American Journal Of Biomedical Science & Pharmaceutical Innovation
(ISSN – 2771-2753)
VOLUME 04 ISSUE 06 PAGES: 25-30
OCLC – 1121105677
Crossref doi Google Scholar WorldCat MENDELEY

Publisher: Oscar Publishing Services

Journal Website: https://theusajournals.com/index.php/ajbspi

Research Article

STUDYING THE DYNAMICS OF SOME FUNCTIONS OF THE BODY OF ADOLESCENTS WHEN CARRYING WEIGHTS

Submission Date: June 07, 2024, Accepted Date: June 12, 2024,
Published Date: June 17, 2024
Crossref doi: https://doi.org/10.37547/ajbspi/Volume04Issue06-05

Allamuratov Mirtaza
Associate professor at Department of Human and Animal Physiology at National University of Uzbekistan named after Mirzo Ulugbek, Uzbekistan

ABSTRACT

The article scientifically substantiates the possibility of adaptation of 16-17 year old adolescents to heavy physical activity and the compatibility of physiological processes with the mechanisms of action.

KEYWORDS

Heavy physical activity in adolescents, physiological processes, adaptation possibilities.

INTRODUCTION

The objective of this work was to establish an objective assessment of the adequacy of the reactions of physiological indicators and the adaptive ability of the body of adolescents, aged 16-17 years, when carrying heavy loads established by the Labor Code.

During the work, pulse and respiration rates were recorded, pulmonary ventilation, oxygen consumption and energy expenditure of the body were determined. Before work and during rest, pulse and respiration rates, blood pressure, stroke and cardiac output (according to the Starr formula), latent period of the visual-motor reaction, physiological hand tremor, muscle strength and endurance to static stress were studied [4,5] The periods of continuous carrying of weights by adolescents were limited to 20 minutes. This duration of continuous carrying of loads was established by us based on the results of preliminary observations. The study regimen consisted of six 20-

American Journal Of Biomedical Science & Pharmaceutical Innovation
(ISSN – 2771-2753)
VOLUME 04 ISSUE 06 PAGES: 25-30
OCLC – 1121105677
Crossref doi Google Scholar WorldCat MENDELEY
Publisher: Oscar Publishing Services

minute working periods with 15 minutes of sitting rest after each working period. the working time with the load was 2 hours (i.e. 1/3 of the working time of adolescents, in accordance with the Labor Code).

A study on the effect of carrying a load of 16.4 kg by adolescents aged 16 was conducted on 24 adolescents. Carrying this load caused an increase in the duration of the latent period of the visual-motor reaction throughout the study and especially at the end of the experiment. There was an increase in heart rate by 35-44.5%. When analyzing individual data, each subsequent working period occurred with a greater pulse shift than the previous one. Pulse pressure increased throughout the study. Indicators of external respiration and gas exchange increased by 1.7-2.0 times. The increase in pulmonary ventilation occurred mainly due to increased breathing; there was a disturbance in the rhythm of respiratory movements and breath holding. There was a decrease in muscle strength (by 28% in the right and 35% in the left arm) and endurance to static stress (in the right arm by 52.6%, in the left arm by 56.7%). When carrying a load, all adolescents complained of pain in the muscles of the arms, shoulders and forearm, and often intercepted the load; cyanosis of the hands was noted. During rest and at the end of the study, hemodynamic parameters were not restored within 15 minutes of rest. Not all teenagers who carried this load were able to complete the full amount of work. 10 people (41.6%) refused to work during various working periods. In them, a significant lengthening of the latent period of the visual-motor reaction was noted (from 0.66 to 1.25 seconds) and an increase in differentiation disorders. The pulse rate increased sharply towards the end of each working period, and at the time of refusal to work, it increased by 115% compared to the initial one. In recent working periods, there was an increase in breathing with an increasing pulse rate. At the same time, pulmonary ventilation, breathing depth, and oxygen consumption decreased. Refusal to work was preceded by signs of severe fatigue: pale face, profuse sweating, cyanosis of the hands, decreased interest in the environment, then the fingers unclenched and the load fell from the hands [1].

Due to the fact that the data obtained indicate unfavorable changes in the body, pronounced subjective and objective signs of severe fatigue and refusal to work, we came to the conclusion that carrying a load of 16.4 kg does not correspond to the functional capabilities of the body. In this regard, observations were carried out on 22 adolescents carrying a load of 14 kg. Due to the fact that when carrying a load of 14 kg, all adolescents experienced similar unfavorable functional changes, and 6 adolescents refused to work, studies were conducted with a load of 12 kg. The research was conducted on 20 teenagers. They all completed the full amount of work. Functional changes in the central nervous system and cardiovascular, respiratory and neuromuscular systems were adequate to the load tolerated and

American Journal Of Biomedical Science & Pharmaceutical Innovation
(ISSN – 2771-2753)
VOLUME 04 ISSUE 06 PAGES: 25-30
OCLC – 1121105677
Crossref doi Google Scholar WorldCat MENDELEY
Publisher: Oscar Publishing Services

indicated a moderate load. Therefore, we consider it possible to recommend that for adolescents aged 16 years, a load weighing 12 kg as the maximum load to be carried is a load weighing 12 kg, as it corresponds to the functional capabilities of the body. To study the effect of carrying a load of 16.4 kg on adolescents aged 17 years, studies were conducted on 10 subjects. The data obtained indicate that carrying this load does not cause significant functional changes in the neurodynamics of adolescents. On the part of the cardiovascular and respiratory systems, there was a slight increase in shift towards the end of each period, however, by the fifth minute of rest, these functions were restored. Changes in gas exchange indicators indicate strictly coordinated activity of the circulatory and respiratory systems [2]. Based on the data obtained, we can say that carrying a load of 16.4 kg, established by the Labor Code, in adolescents 17 years old does not cause adverse changes and, therefore, corresponds to the functional capabilities of the body. Thus, as a result of the research, a number of practically important provisions have been established that indicate that experimental modeling of teenagers carrying weights in laboratory conditions (walking on a treadmill with a load in both hands, lowered down) made it possible to detect certain patterns in the dynamics of changes in the functional state of the subjects, depending on their age and the size of the load. A study of the effect of carrying loads of 16.4 kg and 14 kg on adolescents 16 years old revealed unfavorable changes in the functional state of the body of adolescents: pronounced subjective and objective signs of severe fatigue and refusal to work (in 41% of cases). Favorable dynamics of performance indicators were observed in these adolescents when carrying a load of 12 kg. A study of the effect of carrying a weight of 16.4 kg by adolescents 17 years old revealed an adequate response from indicators of the functional state of the central nervous system, cardiovascular and respiratory systems, as well as the neuromuscular system.

REFERENCES

1. Гуминский А.А.,Леонтева Н.Н. Маринова К.В. Руководство к лабораторным знятиям по общей и возрастной физиологии. - М.: Просвещение 1990г.
2. Гольперин С.И. Анатомия а физиология человека. - М.: Внешняя школа. 1986 г.
3. Жуковский М.А. Детская эндокринология 2-е изд.-М.: Медицина. 1982г.
4. 4. Иргашев М.С. Клемешева Л,С. Возрастная физиология. Уч. Пос. - Т.: ТашГУ. 1989 г а. Маринова К.В. Анатомия физиология детского организма.-М.: Просвещение 1984 г.
5. Abdikarimova, M. K., Allamuratov, M. O., Khabibullaev, A. J., Abdimuratova, N., & Shikhiev, R. M. Science and Education in Karakalpakstan ISSN 2181-9203.
6. Allamuratov, M., Xojasov, A., Oteuliev, J., & Genjemuratov, K. AGROTECHNICAL AFFAIRS FOR THE PRODUCTION OF LOCAL CORN SORTS IN THE

American Journal Of Biomedical Science & Pharmaceutical Innovation
(ISSN – 2771-2753)
VOLUME 04 ISSUE 06 PAGES: 25-30
OCLC – 1121105677
Publisher: Oscar Publishing Services

CASE OF SALTED SOILS OF THE REPUBLIC OF KARAKALPAKSTAN. Science and Education in Karakalpakstan ISSN 2181-9203, 23.

7. Nagashibayeva, A. K., Allamuratov, M., Qidirbaeva, A., Tlepbergenova, P., Kurbaniyazov, B. T., Tanirbergenov, M. B., ... & Erdonov, O. L. Science and Education in Karakalpakstan ISSN 2181-9203.
8. Allamuratov, M., & Rakhimov, K. R. (1984). Enzymatic activity of the pancreas in postnatal ontogenesis of black Karakul sheep. Uzbekskii biologicheskii zhurnal.
9. Allamuratov, M. (1984). Enzymes of initial and final stages of protein hydrolysis in postnatal ontogenesis of sheep. Uzbekskii biologicheskii zhurnal.
10. Rakhimov, K. R., Allamuratov, M., & Demidova, A. I. (1987). Enzyme systems of the intitial and final stages of nutrient hydrolysis in lambs of different birthweight.
11. Rakhimov, K. R., Sadykov, B. A., & Allamuratov, M. (1989). The enzyme systems of the cavitary and membrane hydrolysis of foodstuffs in the ontogeny of Karakul sheep. Zhurnal Evoliutsionnoi Biokhimii i Fiziologii, 25(4), 460-466.
12. Алламуратов, М. У., Аметов, Я. И., Есимбетов, А. Т., & Алимбетов, А. А. (2015). РЕШЕНИЕ ЭКОПРОБЛЕМЫ АРАЛЬСКОГО МОРЯ ПОЛИМЕРНЫМИ РЕАГЕНТАМИ ДЛЯ ЗАКРЕПЛЕНИЯ ПЕСКОВ. In АНАЛИЗ, ПРОГНОЗ И УПРАВЛЕНИЕ ПРИРОДНЫМИ РИСКАМИ В СОВРЕМЕННОМ МИРЕ (ГЕОРИСК-2015) (pp. 17-20).
13. Ахраров, Б. Б., Алламуратов, М. У., & Мухамедгалиев, Б. А. (2016). ИсследованИе горенИя огнезащИщенных древесных матерИалов, модИфИцИрованных полИмернымИ антИпИренамИ. Химическая промышленность, 93(4), 213-216.
14. Ахраров, Б. Б., Алламуратов, М. У., Кушназаров, П. И., & Мухамедгалиев, Б. А. (2016). Полимерные антипирены для снижения горючести целлюлозных материалов. Химическая промышленность, 93(5), 249-253.
15. Аббасова, Н. И., Абдикамалова, А. Б., Абдуллаев, Р. А., Абдуллаева, Н. Н., Абдурахманов, И. Э., Абдурахмонова, П. Э., ... & Сидиков, А. С. (2017). Авторский указатель за 2017. Химическая промышленность, 94(6).
16. Алламуратов, М. У., Ахраров, Б. Б., & Мухамедгалиев, Б. А. (2017). Разработка огнестойких сополимеров на основе аллиловых соединений. Пластические массы, (9-10), 33-35.
17. Ахраров, Б. Б., Алламуратов, М. У., & Мухамедгалиев, Б. А. (2017). Исследование горения Огнезащищенных древесных материалов, модифицированных полимерными антипиренами. Пластические массы, (1-2), 37-39.
18. Ахраров, Б. Б., Алламуратов, М. У., & Мухамедгалиев, Б. А. (2017). Полимерные антипирены для снижения горючести

American Journal Of Biomedical Science & Pharmaceutical Innovation
(ISSN – 2771-2753)
VOLUME 04 ISSUE 06 PAGES: 25-30
OCLC – 1121105677
Crossref doi Google Scholar WorldCat MENDELEY
Publisher: Oscar Publishing Services

целлюлозных материалов. Пластические массы, (5-6), 45-47.

19. Алламуратов, М., Аметов, Я., Мухамедгалиев, Б., & Хабибуллаев, А. (2017). ЛЕСОМЕЛИОРАЦИЯ ПАСТБИЩ И ТУГАЕВ ПРИАРАЛЬЯ. ВЕСТНИК КАРАКАЛПАКСКОГО ГОСУДАРСТВЕННОГО УНИВЕРСИТЕТА ИМЕНИ БЕРДАХА, 34(1), 24-27.
20. Алламуратова, Т., Гуляева, Х., & Мукимов, М. (2017). УСТРОЙСТВО ДЛЯ ОПРЕДЕЛЕНИЯ ПРОЧНОСТИ ЗАКРЕПЛЕНИЯ ПЛЮШЕВОЙ НИТИ В ГРУНТЕ ТРИКОТАЖА. ВЕСТНИК КАРАКАЛПАКСКОГО ГОСУДАРСТВЕННОГО УНИВЕРСИТЕТА ИМЕНИ БЕРДАХА, 35(2), 45-47.
21. Allamuratov, M. U., & Mukhamedgaliev, B. A. (2018). New polymer stabilisers for soils and subsoils and an investigation of their properties. International Polymer Science and Technology, 45(3), 119-122.
22. Алимбетов, А. А., Алламуратов, М. О., & Есимбетов, А. Т. (2019). НОВЫЕ БИОРЕАГЕНТЫ ДЛЯ ЗАКРЕПЛЕНИЯ ПЕСКОВ ПРИАРАЛЬЯ. Булатовские чтения, 4, 27-29.
23. Алимбетов, А. А., Алламуратов, М. О., & Есимбетов, А. Т. (2019). НОВЫЕ БИОРЕАГЕНТЫ ДЛЯ ЗАКРЕПЛЕНИЯ ПЕСКОВ ПРИАРАЛЬЯ. Булатовские чтения, 4, 27-29.
24. Allambergenova, G., & Allamuratov, M. (2023). THE SOMATIC PHRASEOLOGISMS IN THE EPIC" ER ZIYWAR". Innovative Development in Educational Activities, 2(13), 152-157.
25. Allamuratov, M., & Tlepbergenova, P. (2023). SCIENTIFIC-TECHNOLOGICAL REVOLUTION AND CURRENT. Science and Education in Karakalpakstan, 33(3), 157-159.
26. Алламуратов, М. У., & Мухамедгалиев, Б. А. (2017). Новые полимерные реагенты для закрепления почвогрунтов и исследование их свойств. Пластические массы, (3-4), 53-55.
27. Allamuratov, M., & Tlepbergenova, P. (2023). SCIENTIFIC-TECHNOLOGICAL REVOLUTION AND CURRENT. Science and Education in Karakalpakstan, 33(3), 157-159.
28. Есимбетов, А. Т., Аметов, Я. И., & Алламуратов, К. К. (2018). Экологические проблемы Аральского моря и Приаралья. Булатовские чтения, 5, 84-87.
29. Алламуратов, М. О., Аметов, Я. И., Нурузова, З. А., Есимбетов, А. Т., Атаназаров, К. М., & Мухамедгалиев, Б. А. (2017). Разработка эффективных структурообразователей почв на основе местных и вторичных ресурсов. ХАБАРШЫСЫ, 27.
30. Zaripov, B., Allamuratov, M., Akhmedova, G. B., Djabbarova, G. M., Kakharov, B. A., & Yusupova, U. R. (2021). Rehabilitation factors of post-COVID-19 in the population of Uzbekistan. Annals of the Romanian Society for Cell Biology, 5684-5690.
31. Сейдалиева Л. Т., Шукурова С. С. Здоровьесберегающие технологии в

American Journal Of Biomedical Science & Pharmaceutical Innovation
(ISSN – 2771-2753)
VOLUME 04 ISSUE 06 PAGES: 25-30
OCLC – 1121105677
Publisher: Oscar Publishing Services

образовании и спорте //Science and Education. – 2024. – Т. 5. – №. 2. – С. 600-605.

32. Пулатова М. Д., Шукурова С. С., Алламуратов М. МАКТАБ ЁШИДАГИ СКОЛИОЗИ МАВЖУД БЎЛГАН БОЛАЛАРНИ ТАЯНЧ-ҲАРАКАТ АППАРАТНИНГ ФУНКЦИОНАЛ ҲОЛАТИНИ ТИКЛАШ //Academic research in educational sciences. – 2021. – Т. 2. – №. 4. – С. 1834-1842.
33. Pulatova M. D., Allamuratov M., Shukurova S. S. The Influence of Training Loads on the Functional State of the Cardiorespiratory System in Girls Doing Judo //Annals of the Romanian Society for Cell Biology. – 2021. – Т. 25. – №. 6. – С. 2769-2774.
34. Шукурова С. С. и др. Ёш спортчиларни жисмоний юкламалардан кейинги биокимёвий мониторинги //Academic research in educational sciences. – 2021. – Т. 2. – №. 1. – С. 1116-1122.
35. Шукурова С. С. и др. БОКСЧИЛАР ШКАСТЛАНИШНИ БИОМЕХАНИК ВА МАТЕМАТИК МОДЕЛЛАШ АСОСИДА ТАҲЛИЛИ //Academic research in educational sciences. – 2021. – Т. 2. – №. 4. – С. 1795-1801.
36. Шукурова С. С., Пулатова М. Д., Рахимова М. Ш. АЁЛЛАР САЛОМАТЛИГИНИ СОҒЛОМЛАШТИРУВЧИ ГИМНАСТИКА ЁРДАМИДА ТИКЛАШ //Academic research in educational sciences. – 2021. – Т. 2. – №. 1. – С. 362-369.