CHRONIC EATING DISORDERS IN YOUNG CHILDREN.

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Abstract: In this article we describe about Infantile anorexia nervosa is an eating disorder that develops between the ages of six months and three years during the early developmental stage of separation and individuation. Food refusal characterizes infantile anorexia nervosa, which leads to failure to thrive.

Keywords: dystrophy, hypotrophy, paratrophy, obesity, nutrition.

Dystrophy (Greek. dys - disorder, trophy - nutrition) develops mainly in young children and is characterized by a violation of the absorption of nutrients by the tissues of the body.

There are the following types of dystrophies:

1) dystrophy with a body weight deficit (hypotrophy);

2) dystrophy with a body weight corresponding to height or some excess of weight over length (paratrophy);

3) overweight dystrophy.

M. N. Logatkin suggested calling this ratio an indicator of protein nutrition (PBP). In healthy infants and young children , regardless of the type of feeding, the PBP is 83-85% (M. D. Shestakova). With hypotrophy, PBP, according to her data, is always reduced (70-35%), and with excessive protein nutrition it is always increased.In children with hypotrophy, as a rule, the enzymatic activity of the stomach, intestines, pancreas is reduced in proportion to the severity of body weight deficiency, and therefore with hypotrophy II and III degrees of nutritional load adequate for a healthy child,the patient may have an acute digestive disorder — dyspepsia. The intestines are more often elongated, expanded, and therefore constipation is typical. Dysbiosis is characteristic.In the Anglo-American literature, grade I and II hypotrophy is called mild or moderate protein-calorie (or protein-energy) deficiency (BCN), and grade III hypotrophy is either alimentary insanity or kwashiorkor.With BCN, the functions of the liver (protein-synthetic, antitoxic, acetylating, carbohydrate, fat, and others), heart, kidneys, lungs, etc. are impaired. Such children often develop anemia not only due to protein deficiency, but also due to frequent concomitant deficiencies of iron,copper, zinc, folic acid, pyridoxine and other vitamins.There are no regular violations of humoral immunity in CDN, but typical are violations of the phagocytic activity of neutrophils and macrophages, suppression of the T-lymphoid system with lymphocytopenia (the deficiency of T-helpers is more pronounced, while the activity of T-suppressors are either normal or slightly elevated), which leads to frequent layering of infections in them. In children with hypotrophy, infections are often asymptomatic, latent.

Hypotrophy (Greek. hypo - under, below trophy - nutrition) is a chronic eating disorder with a deficiency of body weight. This is a pathophysiological reaction of a young child, accompanied by a violation of the metabolic and trophic functions of the body and characterized by a decrease in tolerance to food and immunobiological reactivity. According to WHO, malnutrition (malnutricion) is diagnosed in 20-30% or more of young children.

Etiology: According to the time of occurrence, congenital (prenatal) and acquired (postnatal) hypotrophy are distinguished (Table 1). The causes, clinic and treatment of intrauterine

growth retardation are discussed above in the section "Antenatal hypotrophy". There are 2 groups of acquired hypotrophy by etiology - exogenous and endogenous (Table 1). With careful collection of anamnesis data, a mixed etiology of hypotrophy in a child is often established. With exogenous causes, primary hypotrophy is diagnosed, with endogenous causes, secondary (symptomatic).

Exogenous causes of hypotrophy:

- alimentary factors - quantitative under-feeding with hypogalactia in the mother or difficulties in feeding on the part of the mother or child, or qualitative under-feeding (use of an age-inappropriate mixture, late introduction of complementary foods).
- infectious factors - intrauterine infections, infectious diseases of the gastrointestinal tract, repeated acute respiratory viral infections, sepsis.
- 3.toxic factors - the use of low-quality milk mixtures with expired shelf life, hypervitaminosis a and d, drug poisoning.
- shortcomings of care, regime, upbringing.

Endogenous causes of hypotrophy:

- perinatal encephalopathies of various genesis.
- bronchopulmonary dysplasia.
- congenital malformations of the gastrointestinal tract, cardiovascular system, kidneys, liver, brain and spinal cord.
- primary malabsorption syndrome (lactase, sucrose, maltase deficiency, cystic fibrosis, exudative enteropathy) or secondary (intolerance to cow's milk proteins, "short intestine" syndrome after extensive intestinal resections, secondary disaccharidase deficiency).
- hereditary immunodeficiency conditions.
- hereditary metabolic disorders.
- endocrine diseases (hypothyroidism, adreno-genital syndrome).
- anomalies of the constitution.

Pathogenesis: With hypotrophy, the utilization of food substances (primarily proteins) is disrupted both in the intestine and in the tissues. In all patients, the excretion of nitrogenous products with urine increases with a violation of the ratio between urea nitrogen and total urine nitrogen. It is characterized by a decrease in the enzymatic activity of the stomach, intestines, pancreas and the level of deficiency corresponds to the severity of hypotrophy. Therefore, a nutritional load adequate to a healthy child in a patient with hypotrophy of II-III degree can cause acute digestive disorder. With hypotrophy, the functions of the liver, heart, kidneys, lungs, immune, endocrine, and central nervous system are disrupted.

Of the metabolic disorders, the most typical are: hypoproteinemia, hypoalbuminemia, aminoaciduria, a tendency to hypoglycemia, acidosis, hypokalemia and hypokalemia, hypocalcemia and hypophosphamenia. Hypotrophy of the first degree is characterized by thinning of the subcutaneous fat layer on all parts of the body and primarily on the abdomen. The index of fatness of Chulitskaya decreases to 10-15. Tissue turgor and muscle tone are reduced, the fat fold is flabby. Characterized by pallor of the bone and mucous membranes, a decrease in the elasticity and elasticity of the skin. The child's growth does not lag behind the norm. The body weight deficit is 10-20%. The curve of the increase in body weight is flattened. The child's well-being is not disturbed. Psychomotor development corresponds to age. The child is restless, sleeps poorly. Immunological reactivity is not impaired.

Hypotrophy of the II degree. The subcutaneous fat layer is absent on the abdomen, chest, sharply thinned on the limbs, preserved on the face. Pronounced pallor, dryness, decreased elasticity of the skin. Chulitskaya's fatness index is 0-10. Reduced tissue turgor (on the inner surface of the thighs, the skin fold hangs down) and muscle tone. Active rickets in children is manifested by muscular hypotension, symptoms of osteoporosis, osteomalacia and hypoplasia. The body weight deficit is 20-30% (relative to height), there is a lag in growth. The body weight gain curve is flat. Appetite is reduced. Food tolerance is lowered. Regurgitation and vomiting are often observed. Weakness and irritability are characteristic, the child is indifferent to the environment. Restless sleep. The child loses already acquired motor skills and abilities. Thermoregulation is broken, and the child quickly cools down or overheats.Most children develop various diseases (otitis media, pneumonia, pyelonephritis), which are asymptomatic and long-lasting.The stool is unstable (more often liquefied, undigested, less often constipated). The acidity of gastric juice, secretion and activity of enzymes of the stomach, pancreas and intestines are significantly reduced. Subcompensated intestinal dysbiosis develops.

Hypotrophy of the III degree (senility, atrophy). Primary hypotrophy of the III degree is characterized by an extreme degree of exhaustion: the appearance of the child resembles a skeleton covered with skin. There is no subcutaneous fat layer. The skin is pale gray, dry. The limbs are cold. The skin fold does not straighten out, since there is no elasticity of the skin. Characterized by thrush, stomatitis. The forehead is covered with wrinkles, the chin is pointed, the cheeks sink. The abdomen is stretched, swollen, or the loops of the intestine are contoured. The chair is unstable.Body temperature is often lowered. The patient cools down quickly during examination, easily overheats.

Against the background of a sharp decrease in immunological reactivity, various foci of infection, occurring with little symptoms. Significantly reduced muscle mass. The body weight gain curve is negative. The body weight deficit exceeds 30%, in children of the appropriate height. The Chulitskaya index is negative. The child sharply lags behind in growth. With secondary grade III hypotrophy, the clinical picture is less severe than with primary ones, they are easier to treat if the underlying disease is detected and it is possible to actively influence it. Modern ideas about the principles of rational nutrition of children are changeable. However, the relevance of the issue of the impact of nutrition on the health of the child remains unchanged. It has been established that the younger the child, the more significant the impact of food on his present and subsequent development as a whole.

Congenital (intrauterine) hypotrophy is a chronic nutritional disorder of the fetus, which is accompanied by a lag in physical development, metabolic disorders, a decrease in immunological reactivity due to insufficient placental circulation, exposure to adverse factors from the mother. It is clinically manifested by thinning of subcutaneous fat, an increase in skin folds on the neck, limbs, around joints and a decrease in their thickness, general hypotension, perioral cyanosis, shortness of breath, the presence of clearly delimited bone formations, a decrease in the mass-growth index (below 60).Acquired hypotrophy is a chronic eating disorder characterized by the cessation or slowing of the increase in body weight, progressive disappearance of the subcutaneous fat layer, violation of body proportions, digestive function, metabolism, reduction of specific and non–specific factors of body protection, predisposition to the development of other diseases and delayed neuropsychiatric development. Causes: malnutrition (malnutrition, difficulty eating), infectious, toxic factors, digestive disorders, increased nutritional needs, metabolic diseases,

immunodeficiency conditions. In the pathogenesis of hypotrophy, the leading role belongs to profound disorders of all types of metabolism and changes in internal organs.

Alimentary factors — quantitative under-feeding with hypogalactia in the mother or difficulties with feeding from the mother (flat, retracted nipple, "tight" mammary gland, etc.), the child (regurgitation, vomiting, small lower jaw, "short frenulum" of the tongue, etc.) or qualitative under-feeding (use of an age-inappropriate mixture, late introduction complementary foods,the poverty of the daily diet of animal proteins, fats, vitamins, iron, trace elements).— Infectious factors — intrauterine generalized infections (cytomegaly, etc.), intranatal infections, toxic-septic conditions, pyelonephritis and urinary tract infection, intestinal infections, etc. Especially often, the cause of hypotrophy is infectious lesions of the gastrointestinal tract, causing morphological changes in the intestinal mucosa (up to atrophy of the villi), inhibition of disaccharidase activity (more often lactase), immunopathological damage to the intestinal walls, dysbiosis, contributing to prolonged diarrhea, maldigestion, malabsorption. It is believed that in any mild infectious diseases, energy and other nutritional needs increase by 10%, in moderate — by 50% of the needs under normal conditions.

The pathogenesis of hypotrophy is determined by the disease that caused it, as well as insufficient intake and/or assimilation of nutrients, but in all cases it is characterized by gradually deepening metabolic disorders with depletion of fat and carbohydrate reserves, increased protein catabolism and a decrease in its synthesis. At the same time, there is a shortage of many essential micronutrients responsible for the implementation of immune functions, optimal growth, and brain development [7-9]. At the same time, the concept of "hypotrophy" does not take into account the possible growth retardation (body length) observed in severe forms of nutritional insufficiency. Paraclinical research methods. In a laboratory study in children with hypotrophy , anemia is often noted in the general blood test,with severe hypotrophy, a decrease in ESR, lymphopenia is possible. Biochemical methods for assessing nutritional status disorders include determining the content of albumin and short-lived proteins (transthyretin, retinol binding protein, transferrin, etc.), their concentrations decrease with hypotrophy. Another indicator of a violation of protein metabolism is α1 -antitrypsin is an inhibitor of proteolytic enzymes, the level of which during protein breakdown increases; in addition, hypo- and dysproteinemia, dyslipidemia, hypercholesterolemia,an increase in the level of alkaline phosphatase and cortisol are noted. The coprogram may show signs of insufficient gastric, small- and large-intestinal.digestion and absorption.

Literature:

1. Yusupaliev U.A, & Mukhamedov B.I., Ibragimova N.S., Pyagai G.B., Solmetova M.N. (2023). dermatology: not everything is as simple as it seems. difficulties in diagnosis. *conference zone*, 337–344. retrieved from http://conferencezone.org/index.php/cz/article/view/978
2. Pyagay, Grigory Borisovich, & Nargiza Sayfutdinovna Ibragimova. (2023). criteria for selecting therapy for patients with actinic keratosis. conference zone, 156–161. Retrieved from http://conferencezone.org/index.php/cz/article/view/949
3. Pyagay Grigory Borisovich, & Nargiza Sayfutdinovna Ibragimova. (2023). the effectiveness of conservative methods of treatment of actinic keratosis. conference zone, 150–155. retrieved from http://conferencezone.org/index.php/cz/article/view/948

4. G.B. Pyagay, K.A. Yuldashev Comparative analysis of the therapeutic efficacy of various methods of treatment of syphilis patients suffering from drug addiction News of dermatovenereology and reproductive health. 2005, No. 3-4, pp. 118-122.
5. Boris Lyuban, Bahrambek Mukhamedov, Nargiza Ibragimova, Grigory Pyagai, Miyassar Allaeva, Nilufar Malikova, Malika Solmetova cases of medical errors in the primary period of syphilishttp://medin.uz/index.php/jmi/article/view/71 http://medin.uz/index.php/jmi/article/view/71/62
6. Lapasov, O. A., & Latipov, I. I. (2022). basal cell skin cancer. historical aspects, current achievements and problems at the present stage.central asian journal of medical and natural science, 3(5), 381-391. retrieved from https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1109
7. Lapasov, O. A., Zaslavsky, D. V., Sidikov, A. A., Pyagay, G. B., Kozlova, D. V., & Gunchenko, I. V. (2022). Basal cell skin cancer. Historical aspects, current achievements and problems at the present stage. Dermatovenereology. Cosmetology, 8(1), 27-42.. https://www.elibrary.ru/item.asp?id=48197950
8. A.A Sidikov, A.T Makhmudov, G.B Pyagay, J.R Rikhsiboev Importance of questionnaires in the diagnosis of diseases of the urogenital tract-development of new technologies in the diagnosis and 2021https://www.elibrary.ru/item.asp?id=45597101
9. T Lotti, AA Sydikov, Z Zarrab, GB Pyagay… Aesthetic concerns in oncological dermatology: a case of successful treatment with imiquimod and interferon-α for primary anaplastic large-cell cd30+ t-lymphoma of the skin - Journal of Applied Cosmetology, 2019 https://www.elibrary.ru/item.asp?id=44794514
10. M.N Solmetova, M.D Allaeva, B.I Mukhamedov Clinical case of pseudoxanthoma elastica - Dermatovenereology. Cosmetology,2021 https://www.elibrary.ru/item.asp?id=45428711
11. D.V Zaslavsky, A.A Sidikov, L.V Garyutkina A new principle for diagnosing limited scleroderma at the onset of the disease - Russian journal of skin and venereal diseases, 2021 https://scholar.archive.org/work/fkgqphdcizfyjfngqv7x4bqaca/access/wayback/https://rjsvd.com/1560-9588/article/download/72328/pdf_1
12. Пягай, Г., Ибрагимова, Н., Мухамедов, Б., Маликова, Н., & Аллаева М. (2021). клинический случай поздней диагностики пигментной крапивницы. медицина и инновации, 1(1), 148–150. извлечено от https://inlibrary.uz/index.php/medicine_and_innovations/article/view/55
13. Zaslavsky D.V., Sidikov A.A., Garyutkina L.V., Pyagai G.B., Alaeva M.D., Ibragimova N.S., Malikova N.N., Kozlova D.V. A new principle for the diagnosis morphea in the onset of the disease // Russian Journal of Skin and Venereal Diseases. - 2021. - Vol. 24. - N. 3. - P. 263-274 https://doi.org/10.17816/dv72328 https://rjsvd.com/1560-9588/article/view/72328
14. А.А Садыков, Н.С Ибрагимова, А.А Юлдашев Зуд при коморбидных состояниях - VA ESTETIK TIBBIYOT, 2015 https://dermatology.uz/pdf/medic_juranal/Dermatologiya_N1_2015.pdf#page=29
15. A Sidikov, D Zaslavsky, A Sadykov, N Ibragimova,M Megna, O Olisova, D Kozlova, R Nasyrov, E. Shalaeva,T Garcia The new differential diagnostic test for the lichenoid drug eruption Dermatologic therapy, 2020 https://doi.org/10.1111/dth.13784

16. Ваисов А. Ш., Ташкенбаева У. А., Ибрагимова Н. С. Современные аспекты этиологии, патогенеза, течения и ранней диагностики васкулитов: обзор //Новости дерматовенерол. и репрод. здоровья. – 2007. – №. 2. – С. 88.
17. И.У Салимова, Ш.Т Аюпова, Н.С Ибрагимова аспекты псориаза в дерматологии - Spirit Time, 2020 https://www.elibrary.ru/item.asp?id=42780705
18. А.А Садиков, Н.С Ибрагимова, С.И Мавлянов - частота встречаемости кожной патологии у спортсменов при проведении углубленного медицинского осмотра (умо) и степень приверженности лечению. Безопасный спорт-2019. https://www.elibrary.ru/item.asp?id=41357327
19. N Ibragimova, R Tregulova, N Normatova, S Djalalov-comparative analysis of the prevalence of type 2 diabetes according to the screening and register data in Uzbekistan - Endocrine Abstracts ISSN 1470-3947 (print) | ISSN 1479-6848 (online) https://www.endocrine-abstracts.org/ea/0056/abstracts/poster-presentations-diabetes-obesity-and-metabolism/diabetes-to-include-epidemiology-pathophysiology/ea0056p342/ https://doi.org/10.1530/endoabs.56.P342
20. Normatova N., Ibragimova N. Frequency of occurrence and factors of diabetic retinopathy advancement in people with DM type 2 in Uzbekistan //Endocrine Abstracts. – Bioscientifica, 2016. – Т. 41. https://www.endocrine-abstracts.org/ea/0041/ea0041ep520 https://doi.org/10.1530/endoabs.41.EP520
21. Ахмедова Ш.У., Абдуллаева О.И., Даминова М.Н., Алиева Г.Р., Ибрагимова Х.Н. функциональное состояние эритроцитов у детей и подростков с сахарным диабетом 1 типа на фоне микробиоценоза кишечника // нау. 2015. №4-4 (9). url: https://cyberleninka.ru/article/n/funktsionalnoe-sostoyanie-eritrotsitov-u-detey-i-podrostkov-s-saharnym-diabetom-1-tipa-na-fone-mikrobiotsenoza-kishechnika
22. N.N Malikova, K.Y Karimov, K.T Boboev, S.S Arifov - The CYP17A1 rs743572 gene polymorphism and risk of development and clinical features of Acne Vulgaris in the Uzbek population.International Journal of Biomedicine, 2019. https://www.elibrary.ru/item.asp?id=38469333
23. Arifov S.S., Erkinlar Z.E., & Malikova N.N. (2021). modern methods of acne and post-acne therapy. the American journal of medical sciences and pharmaceutical research, 3(09), 147–153. https://doi.org/10.37547/TAJMSPR/Volume03Issue09-24
24. Burxanova Gulnoza Lutfulloevna. (2022). optimization of rehabilitation for lesions of the locomotor apparatus of athletes participated in chess. *conference zone*, 404–409. retrieved from https://conferencezone.org/index.php/cz/article/view/876
25. Ibragimova Malika Shavkatovna. (2022). characteristics of rehabilitation of children with cerebral palsy and speech defects. *conference zone*, 410–414. retrieved from https://conferencezone.org/index.php/cz/article/view/877
26. Мухамедов, Б., Хаджиметов, А., & Садыков, А. (2022). взаимосвязь показателей липидного состава сыворотки крови и ацетиляторного статуса у больных вирусным гепатитом с проявлениями дерматологического характера. *research and education*, *1*(9), 231–240. retrieved from http://researchedu.org/index.php/re/article/view/976
27. Камалова, Ё., Наимова, Х., Мавлянова, З., & Набиев, З. (2014). физиотерапия при острых респираторных заболеваниях у детей и подростков. журнал проблемы биологии и медицины, (3 (79), 108. извлечено от https://inlibrary.uz/index.php/problems_biology/article/view/5063

28. Камалова Ё А, Джуманов Ж А Значение лечебной гимнастики в комплексе методов физической реабилитации больных остеохондрозом поясничного отдела позвоночника // вестник науки и образования. 2020. №23-3 (101). url: https://cyberleninka.ru/article/n/znachenie-lechebnoy-gimnastiki-v-komplekse-metodov-fizicheskoy-reabilitatsii-bolnyh-osteohondrozom-poyasnichnogo-otdela
29. Akhmedova Shakhnoza Ozodjonovna. (2023). principles of environmental impact assessment. conference zone, 95–107. retrieved from http://conferencezone.org/index.php/cz/article/view/939
30. Akhmedova Shakhnoza Ozodjonovna. (2023). global implications of climate change. conference zone, 79–86. retrieved from http://conferencezone.org/index.php/cz/article/view/937
31. Akhmedova Shakhnoza Ozodjonovna. (2023). relationship of environmental impact assessment and environmental expertise. Conference Zone, 115–121. Retrieved from http://conferencezone.org/index.php/cz/article/view/941
32. Akhmedova Shakhnoza Ozodjonovna. (2023). climate change: everyone's struggle for survival. conference zone, 70–78. retrieved from http://conferencezone.org/index.php/cz/article/view/936
33. Khasanova Diyora Zafarjon kizi, Khamidov Obid Abdurakhmonovich and Juraev Kamoliddin Danabaevich 2023. SYMPHYSIOPATHY AND PREGNANCY. "Conference on Universal Science Research 2023". 1, 2 (Feb. 2023), 55–60.
34. Yusufzoda Hosiyat Turon kizi, Khamidov Obid Abdurakhmonovich and Juraev Kamoliddin Danabaevich 2023. DIAGNOSIS OF CHANGES IN PREGNANT WOMEN WITH VULVOVAGINITIS. "Conference on Universal Science Research 2023". 1, 2 (Feb. 2023), 51–55.
35. Obid, K., Servetovna, A. A., & Javlanovich, Y. D. (2022). Diagnosis and Structural Modification Treatment of Osteoarthritis of the Knee. Central Asian Journal of Medical and Natural Science, 3(5), 547-559.
36. Yakubov D.J., Turanov A.R. and Baymuratova A.C. 2022. Possibilities of contrast-enhanced ultrasound tomography in the diagnosis of metastatic liver lesions in patients with cervical cancer. Journal the Coryphaeus of Science. 4, 4 (Dec. 2022), 80–88.
37. Usarov M.Sh, Otakulov Z.Sh and Rakhmonkulov Sh. H. 2022. Contrast-enhanced ultrasound in the differential diagnosis of focalnodular hyperplasia and hepatocellular liver adenoma. Journal the Coryphaeus of Science. 4, 4 (Dec. 2022), 70–79.
38. КАМАЛОВА Ё. А. ўйин спортлари ва жанг санъатлари вакилларининг таркибий қисмларининг хусусиятлари //журнал биомедицины и практики. –2022. –т. 7. – No. 4. https://tadqiqot.uz/index.php/biomedicine/article/download/5517/522236
39. Хусанова А., & Камалова, Ё. (2022). Дарсонвализация в комплексном лечении у больных с пародонтозом. Дни молодых учёных, 1(1), 323–324. извлечено от https://inlibrary.uz/index.php/young-scientists/article/view/15368
40. Burkhanova, G., Mavlyanova, Z., & Kim, O. (2017). The influence of sports nutrition on the physical development of children and adolescents with increased physical activity. Journal of Problems of Biology and Medicine, (4 (97), 24–26. retrieved from https://inlibrary.uz/index.php/problems_biology/article/view/3242
41. Egamova, M., Mavlyanova, Z., & Burkhanova, G. (2018). The use of physiotherapy exercises for children with cerebral palsy at home. Journal of Physician's Gazette, 1(2), 114–117. retrieved from https://inlibrary.uz/index.php/doctors_herald/article/view/2931

42. G.L Burkhanova, Sh.M Safin, K.H Derevyanko modern possibilities of rehabilitation for craniovertebral pathology- journal of biomedicine and practice, 2022 https://tadqiqot.uz/index.php/biomedicine/article/view/6012 https://tadqiqot.uz/index.php/biomedicine/article/view/6012/5683
43. Sharafova Inobat Akhmedzhanovna, Burkhanova Gulnoza Lutfilloevna basic approaches to the complex treatment of facital nerve neuropathy in children // Bulletin of Science and Education. 2020. №25-2 (103). URL: https://cyberleninka.ru/article/n/osnovnye-podhody-k-kompleksnomu-lecheniyu-neyropatii-litsevogo-nerva-u-detey
44. Burkhanova, G., & Kim, O. (2018). Evaluation of physical performance of young athletes with increased physical activity. Physician's Journal, 1(2), 25–28. retrieved from https://inlibrary.uz/index.php/doctors_herald/article/view/2825
45. Baratova Sitora Sakhidinovna, Mavlyanova Zilola Farhadovna, Burkhanova Gulnoza Lutfulaevna Study of the allowable values of body parameters of athletes using bioimpedancemetry // Problems of science and education.2019. №31 (81). URL: https://cyberleninka.ru/article/n/issledovanie-dopustimyh-znacheniy-parametrov-tela-sportsmenov-pri-pomoschi-bioimpedansometrii
46. S.M Makmudov, O.A Kim assessment of nutritional status based on bioimpedancemetry in young people - journal biomeditsiny i practice, 2022. https://tadqiqot.uz/index.php/biomedicine/article/view/5518 https://tadqiqot.uz/index.php/biomedicine/article/view/5518/5223
47. Makhmudov Sardor Mamasharifovich the functional state of the cardiorespiratory system of athletes involved in swimming.- “Янги Ўзбекистонда миллий тараққиёт ва инновациялар” 2022. http://conf.iscience.uz/index.php/yumti/article/view/106 http://conf.iscience.uz/index.php/yumti/article/view/106/99
48. Makhmudov Sardor Mamasharifovich Mavlyanova Zilola Farhadovna Khaidarova Sarvinoz Khaydarzhonovna Vysogortseva Olga Nikolaevna a new approach to the program of rehabilitation treatment of patients with ankylosing spondyloarthritis.2022-04-08. https://www.tadqiqot.uz/index.php/biomedicine/article/view/4373 https://www.tadqiqot.uz/index.php/biomedicine/article/view/4373/4141
49. Kim Olga Anatolevna, Abdusalomova Maftuna Akbarovna, Makhmudov Sardor Mamasharifovich, Zhalolitdinova Shaxnoza Akbarzhon kizi, & Ibragimova Leyla Ilxomovna. (2022). the influence of risk factors on the development of cerebral strokes in children. open access repository, 8(04), 179–182. https://doi.org/10.17605/OSF.IO/GV5BS
50. Камалова Ёкутхон Ахмаджановна, Джуманов Жонибек Абдураупович значение лечебной гимнастики в комплексе методов физической реабилитации больных остеохондрозом поясничного отдела позвоночника // вестник науки и образования. 2020. №23-3 (101). url: https://cyberleninka.ru/article/n/znachenie-lechebnoy-gimnastiki-v-komplekse-metodov-fizicheskoy-reabilitatsii-bolnyh-osteohondrozom-poyasnichnogo-otdela
51. Абдусаломова М А, Махмудов С М Достижения науки и образования. 2019. №11 (52). URL: https://cyberleninka.ru/article/n/optimizatsiya-mediko-sotsialnoy-reabilitatsii-pri-bolezni-dyushenna
52. РАВШАНОВА М. З. ранняя реабилитации спортсменов с травмой голеностопного сустава различными методами восстановления //журнал биомедицины и практики. – 2022. – т. 7. – №. 4. https://tadqiqot.uz/index.php/biomedicine/article/view/5519 https://tadqiqot.uz/index.php/biomedicine/article/view/5519/5224

53. Усманходжаева А.А., Исамухаметова Ю.М., Бурханова Г.Л. методы модернизированной корейской медицины в лечении неспецифического болевого синдрома в спине// проблемы биологии и медицины. - 2020. №6. том. 124. - с. 123-126. DOI: http://doi.org/10.38096/2181-5674.2020.6.00320
54. МАХМУДОВ, Сардор Мамашарифович, et al. "анкилозланувчи спондилоартрити бўлган беморлар реабилитация дастурига янгича ёндашув." журнал биомедицины и практики 7.1 (2022). https://tadqiqot.uz/index.php/biomedicine/article/view/4373 https://tadqiqot.uz/index.php/biomedicine/article/view/4373/4141
55. Мавлянова З. Ф., Махмудов С. М., Тохтиев Ж. Б. Морфофункциональный статус и динамика физической подготовленности лиц, занимаюшихся национальным видом спорта кураш //журнал биомедицины и практики. – 2022. – Т. 7. – №. 1.