

DISLOCATIONS OF THE STERNAL END CLAVICLE.

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Abstract: in this article we describe the clavicle is a curved s-shaped bone, consisting of the body and having two ends with articular surfaces - the acromial (external) and sternal (internal). Together with the scapula, it forms the girdle of the upper limbs. The clavicle is the only bone that connects the trunk (axial skeleton) to the upper limb.

Keywords: Dislocation of the clavicle, collarbone, sternal or internal.

The dislocation of the sternal end of the clavicle can be caused by a blow to the chest, a fall on the shoulder, etc. In this case, the sternal end of the clavicle can move forward, backward or upward. Most often, the collarbone is displaced forward, which is called an anterior dislocation.

Dislocation of the clavicle - a complete displacement of one of the ends of the bone relative to the attachment site. The condition is accompanied by severe pain, swelling, unnatural protrusion of the collarbone under the surface of the skin. The clavicle is an arcuate tubular bone of medium size, which is attached to the sternum at one end and to the shoulder blade at the other. The part that connects to the sternum is called the sternal or internal, and that which is in contact with the end of the scapula is called the acromial or external. Most often in children, dislocations of the acromial end of the clavicle occur, which is due to the localization of the bone more prone to injury. In rare cases, there is a bilateral injury affecting both ends of the clavicle.

The clavicle is a curved S-shaped bone, consisting of the body and having two ends with articular surfaces - the acromial (external) and sternal (internal). Together with the scapula, it forms the girdle of the upper limbs. The clavicle is the only bone that connects the trunk (axial skeleton) to the upper limb. Due to the fact that the clavicle is involved in the formation of two joints (sternoclavicular and acromioclavicular), there are two types of dislocations: the sternal end of the clavicle and the acromial end of the clavicle. Most often, dislocations of the acromial end occur, dislocations of the sternal end of the clavicle are much less common. Dislocation of the scapular (acromial) end can be complete or incomplete (depending on which ligament is torn). Dislocation of the sternal end is subdivided into suprasternal, presternal and retrosternal (depending on the trajectory of the clavicle displacement).

For the treatment of dislocations of the clavicle, two methods are used: conservative and surgical intervention. A conservative treatment method is used to reduce dislocations of the acromial end of the clavicle in a closed way using anesthesia. Then the specialist fixes the reduced clavicle with a plaster cast, special splints with constant pressure and support (orthopedic pads). With a complete dislocation and rupture of the ligaments, urgent surgical treatment is required. In sternal dislocations, only a surgical method of treatment is indicated (open reduction using metal structures). After the operation, the arm is fixed with a plaster cast. The immobilization period lasts 4-6 weeks.

The cause of dislocation of the sternal end of the clavicle can be a blow to the chest, a fall on the shoulder, etc. In this case, the sternal end of the clavicle can move forward, backward or upward. Most often, the collarbone is displaced forward, which is called an anterior dislocation. The patient complains of pain in the area of the sternoclavicular joint. Edema occurs on the anterior surface of the chest, the shape of the articulation area changes. With dislocation of the thoracic end of the

clavicle anteriorly, the end of the clavicle is palpated as a bulge on the anterior surface of the chest. With a posterior dislocation of the clavicle, a depression is detected. Diagnosis is confirmed by x-ray. Rehabilitation measures are aimed at the speedy recovery of the patient after the injury.

Mandatory set of exercises for the development of an injured collarbone (selected by a traumatologist, taking into account the type of dislocation and the complexity of the injury)

- physiotherapy treatment (uhf therapy, therapeutic massage, acupuncture, electrophoresis)
- rational nutrition (including products containing essential trace elements and vitamins)
- the recovery period is approximately 1.5-2 months, after which the usual performance returns.

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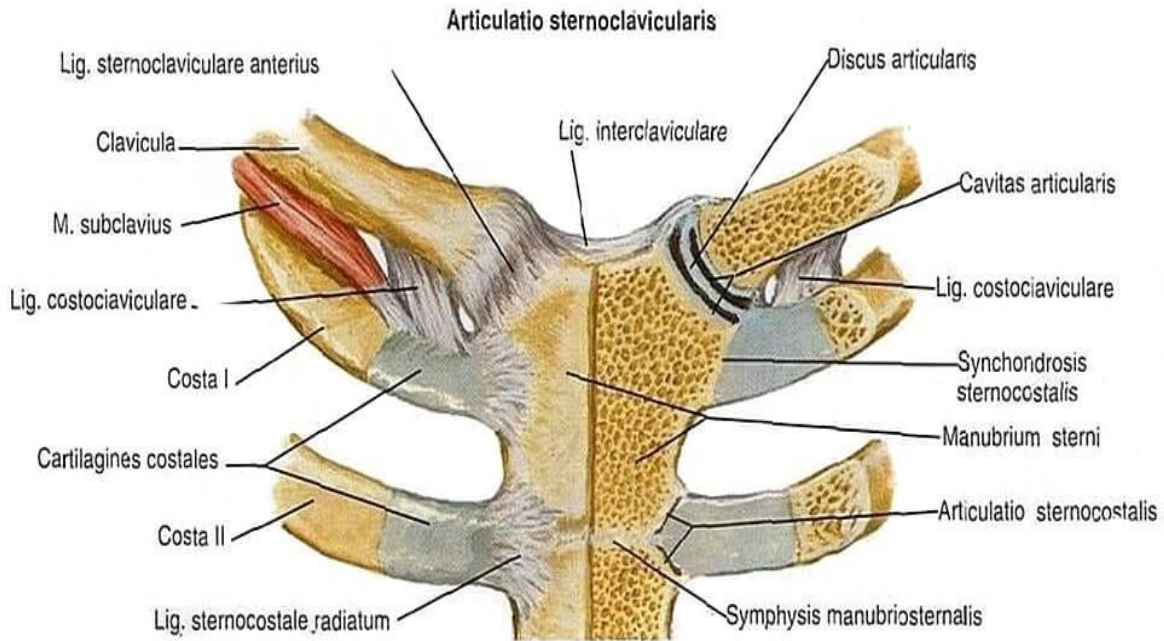
If, with a dislocation of the collarbone, you do not seek help from a specialist in time or do not follow his recommendations, then the consequences of such an attitude may be damage to the nerves, blood vessels and dysfunction of the hand.

The scheme of correct actions for displacement of the clavicular bones in a child suggests:

- ensuring motor rest of the victim;
- applying a fixing bandage to reduce pain and immobilize the injured area (this can be done with an elastic bandage, scarf, scarf and other fabric);
- applying a cold compress to the collarbone area (a bag of ice water, ice, snow, a frozen product, a cooling element, etc.);
- taking pain medication appropriate for the age and weight of the child.

An important point: while waiting for medical help or while transporting the victim to the emergency room, it is necessary to continue the cold exposure and apply a compress for 15-20 minutes with a break of half an hour. If the child, in addition to suspected dislocation of the collarbone, has other injuries, symptoms of respiratory failure, you need to call emergency services as soon as possible or take the baby to the nearest medical facility. Dislocation of the clavicle is a pathological condition characterized by a violation of the position of the acromial or sternal end of the bone relative to the process of the scapula or sternum. Such a pathology can also be called an injury to the acromioclavicular joint with displacement of its components relative to each other. Consider the main methods of diagnosis and treatment of pathology. The doctor asks the patient about complaints and collects anamnestic information. According to the results of the initial examination, it is possible to identify the characteristic signs of injury: the sternal or acromial end of the clavicle is displaced, the bone joint is deformed. Palpation is performed. Only external signs are not enough to clarify the type of pathology. The clavicle has two ends - acromial (external) and clavicular (internal). The sternoclavicular joint is the junction of the clavicle with the sternum. The joint is stabilized by the costoclavicular, anterior and posterior sternoclavicular ligaments. Inside the joint there is a layer of cartilage - the articular disc. You can read more about the anatomy of the sternoclavicular joint or articulation on our website.

Among all injuries of the clavicle, fractures of the clavicle and dislocations of the acromial end of the clavicle are most common, and injuries of the sternal end of the clavicle are quite rare, but the rarity of their injuries does not detract from their significance.



Additional research: X-ray. This is the primary imaging method that allows the specialist to assess the position of the articular components and determine the nature of the injury. Magnetic resonance imaging. Obtaining layer-by-layer detailed images of anatomical structures is important for the complex nature of the pathology. X-ray of both joints with obtaining a comparative radiograph with and without load. Such a study is necessary to confirm the diagnosis in some cases. MRI is a highly accurate visual diagnostic method that can be used to assess the state of damaged anatomical structures. In CMRT clinics, magnetic resonance imaging is performed by experienced radiologists using an expert-class apparatus. Informative research allows to identify all violations and prescribe topical treatment.

A dislocation is a displacement of a bone outside of its normal position. When this occurs, the bonds are broken. A dislocation often occurs without a fracture, but contrary to popular belief, a fracture and dislocation can occur at the same time. Most often, anterior dislocations occur - when the sternal end of the clavicle moves forward, tearing the anterior sternoclavicular ligament (the posterior ligament and articular disc can also be torn).

Less commonly, there are posterior dislocations, in which the clavicle is displaced posteriorly from the sternum, first tearing the posterior sternoclavicular ligament. Posterior dislocations are very dangerous, since the sternal end of the clavicle can damage important anatomical structures. Even less often, there are upper dislocations, which are possible with a rupture of the costoclavicular ligament. A special type of dislocation, which some scientists consider as a kind of anterior dislocation, is a subcostal dislocation, in which the sternal end of the clavicle comes under the first rib. After an injury, swelling and bruising appear in the area of the sternoclavicular joint, which increases in a few days. Sometimes swelling and bruising does not occur.

The main clinical sign by which one can suspect dislocation of the sternal end of the clavicle is deformity. If the dislocation is anterior, then the clavicle will protrude above the sternum, a symptom of the key is possible - if you press on the collarbone, then it is reduced, but after the pressure stops, it immediately dislocates again. With a posterior dislocation, a retraction in the sternoclavicular joint can be detected, the patient may complain of pain when breathing,

swallowing. If the clavicle presses on the vessels passing behind the sternum (they are different on the left and right sides), then specific vascular symptoms are possible.

A feature of the posterior dislocation is that it can spontaneously retract, but this does not exclude the fact that the clavicle at the time of dislocation did not damage important retrosternal structures. A dislocation can be incomplete (subluxation) or complete. There are also acute (fresh), repeated and chronic (old) dislocations. Often, x-rays are required to clarify the diagnosis. Unfortunately, the dislocation is often not visible on the standard anteroposterior projection, so you have to take a special picture in the "successful" projection (English serendipity view) and other special projections. Radiography for diagnosing damage to the sternal end of the clavicle. From left to right: "successful" projection, Heinig projection, Hobbs projection. After the operation, an eight-shaped bandage is also applied for 3-5 weeks, and painkillers are taken. Both after conservative treatment and after surgery, they begin rehabilitation. Sample development exercises can be found on our website. In the case of posterior subluxation, conservative treatment is applied - a figure-of-eight bandage is applied. It is important to note once again that posterior dislocations can be reduced spontaneously, but at the time of dislocation, damage to the retrosternal structures is possible. In this regard, it is important to exclude such damage.

If there is a complete posterior dislocation, then, again, it is important to exclude damage to the retrosternal structures. First, an attempt is made to close the reduction of the dislocation. To do this, perform anesthesia and, if necessary, add drugs that relax muscles (muscle relaxants). Sometimes general anesthesia (endotracheal or intravenous anesthesia) may be required. These special projections are especially important for the diagnosis of posterior dislocation, in which, as we have noted more than once, damage to the vessels, trachea, esophagus and other structures is possible. With complete anterior dislocations, it is impossible to say unequivocally which method of treatment is preferable - conservative or operative. In any case, you need to start with an attempt at a closed reduction: the patient is placed on the table, a roller is placed under the shoulder. Be sure to anesthetize the joint with novocaine, to relax the muscles, special preparations are injected - muscle relaxants. They pull by the hand, at the same time pressing on the collarbone, adjusting it. If the clavicle can be adjusted, then apply an eight-shaped bandage. However, unfortunately, as soon as the patient gets up from the table, the collarbone can dislocate again and then surgical treatment should be considered. Closed reduction followed by conservative treatment is successful in about 50% of cases. Usually, the reduction of posterior dislocations is quite easy if no more than 2 days have passed since the injury. After that, a figure-of-eight bandage is applied for 4-6 weeks. If the attempt to close the reduction was unsuccessful, then you have to perform the operation.

It is worth noting that many well-known surgeons consider it expedient to operate on any posterior dislocations, even if the collarbone has been repositioned. Perhaps the only complication of conservative treatment is incomplete reduction, which will manifest itself as a cosmetic defect - the clavicle will simply bulge noticeably (after anterior dislocation). Serious complications in the form of damage to the arteries, veins, nerves, esophagus, trachea, pneumothorax (due to rupture of the pleura), TOS syndrome, etc. are inherent only in posterior dislocations. The literature even describes a case when, with chronic posterior dislocation in a person with a lowered arm, the voice was normal, and when the arm was raised up, the timbre of the voice changed to falsetto.

Surgical treatment is characterized by such complications as failure of fixation, infectious complications. If the clavicle is fixed with wires (now this method is rarely used), then the wires can migrate and damage the retrosternal structures. Difficult cases of diagnosis. In patients younger than 25 years, a fracture occurs more often in the growth zone of the sternal end of the clavicle (epiphysiolysis). The medial growth zone of the clavicle is the last to close in a person, so such damage is possible even at the age of 25.

The essence of the operations is that the clavicle is set (if it continues to be in dislocation) and fixed. For this, metal knitting needles, rods, and sometimes plates are used. In general, the same plastic (strengthening) of the ligaments is possible as in the case of anterior dislocation. In chronic dislocation, removal (resection) of part of the sternal end of the clavicle is sometimes required. The cause of dislocation of the sternal end of the clavicle can be a blow to the chest, a fall on the shoulder, etc. In this case, the sternal end of the clavicle can move forward, backward or upward. Most often, the collarbone is displaced forward, which is called an anterior dislocation.

Literature:

1. Yusupaliev U.A., & Mukhamedov B.I., Ibragimovan 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. Pyagai, 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. Pyagai 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. Pyagai, 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 syphilis <http://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., Pyagai, 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 Pyagai, J.R Rikhsiboev Importance of questionnaires in the diagnosis of diseases of the urogenital tract-development of new technologies in the diagnosis and 2021 <https://www.elibrary.ru/item.asp?id=45597101>
9. T Lotti, AA Sydikov, Z Zarrab, GB Pyagai... 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/fkgqphdcizfyjngqv7x4bqaca/access/wayback/https://rjvs.vd.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://rjvsd.com/1560-9588/article/view/72328>
 14. А.А Садыков, Н.С Ибрагимова, А.А Юлдашев Зуд при коморбидных состояниях - ВА ЭСТЕТИК ТИВБИЙОТ, 2015 https://dermatology.uz/pdf/medic_jurnal/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/funksionalnoe-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. 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>
 34. 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>

35. 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
36. 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
37. G.L Burkhanova, Sh.M Safin, K.H Derevyanko modern possibilities of rehabilitation for craniovertebral pathology- *journal of biomedicine and practice*, 2022
38. Sharafova Inobat Akhmedzhanovna, Burkhanova Gulnoza Lutfilloevna basic approaches to the complex treatment of facial 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>
39. 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
40. 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>
41. S.M Makmudov, O.A Kim assessment of nutritional status based on bioimpedancemetry in young people - *journal biomeditsiny i practice*, 2022.
42. Makhmudov Sardor Mamasharifovich the functional state of the cardiorespiratory system of athletes involved in swimming.- “Янги Ўзбекистонда миллий тараққиёт ва инновациялар” 2022.
43. 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.
44. 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>
45. 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).
46. 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>
47. РАВШАНОВА М. З. ранняя реабилитации спортсменов с травмой голеностопного сустава различными методами восстановления // *журнал биомедицины и практики*. – 2022. – т. 7. – №. 4.
48. 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>
49. МАХМУДОВ, Сардор Мамашарифович, et al. "анкилозланувчи спондилоартрити бўлган беморлар реабилитация дастурига янгича ёндашув." журнал биомедицины и практики 7.1 (2022).
50. Мавлянова З. Ф., Махмудов С. М., Тохтиев Ж. Б. Морфофункциональный статус и динамика физической подготовленности лиц, занимающихся национальным видом спорта кураш //журнал биомедицины и практики. – 2022. – Т. 7. – №. 1.

