not aware of the most basic elements involved in forming a healthy meal.
As for the answers to the fifth question, it revealed incorrect answers, which were estimated at (97) iterations and (3) iterations of correct answers, with a calculated Chi-squared, it was estimated at 88.36, which was greater than that

of the tabular Chi-squared, which was estimated at 3.84. This is evidence of significant differences indicating that the study sample individuals were not aware of the most important essential acids that are involved in forming a healthy meal for muscle development.

As for the answers to the eighth question, it revealed incorrect answers, in which the following repetitions were recorded: (2) From individuals producing 1 calories, (34) Yields 4 calories, (35) It produces 12 calories, (13) Without an answer, (16) repeating a correct answer results in 9 calories for fat, and with a calculated Chi-squared estimated at 40.5, which was greater than the tabular Chi-squared, which was estimated at 9.49, and this is evidence of significant differences indicating that the study sample individuals are not aware of the most important calories the caloric content involved in calculating or forming a healthy meal.

Also, the answers to the tenth question clarified the wrong answers in which the following recurrences were recorded: (9) Of individuals produce 1 calories, (26) produce 9 calories, (33) produce 12 calories, (16) without an answer, (16) repeat a correct answer produces 4 calories in relation to carbohydrates, and with Chi-squared calculated estimated at 17.9, which was greater than the tabular Chi-squared, which was estimated at 9.49, and this is evidence of significant differences indicating that the study sample individuals were not aware of the most important calories involved in calculating or forming a healthy meal.

As for the answers to the fourteenth question, it clarified wrong answers that were estimated at (79) iterations, and (21) repetitions of correct answers, and with Chi-squared calculated at 33.64, which was greater than the tabular Chi-squared, which was estimated at 3.84, and this is evidence of the presence of significant differences indicating that the study sample individuals are not aware of the most important nutrients they consume immediately after completing training.

As for the answers to the fifteenth question, it clarified wrong answers that were estimated at (87) iterations, and (13) repetitions of correct answers, and with Chi-squared calculated at 54.76, which was greater than the tabular Chi-squared, which was estimated at 3.84, and this is evidence of the presence of significant differences indicating that the study sample individuals were not aware of calories as nutrients that are included in the formation of a healthy meal.

As for the answers to the twenty-second question, it clarified incorrect answers that were estimated at (81) iterations, and (19) repetitions of correct answers,

and with a calculated Chi-squared, it was estimated at 38.44, which came greater than the tabular Chi-squared, which was estimated at 3.84, and this is evidence of the significant differences that indicate that the study sample individuals are not aware that vitamins are not involved in energy production.

As for the answers to the twenty-fourth question, wrong answers were explained in which the following occurrences were recorded: (11) Vitamin A and (7) Vitamin D and E, (0) Vitamin K, (81) without an answer, and with Chi-squared calculated at 227, which was greater than the Chi-squared table. Which was estimated at 9.49, and this is evidence of the presence of significant differences indicating that the study sample individuals were not aware of the most important fat-soluble vitamins that are involved in forming a healthy meal.

As for the answers to the twenty-fifth question, it clarified wrong answers, which were estimated at (37) iterations (60) iterations without an answer, (3) iterations of correct answers, and with Chi-squared calculated, it was estimated at 88.36, which was greater than the tabular Chi-squared, which was estimated at 5.99. This is evidence of the presence of significant differences that indicate that the study sample individuals are not aware of the distinction between essential amino acids and non-essential amino acids that are involved in forming a healthy meal for muscle development.

As for the answers to questions (4), (6), (11), (13), and through the data obtained and shown in Table N° (04) by comparing the calculated Chi-squared with the tabular Chi-squared at the significance level 0.05 with the degree of freedom 1 and since the calculated Chi-squared is smaller than the tabular Chi-squared, we say that the differences are not statistically significant, but are due to chance factors.

Table N° (05) shows the results of the second partial hypothesis

Qutestions	N°	Answer	percentage	Statistical decision
16,18,19,21	4	True	(60-81) %	Expressive
17,20	2	False	(66-67) %	Expressive

The values in Table N° (05) indicate that bodybuilding practitioners are not aware of the necessary rest periods between repetitions, as well as between the various exercises in the training unit for the muscle development required by their sport, with incorrect answers to the seventeenth question in which the following repetitions are recorded: (31) Complete rest, (67) incomplete rest, (2) without an answer, and with a Chi-squared

calculated, it was estimated at 63.62, which was greater than the tabular Table Chi-squared, which was estimated at 5.99, this is evidence of significant

differences indicating that the study sample individuals were not aware of the rest needed by a bodybuilding athlete between exercises (groups) during muscle inflation.

As for the answers to the question twenty, wrong answers were recorded in which the following occurrences were recorded: (66) complete rest, (32) incomplete rest, (2) without an answer, and with a calculated Chi-squared estimated at 61.52, which came greater than the tabular Chi-squared which was estimated at 5.99, and this is evidence of significant differences indicating that the study sample individuals were not aware of the rest needed by a bodybuilding athlete between repetitions during muscle inflation.

The values also shown in Table N° (05) indicate that bodybuilding practitioners are aware of the ABCs of intensity distribution (lifted weight) and volume (repetitions) in the exercise program that they follow during training sessions for the muscle development required by their sport, with correct answers to Question sixteen And the eighteenth, nineteenth and twenty-first, which were a function of 60-81%, this is evidence of the presence of significant differences that indicate the awareness of the study sample individuals with knowledge of the intensity (raised weight) and volume (repetitions) most appropriate to inflate the muscle, and the researcher recommends this result according to what is common and known.

From this, we conclude that bodybuilding practitioners are not aware of the ABCs of the distribution of the training load in the sports program that they follow during training sessions for the muscle development required by their sport, because each component complements the other (intensity, volume, rest).

4. Discussion:

To discuss the first hypothesis, we will use the results of the values of the frequencies, percentages, and chi-square calculated for the various questions that came within this first axis, to support the results of the first hypothesis through the answers of the study sample individuals, and the values in Table N° (04) indicate that bodybuilding practitioners are not fully aware of rational consumption in their diets they eat daily for muscle development.

The researcher attributes this result to the lack of awareness of the importance of healthy nutrition, as well as the lack of financial resources, and this is confirmed by Sassi Bouaziz, and others through the study that they conducted, as the results of the study insisted on the lack of awareness of the importance of healthy nutrition among athletes in football clubs of the first national amateur league, as well as the lack of financial capabilities in sports clubs in

this league, it negatively affects the quality and richness of the nutritional program underlined for the player, and from it the first hypothesis was achieved through the results obtained (Sassi Bouaziz, et al., 2014, p 422), and this is reflected with what Bushehr Hawari said that there is a positive effect of balanced nutrition on developing the muscular capacity of bodybuilders, by relying on building a nutritional program according to the athletes' practical plans (Bushehir Hawari, 2020, p 157), and this is confirmed by Bahaa El Din Salama when he said that nutrition constitutes 60% of importance in the life of an athlete and appears more clearly in individual sports than in team sports (Bahaa El Din Salama, 2000, p 11)

To discuss the second hypothesis, we will also use the results of the values of the frequencies, percentages, and chi-square calculated for the various questions that came within this second axis, to support the results of the second hypothesis through the answers of the study sample individuals, and the values in Table N^{o} (05) indicate that bodybuilding practitioners are not aware of the ABCs of the distribution of the training load in their sports program during training sessions for muscular development.

The researcher attributes this result to the lack of respect for the rotation between work and rest, by not respecting the necessary rest periods between repetitions, as well as between the different exercises (groups) in the training unit, which inevitably leads to a lack of control over the training load, and this result is consistent with the results of Harun Murad's study in saying that training in the sport of bodybuilding is not based on correct foundations and that practitioners of bodybuilding do not have planning nor follow a plan that draws a picture of the work and determines its path (Aaron Murad, 2014, p86), this is consistent with what Ali Marouche said about giving the interested people, not the specialists, basic information, essential to work in order to spare them the chaotic, unscientific work practiced in some gyms for muscle strengthening that are widespread in Algeria (Ali Marouche, p16), this is reflected with what Asma Suleiman and Fatni Monia said that going to the gym and fitness centers contributes to building the body image of the practitioners through the fact that getting accustomed to going to the gym and regular training in addition to special exercises contributes to the development of their external appearance and health. (Asmaa Suleiman, and Fatni Monia, 2020, p 298)

From this proposition, we can say that the reality of healthy nutrition in muscle development for bodybuilding practitioners is far from correct practice.

This is what Dr, Abdul Razzaq confirms through his interest in the importance of nutrition for athletes, as he says that we cannot separate between nutrition

and training in terms of importance within the life of an athlete, as it is a system in which no one can separate its components (nutrition, training, rest) as well as every component they complement each other, and without them it is difficult to improve the athlete's performance (Bushehir Hawari, 2020, p 158), this result is consistent with the results of the Sivi Belkacem study, and others that the experimental group that combined diet and exercise program achieved an acceptable fat distribution and improved cardio-respiratory capacity better than the group that adhered to the diet only or practiced physical activity only (Sivi Belkacem et al., 2020, p 265), This is consistent with what Sassi Bouaziz and others said, that the trainers and administrative staff of the team did not take into account the food program and its relationship with the training program. (Sassi Bouaziz, et al., 2014, p 422).

5. Conclusion:

In our study, we were able to contribute, even with a small part, to uncovering some important aspects of the student at the Algerian University, and we also tried to identify the most important trends for students of bodybuilding practitioners by dividing the questionnaire into two axes that reveal to us the reality of healthy nutrition in muscle development among practitioners of bodybuilding, and after preparing a questionnaire to collect data and apply it to a sample of 100 students, after collecting, statistically processing, presenting, analyzing, interpreting and discussing data, we reached the following conclusions, that nutrition and exercise in bodybuilding is an interconnected link that cannot be dispensed with, while we find that nutrition has a major role in the sport of bodybuilding , and there is a famous saying in the world of bodybuilding that bodybuilding is 80% of nutrition and this does not mean neglecting exercise, and from it we conclude that it is not possible to separate between (nutrition, training, rest) in terms of importance within the athlete's life, just as each component complements each other and without it it is difficult to improve the athlete's performance, therefore, the researcher recommended providing specialists in sports nutrition in addition to the presence of trainers with high experience in the sport of bodybuilding in every gym due to the need for integration between the nutritional and training programs, as well as the interest in conducting medical analyzes every three months with a focus on linking the nutritional programs and the results of medical analyzes for every athlete, whether in the bulking or drying stage.

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