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Comparative Description Of Anthropometric Indicators Of Nutritional Strategy In Practitioners With An Ectomorph Body Structure

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Annotation. This study demonstrates the impact of proper nutrition on the engaging form of athletic gymnastics, a healthier type of gymnastics. Observations were conducted on second-year students of the Faculty of Physical Culture of Andijan State University. Through the study, the study described how the effectiveness of athletic exercise in determining the anthropometric performance of students depends on the proper organization of nutrition. The importance of supplemental nutrition for ectomorphic individuals by body type has been demonstrated.

Key words. Athletic gymnastics, ectomorph, mesomorph, endomorph, anthropometry, strategy, creatine, protein, carbohydrate, amino acid, vitamins, trace elements, caffeine.

Relevance. The period itself is demanding today to increase the effectiveness of work aimed at promoting an authentic culture, a healthy lifestyle, physical and sports among our youth. The implementation of the activities established in these programs will be strictly continued on the basis of the norms of the recently adopted law on State Youth Policy [1].

It is noted by the World Health Organization that the issue of creating conditions for the physical, mental–emotional healthy development of students is considered a priority issue for the future of each society [2]. In the healthy development of students, the acumen of physical exercises, especially athletic Gymnastics, is very great. The correct Organization of students to eat during athletic Gymnastics, taking into account daily and weekly energy consumption, is one of the most pressing problems in modern times. The practice of athletic Gymnastics has an urgent relevance from the point of view of conducting such studies, developing complexes of measures to improve their health, in order to constantly monitor the impact on the state of physical development and health of students. The effectiveness of athletes ' conditioning training depends on how much physical loads are correctly selected for them, rational nutrition and the organization of proper rest [3, 8, 10]. Rational nutrition is characterized by a sufficient supply of the necessary nutrients to the body. This implies the physical development

of the body and the provision of vital processes with sufficient substances and energy. As a building material in the body, mainly protein is used, obtaining energy from the breakdown of carbohydrates and fats. In addition to these substances, in relatively small amounts, Ham vitamins and minerals will be necessary for the healthy departure of chemical processes.

Practicing athletic Gymnastics develops skeletal muscles. For this reason, nutrition should be properly organized when practicing this sport, otherwise good results cannot be achieved. It is very important to organize the organization of complementary feeding of athletes when performing sports gymnastics. In athletic Gymnastics, the effect of Chin training is seen as an increase in the mass of skeletal muscles [4, 9, 12].

Research objective. Taxing anthropometric indicators of the ectomorph body structure through the effect of supplementary feeding in the sport of athletic gymnastics.

Research metrics and styles. The research was carried out by students of the second stage of Andijan State University, who are studying in the direction of Physical Culture Education.

A comparative interpretation was made during the study of students by determining their anthropometric indicators, which depends on how much the effect of engaging them in athletic exercises is on the correct Organization of nutrition. The studies examined 13 20-28-year-old athletes following the conditions that ensure the accuracy and comparability of the results. 9 anthropometric parameters were obtained from the athletes under study: longitudinal, transverse, transverse body sizes. The body structure of the students was determined by a test in a sport-specific style to be 7 students ectomorph, 4 students Ecto-mesomorph, 2 students mesomorph body structures.

Table 1.

Preliminary results on anthropometric indicators

№	Name	Height length (sm)	Body weight (kg)	Weight Index	Chest circumference (sm)	Shoulder girdle length (sm)	Wrist circumference length (sm)	Pelvic girdle circumference length (sm)	Thigh circle length (sm)	Calf circumference length (sm)
1	V. A	1.71	55.6	19,1	89	32.5	24	72	45	29
2	A. D	1.72	52.0	17,9	89	27	25	68	48	32
3	R. X	1.69	50.4	18.0	90	30	25	61	41	26

4	G‘. X	1.62	51.2	18,2	81	29	25	65	44	33
5	Yo. X	1.70	53	18,2	87	30	24	84	43	30
6	A.B	1.79	60	18.7	88	23	26	85	45	31
7	N.A	1.67	60	22.2	93	30	27	84	53	32
8	M.F	1.91	74.5	20,6	96	32	27	85	55	36
9	S.Z	1.80	75	23.4	99	32	27	87	55	35
10	R.M	1.72	70	24.1	88	31	26	91	50	35
11	T.N	1.80	80	25,0	104	41	32	90	55	36
12	I.K	1.69	62	22,1	95	36	28	87	51	33
13	S.A	1.75	75	24,5	97	34	27	88	58	35

1. 1. *Additional feeding of students (g / kg)* – was carried out according to the following Scheme – 3 g of protein per day per 1 kg of body weight of the student, 5 g of carbohydrates, 1 g of fat content were prescribed. The total additional amount of the specified daily was divided into five, and the students were fed under the supervision of the coach. In addition, a maxal Biocontrol of ham is added to the daily feeding ration of students. Bioaccumulators include arginine, beta-ecdisterone, caffeine, carnitine, creatine, multivitamins, myroelements [3, 10, 13].

At night.

What and how much?

Arginine..... 5 g.

Why: slow muscle growth, one of the main causes of which is the narrowing of the capillary vessels. Therefore, muscle tissue does not receive enough anabolic hormones and nutrients. With the intake of arginine on an empty stomach at night, a strong nitrogen oxidation process is activated in the body. As a result, the capillary vessels expand. The most important thing is that this state is preserved until late. This means that all nutrients reach the muscle.

An hour before breakfast.

What and how much?

Whey milk protein 40 g;

Carbohydrate 50 g ;

Carnitine 1-3 g;

Beta-Ecdisterone 100 mg.

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Why? By dawn, the body is able to fully absorb glycogens in the liver, and the turn goes to the muscles, an alternative option for obtaining energy.

Catabolic hormones provide muscle tissue with free amino acids, while blood transports them to the liver. Here they are converted into glucose. To stop such a dangerous process, it is necessary to immediately consume fast-absorbing carbohydrate and whey milk protein.

As for carbohydrates, being drunk in a liquid way, it is quickly absorbed and absorbed, as a result of which the glycogen reserve of the liver is replenished by the same poison. Carnitine, on the other hand, is needed to activate testosterone receptors.

Breakfast.

3 eggs

3 egg whites;

3 tablespoons of oats porridge (prepared);

After breakfast.

What and how much?

Multivitamins and microelements ..1 dose.

Why? The lack of good muscle development is often caused by a lack of vitamins. And heavy training requires more vitamins than usual. Sodium and potassium are necessary for the thyroid hormones responsible for the metabolism of muscle protein. Do you lose weight on the intake of these microelements into the body in moderation with food? A deficiency of such microelements lowers immunity (as well as testosterone secretion).

From this it is necessary to draw such a conclusion — it is necessary to make it a habit to eat vitamins and microelements at breakfast.

Breakfast 2.

250 gr skim cheese;

Lunch.

250 gr chicken stock;

2 slices of jaydari flour bread;

Cottage cheese 50 gr;

More salad.

After lunch.

What and how much?

Beta-Ecdisterone 100 mg.

Why? This additional re-consumption will help speed up the synthesis of protein in lunch.

An hour before training.

What and how much?

Arginine..... 5 g;

Caffeine..... 200 mg.

Why? Arginine participates in the synthesis of nitric oxide and dilates capillary blood vessels. This is important after training. Capillary vasculature the arrival of oxygen and nutrients to the muscle tissue is in between.

Caffeine increases physical strength, and more importantly, energy. Caffeine gains mental endurance and at the same time drives fatigue. In addition, caffeine has an analgesic causality.

Half an hour before training.

What and how much?

Whey milk-protein 20 g ;

Creatine 5 g;

Carnitine 1-3 g;

40 g of slow carbohydrates-fruits, jaydari in the form of bread or oats porridge from it.

Why? Whey milk protein can enrich the blood with amino acids to prevent the catabolic mechanism from triggering in the muscles, which means that the absorption of muscle fiber is stopped. We must also mention that protein also has a husk that can expand blood vessels. It promotes creatine penetration into muscle tissue by increasing the effectiveness of arginine. Creatine is the main "fuel" in muscle contraction. The more creatine in the muscles, the stronger the muscles.

We knew the importance of carnitine. But drinking before training will benefit the athlete even more. Carnitine accelerates fatty acids to reach the mitochondria, the "energy factory"inside tissues. This means additional energy. As a result, the body reduces blood sugar and glycogen consumption. Fruits, porridge, black bread are "safe" carbohydrates, that is, they do not sharply raise the amount of insulin. It enriches carbohydrates, glucose and in this way normalizes blood sugar levels. Its descent is indicative of the initiation of catabolic secretion hormones.

After training.

What and how much?

Whey milk-protein 60 g;

Carbohydrate 80 g;

Creatine 5 g;

Carnitine 1-3 g;

Beta-Ecdisterone 100 mg.

High amounts of leucine in the alox of the amino acids VSAA.

Why? Milk whey protein, which is drunk immediately after the end of training, is important in normalizing protein synthesis. In addition whey milk protein contributes to the absorption of carbohydrates. A rapid rise in blood glucose blocks catabolic hormone secretion. Glucose in the blood reaches directly to the muscles and liver. In muscles, anabolic processes become fuel, and in the liver to glycogen. An increase in testosterone secretion after exercise is known. Therefore, an anabolic complex-carnitine and beta - Ecdisterone-is taken. Together, they accelerate protein synthesis. With the intake of creatine, the reserve of ATF is replenished.

Dinner.

300 g of chicken with a blunt part, pasta mixed in kale, fruits.

After dinner.

What and how much?

Multivitamins and microelements.....1 dose.

Why? Exercise triggers hundreds of metabolic reactions in the body. Vitamins and microelements are directly involved in the processes necessary for this event. By taking them after dinner, it helps to replenish, restore the place of energy and energy spent in the body.

An hour before sleep.

What and how much?

Arginine..... 9 g;

ZMA..... 1 dose.

Why? During sleep, the body produces growth hormone. The degree of action of this powerful anabolic increases even more after the intake of arginine. 9 g of arginine accelerates the secretion of growth hormones.

Important aspect of growth hormoninig: develops muscles, strengthens bone-connective apparatus. Studies have shown that the bone of paxlavones becomes larger and stronger from year to year.

The ZMA additive consists of zinc and magnesium. Zinc increases testosterone levels by 40%. Magnesium, on the other hand, promotes the absorption of zinc, relaxes muscles and improves sleep quality.

Before sleep.

What and how much?

Casein 40 g;

Beta-ecdisterone 100 mg.

Why? During sleep, the amount of amino acids in the blood begins to decrease. Because in sleep a person does not eat. When the decrease reaches the kiritic level, spontaneous catabolic hormone secretion begins to be produced. They begin to take ready-made amino acids from muscle tissue and deliver them to the blood. To prevent the same process , to preserve muscle tissue, casein is istemolized before sleep. Casein is a protein that has been digestion for a long time. Therefore, the body is slowly supplied with oxista amino acids.

And Beta-Ecdisterone ensures that this amino acid is synthesized in the muscles.

Table 2.

Post-observational results of anthropometric indicators

№	Name	Height length (sm)	Body weight (kg)	Weight Index	Chest circumference (sm)	Shoulder girdle length (sm)	Wrist circumference length (sm)	Pelvic girdle circumference length (sm)	Thigh circle length (sm)	Calf circumference length (sm)
1	V. A	1.71	64,0	22,0	91	34.5	26	74	47	30
2	A.D	1.72	56.6	19.5	90	29	26	70	50	34
3	R. X	1.69	52.4	18.7	92	32	27	63	43	28
4	G‘. X	1.62	54.2	20.8	83	30	26	67	46	34
5	Yo. X	1.70	56	19.3	88	31	25	85	45	31
6	A.B	1.79	64	20.0	89	24	27	86	47	32
7	N.A	1.67	66	23.5	94	31	28	85	55	34
8	M.F	1.91	79.5	22.0	98	34	28	87	57	38
9	S.Z	1.80	80	25.0	100	34	28	88	57	37
10	R.M	1.72	72	24.8	89	32	27	92	51	36
11	T.N	1.80	84.5	26.4	106	43	33	91	57	37
12	I.K	1.69	64	22.8	96	37	29	88	52	34
13	S.A	1.75	80	26.6	98	35	28	89	59	36

The results of the observation were processed mathematically–statistically using standard biometric techniques. The results are presented in the form m±m of the values of experiments performed In N-fold recurrence, representing the arithmetic value of the M – mean and the error value of the M-standard. Also, the results of the observation calculated the difference in values between groups on the basis of the level of statistical reliability of the structure t-criterion and assessed as statistical reliability in values R<0.05, R<0.01 [5].

The results of the study and its dissociation. The following table lists the anthropometric indicators of the students involved in the study before the start of complementary feeding and athletic exercise training sessions and after the completion of observation work (Table 3).

Table 3

Average results of anthropometric indicators of all three body structures before and after complementary feeding

Anthropometric indicator	Before the start of observation n-13	After completion of observation n-13
Height length (sm)	173,6±0,02	173,6±0,02
Body weight (kg)	62,9±2,9	72,1±3,06*
Weight Index	20,9±0,75	23,4±0,75*
Chest circumference (sm)	92,0±1,68	93,3±1,69
Shoulder girdle length (sm)	31,34±1,19	35,03±1,24*
Wrist circumference length (sm)	26,38±0,58	28,13±0,55*

Pelvic girdle circumference length (sm)	80,53±2,84	81,92±2,72
Thigh circle length (sm)	49,46±1,53	54,23±1,49*
Calf circumference length (sm)	32,53±0,83	35,72±0,82*

Note: * , ** – I represents the level of statistical reliability of the differentiation between the values of the control group with respect to the experimental group (* – $p<0,05$; ** –$p<0,01$).

Based on the analysis of the results of the experiment obtained, it can be determined that in all of the anthropometric indicators of students of the second stage, who are studying Physical Culture in the educational direction, an increase in average values is observed when the observation is completed compared to the one at the beginning of the observation. However, the change in some indicators was not statistically convincing.

A person's height indicator is resistant to various exogenous and endogenous influences due to strong control by heredity. Since our studies lasted for a short time (4 months), the practice of additional nutrition and athletic Gymnastics exercises did not make students statistically convincing changes in height.

Before the start of observation work, the average of the height length of students was 173.6 +0.20 CM. After the completion of the experiment, the average value of the height length of the ham students remained at the previous level of 173.6 +0.20 CM, the difference was not observed. **Table 3**

Body weight is mainly made up of the weight of the skeletal muscles. In older people who are not involved in sports, the weight of the skeletal muscles is 42-45% of the body weight. In physically fit athletes, body weight is 50%.

Students were found to have an average body weight of 62.9±2.9 kg before the start of observation. Absaluation of student body weight was recorded in a spectrum of 50.4-80.0 kg.

After the completion of the observational studies, the average body weight of their students was found to be 72.16±3.06 kg. It was noted that the maximum weight student had a body weight of 84.5 kg, while the smallest weight student had a body weight of 52.4 kg. **Table 3**

When the average of the observed Guruh was compared, the difference between them was recorded as 9.2 kg. This difference is inevitable from the statistical abstract (r<0.05).

The increase in muscle mass in the body is determined by changing the index of body weight. The average body weight index was found to be 20.92±0.75 at the beginning of the observation. The smallest body weight index was recorded at 17.9, while the largest index was recorded at 25.0.

1. In ectomorphs, the overall and partial growth rates of the body were compared with the three-dimensional somotypical differences, with the average body weight size indicators stabilizing compared to body length. For ectomorphs, TVI = 169: 2.8561 = 17.9 to 167: 2.7889 = 23.5.

2. The mean body weight index in mesomorphs turned out to be more stable; from TVI=172:2.9584=24.8 for the mesomorph, to 175:3.0625=26.1, the weight index of this body structure changed to muscle mass gain and partial fat depletion bias.

3. For endomorphs, TVI = 169: 2,8561 = 22.8 to 180: 3.24 = 26.4 was high, causing the body to lose fat. So this feeding ration is not suitable for endomorphs.

After the completion of the observational studies, the average body weight of their students was found to be 72.16±3.06 kg. The maximum-weight student was recorded as having a body weight of 84.5 kg(endomorph), while the smallest-weight student was recorded as weighing 52.4 kg. (ectomorph) Table 3.

When the averages of the experimental and control guroux were compared, the average of the experimental group turned out to be 2.49 larger than the average of the control group, a difference that is statistically inevitable (r<0.05).

The length of the circumference of the chest (CM) is one of the objective indicators of a person's health, representing the healthy development of the organs located in it, the functional state of the chest and the level of development of the respiratory muscles.

In a quiet state until the start of the observation work, it was found that the average of the length of the thoracic circle in the range of students ' respiratory disorders was 92.0±1.68 CM. The largest was found to be 104.0 CM, and the smallest was 87.0 CM.

After the completion of the observation, the average of the length of the thoracic circle in the middle of the respiratory tract in a calm state of students was observed to be 93.38±1.69 CM. In the range of respiratory events, it was observed that the length of the thoracic circle persists in a spectrum of 106.0 – 83.0. **Table 3**

When the average of observation groups is compared, the difference between them is equal to 1.38 CM, and this difference is not statistically inevitable (r>0.05). From the results obtained, it can be seen that athletic exercise training and complementary feeding at the time of observation are not enough to make students statistically convincing changes in the length of the chest circumference.

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The muscles of the shoulder will consist of three-headed and two-headed muscles that bring the shoulder and wrist-elbow joint into contact. While the three-headed muscle writes the joint, the two-headed muscle folds the joint.

By the beginning of the experiments, the average length of the shoulder circumference of students is 31.34±1.19 cm. The largest was observed at 41.0 CM, the smallest at 23.0.

At the end of the observation, the average length of the shoulder circumference of students is 35.03 CM. It was found that the length of the shoulder circumference of students fluctuates at a limit of 55.0 – 45.0 CM. **Table 3**

When the average indicators of experimental and control groups were compared, the difference between them turned out to be 3.69 CM. This difference is inevitable from the Statistical Abstract (r<0.05). From the results obtained, it can be concluded that The performed Athletic gymnastics training and complementary feeding cause significant changes in the muscles of the two and three heads.

On the wrist of the hand are the muscles that bend the fingers of the hand and the scribe. Until the beginning of the experiments, it was found that the average indicator of the length of the wrist circumference of students is 26.38±0.58 CM. The largest indicator of the length of the wrist circumference was recorded as 32.0 CM, and the smallest indicator was 24.0 CM. After the completion of the experiments, the average value of the length of the circle of the student's wrist is 28.13±0.55 CM. The largest was found to be 33.0 CM, and the smallest was found to be 25.0 CM. **Table 3**

The mean difference was found to be 1.75 CM when compared. This difference is inevitable from the statistical bias (r<0.05). On the wrist of the hand will be located the muscles that harass the fingers. Since students rely heavily on finger strength when performing athletic exercises, supplementation has been observed to positively affect the development of these muscles.

The weight of a person's torso and the organs located in it is transferred to their feet through the pelvic girdle. By the beginning of the studies, the average value of the length of the pelvic girdle circle of students was determined to be 80.53±2.84 CM. It is observed that the absolute values \ u200b \ u200bThe indicators oscillate at a limit of 91.0 – 61.0 CM.

The average value of the length of the pelvic girdle circle for students after the completion of the observation work is 81.93±2.72 CM. It was found to have a maximum value of 92.0 CM and a smallest indicator of 63.0 CM. **Table 3**

When the average values were compared, the difference between them was 1.38 CM. This difference is not inevitable from a statistical bias (r>0.05). The pelvic girdle of students is made up of bones and muscles. It can be assumed that the continuity of our research was not enough to bring about significant changes in them.

On the front and back sides of the thigh part of a person's leg, the muscles involved in the movements of the thigh pelvis and thigh joint will be located. Before the start of the observation work, the average student population circle was 49.46±1.53 CM. In students, the greatest value of the number circle was found to be 58.0 CM, and the smallest indicator was 41.0 CM.

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After completion of the observation, the average length of the circle of the number of students was determined to be 54.23±1.49 CM. It was observed that the largest figure was 59.0 CM, and the smallest figure was 43.0 CM. **Table 1**

In a comparison between the two mean values, the difference between them is equal to 4.76 CM, this difference is reliably distinguished from the statistical bias ($r<0.05$). The human legsthat is located on the front side of the thigh part is the four-headed muscle, which is involved in writing the thigh joint of the legs. This is due to the fact that a lot of loads have fallen on the muscle in everyday life, the degree to which it has developed when performing them has a great importance. It can be clearly seen from the results of the experiment that the use of an additional nutritional factor along with the performance of athletic exercises has a positive effect on the development of the thigh muscle.

Observation at the last foot of the work, the effect of athletic exercises and complementary feeding on the length of the circumference of the calf muscle was observed. The average value of the length of the circumference of the calf muscle of students before Studies is 32.53±0.83 CM. It was observed to have a maximum value of 36.0 CM and a smallest indicator of 26.0 CM.

After the completion of the studies, it was found that the average indicator of the length of the boldiri circle of students is 35.72±0.82 CM. It was observed that the largest value was 38.0 CM, and the smallest value was 28.0 CM. **Table 1**

The difference between them was 3.18 CM, when the average indicators of the length of the circle of the students before and after the experiment were compared. This difference is inevitable from the Statistical Abstract ($r<0.05$). The weight that makes a person fall on the leg pajamas is held by the axillary webbing of the calf muscle, which is attached to the heel bones. In maintaining balance on one leg, which is performed in athletic ginastics, the flexibility of the calf muscles is great. The development of calf muscles with the help of additional feeding of athletes ensures the successful performance of sports exercises.

Conclusion. In order to achieve good results in sports, it is great to do the necessary activities correctly. The correct execution of movements depends on the development of the muscles involved in their implementation. Proper nutrition is important in addition to the selected physical exercises in the proper development of the muscles. The correct Organization of athletes ' nutrition ensures that they quickly achieve sports results. The effect of mistaking students for and supplementing with Athletic Gymnastics exercises for positive effects on individuals in ectomorph and mesomorph type body structures was determined by visual observations and measurements.

Thus, when doing Athletic gymnastics, it is advisable to choose a nutritional strategy according to the type of body structure of students.

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