

UDC 572

DOI: 10.33876/2311-0546/2024-1/348-368

Original Article

© *Elizaveta Kokoba*

SECULAR TRENDS IN THE SOMATIC CHARACTERISTICS OF URBAN ABKHAZIAN CHILDREN AND ADOLESCENTS (1980-s — 2010-s)

The article presents the study of the morphological status of urban Abkhazian children and adolescents and its temporal dynamics over a thirty-year period. It is based on two samples of schoolchildren whose growth and development took place in different living conditions. The first sample's children (1980) grew up in stable conditions of traditional Abkhazian life, while the second sample (2012) consists of schoolchildren, whose growth took place in dynamically changing socio-economic conditions after a period of social upheaval. The methods include an intergenerational analysis of the indicators of somatic development of puberty boys aged 13–15 years and girls aged 10–16 years from the city of Sukhum (Republic of Abkhazia) and two surveys conducted in 1980 and 2012 (a total of 1,423 people) according to a single protocol. The study revealed gender specific secular dynamics for Abkhazian children. For males aged 13–15 years, temporary stability of the shoulders and pelvis width, and the diameter of the chest, with an increase in body length due to an increase in the length of the leg, was observed. For girls, with the stability of the longitudinal proportions of the skeleton, a temporary trend towards leptosomization of the physique was observed: a decrease in the width of the shoulders and pelvis, and the definitive parameters of the chest in the transversal plane. Modern Abkhazian girls and boys of younger ages are characterized by an increase in body weight with a higher frequency of overweight and obese people among them. The topography of subcutaneous fat deposition is changing to the “truncal” type, which may be a predictor of unfavorable prognoses of the health status for the new generation. It was revealed that during the observation period the pace of growth of modern Abkhazian children has become higher and the puberty has accelerated, which is especially pronounced in boys. The changes observed in the study may probably be the result of adaptation to the changes in the traditional way of life of the population. The obtained results demonstrate the important role of environmental factors in the formation of morphological status while genetic factors are stable.

Keywords: *biological anthropology, anthropological variability, secular trend, children and adolescents, growth and development, puberty, Abkhazian population*

Author Info: **Kokoba, Elizaveta G.** — Researcher of the Anuchin Research Institute and Museum of Anthropology, the Lomonosov Moscow State University (Moscow, Russian Federation). E-mail: kokoba.e@yandex.ru ORCID ID: <https://orcid.org/0000-0001-9530-3693>

For Citation: Kokoba, E. G. 2024. Secular Trends in the Somatic Characteristics of

Urban Abkhazian Children and Adolescents (1980-s — 2010-s). *Herald of Anthropology (Vestnik Antropologii)* 1: 348–368.

Funding: The research was carried out within the framework of the planned theme “Anthropology of Eurasian Populations (biological aspects)”.

References

- Alekseeva, T. I. 1998. *Adaptatsiya cheloveka v razlichnykh ekologicheskikh nishah Zemli*. [Adaptation of human in the different ecological niches of the Earth]. Moscow, MNEPU Publ. 278 p.
- Batsevich, V. A., E. Z. Godina, A. S. Prudnikova, O. V. Yasina, and P. K. Kvitsiniya. 2006. Sekulyarnyye izmeneniya pokazateley somaticheskogo razvitiya u detey i podrostkov sel'skikh rayonov Abkhazii za posledniye 25 let [Secular Changes in Indicators of Somatic Development in Children and Adolescents in Rural Areas of Abkhazia Over the Past 25 Years]. In *Sovremennaya sel'skaya Abkhaziya. Sotsial'no-ekonomicheskkiye i antropologicheskkiye issledovaniya* [Modern Rural Abkhazia. Socio-Economic and Anthropological Research], ed. by N. A. Dubova, V. I. Kozlov, A. N. Yamskov. Moscow: Staryi Sad. 189–217.
- Bogin, B. 2013. Secular Changes in Childhood, Adolescent and Adult Stature. In *Recent advances in growth research: nutritional, molecular and endocrine perspectives*, ed. by M. V. Gillman, P. D. Gluckman, R. G. Rosenfeld. Nestlé Nutr. Inst. Workshop Ser. Basel, Nestec Ltd. Vevey/S. Karger AG. 115–126.
- Chumlea, W., W. Wisemandle, S. Guo, and R. M. Siervogel. 2002. Relations between Frame Size and Body Composition and Bone Mineral Status. *American Journal of Clinical Nutrition* 75: 1012–1016. <https://doi.org/10.1093/ajcn/75.6.1012>
- Cortés-Castell, E., M. Juste, A. Palazon-Bru, L. Monge, F. Sánchez-Ferrer, and M. Rizo-Baeza. 2017. A Simple Equation to Estimate Body Fat Percentage in Children with Overweightness or Obesity: A Retrospective Study. *PeerJ*: e3238. <https://doi.org/10.7717/peerj.3238>
- Demerath, E. W., N. I. Rogers, D. Reed, M. Lee, A. C. Choh, R. M. Siervogel, W. C. Chumlea, B. Towne, and S. A. Czerwinski. 2011. Significant Associations of Age, Menopausal Status and Lifestyle Factors with Visceral Adiposity in African-American and European-American Women. *Annals of Human Biology* 38(3): 247–256. <https://doi.org/10.3109/03014460.2010.524893>
- Dubova, N. A., V. I. Kozlov, and A. N. Yamskov. 2008. Kompleksnyye etnoekologicheskkiye issledovaniya v sovremennoy Abkhazii [Complex Ethno-Ecological Studies in Modern Abkhazia]. In *Etnicheskaya ekologiya: narody i ikh kul'tury* [Ethnic Ecology: Peoples and Their Cultures], ed. by N. A. Dubova, L. T. Solov'eva. Moscow: Staryi Sad. 86–121.
- Fedotova, T. K., and A. K. Gorbacheva. 2020. Prolonger Temporal Dynamics of Somatic Traits During Adolescence and Youth. Meta-Analysis Based On Data from Russia and Former USSR (1880s–2010s). *Moscow University Anthropology Bulletin* 1: 16–24.
- Floris, J., U. Woitek, F. Ruhli, and K. Staub. 2017. Temporal Trends, Regional Variation and Socio-Economic Differences in Height, BMI and Body Proportions Among German Conscripts, 1956–2010. *Public Health Nutrition* 20(3): 391–403. <https://doi.org/10.1017/S1368980016002408>
- Frisancho, R. A. 1990. *Anthropometric standards for the assessment of growth and nutritional status*. Ann Arbor: The University of Michigan Press. 189 p.
- Fudvoye, J., and A. S. Parent. 2017. Secular Trends in Growth. *Annales d'Endocrinologie* 78(2): 88–91. <https://doi.org/10.1016/j.ando.2017.04.003>
- Godina, E. Z. 2009. Ot matreshki — k Barbi [From Matreshka — to Barbie]. *Ekologiya i zhizn'* 5: 76–81.
- Godina, E. Z., I. A. Khomyakova, L. V. Zadorozhnaya, A. S. Prudnikova, and V. A. Batsevich. 2008. Abkhaziya chetvert' veka spustya: izmenenie pokazateley somaticheskogo razvitiya v dvukh pokoleniyach abkhazskikh detey i podrostkov [Abkhazia Quarter of the Century Later: Changes in Characteristics of Somatic Development in Two Generations of the Abkhazian Children and Adolescents]. In *Etnicheskaya ekologiya: narody i ikh kul'tury* [Ethnic Ecology: Peoples and Their Cultures], ed. by N. A. Dubova, L. T. Solov'eva. Moscow: Staryi Sad. 86–121.

- Gudkova, L. K. 2013. Izmenchivost kak ponyatiye i kak osnovnoye sodержaniye fiziologicheskoy (ekologicheskoy) antropologii. [Variability as a Concept and as the Main Content of Physiological (Ecological) Anthropology. Part I.]. *Vestnik Moskovskogo universiteta. Seriya XXIII. Antropologiya* 3: 4–14.
- Hashba, A. 2014. *Etnodemograficheskie processy v sovremennoj Abhazii* [Ethno-demographic processes in modern Abkhazia]. Ph.D. dissertation abstract, D. I. Gulia Abkhaz Institute of Humanities. 26 p.
- Hermanussen, M (ed). 2013. *Auxology. Studying Human Growth and Development*. Stuttgart: Schweizerbart. 324 p.
- Hirasing, R. A., A. M. Fredriks, S. van Buuren, S. P. Verloove-Vanhorick, and J. M. Wit. 2001. Increased Prevalence of Overweight and Obesity in Dutch Children and The Detection of Overweight and Obesity Using International Criteria and New Reference Diagrams. *Nederlands Tijdschrift voor Geneeskunde* 145(27): 1303–1308.
- Inal-Ipa, Sh. D. 1976. *Voprosy etno-kulturnoy istorii abkhazov* [Issues of the Ethno-Cultural History of the Abkhazians]. Sukhum: Alashara. 463 p.
- Kokoba, E. G., E. Z. Godina, and I. A. Khomyakova 2018. Vremennaya dinamika pokazatelej fizicheskogo razvitiya abkhazskix detej i podrostkov g. Sukhuma [Temporal Dynamics of Indicators of Physical Development of Abkhazian Children and Adolescents in Sukhum]. *Vestnik Moskovskogo universiteta. Seriya XXIII. Antropologiya* 1: 5–17.
- Kokoba, E. G. 2014. Sekulyarnye ismeneniya morfologicheskogo statusa abkhazov za poslednie desyatiletija [Secular Changes in Body Morphology of Adult Abkhazian Population in The Last Decades]. *Vestnik Moskovskogo universiteta. Seriya XXIII. Antropologiya* 2: 65–79.
- Kokoba, E. G. 2019. Polovoy dimorfizm morfologii tela v populyatsii abkhazov na fone menyayushchikhsya usloviy zhizni sotsiuma [Sexual Dimorphism in The Morphology of the Body in The Abkhazian Population Against the Background of Changing Social Conditions]. *Vestnik Moskovskogo universiteta. Seriya XXIII. Antropologiya* 4: 40–53.
- Kokoba, E. G. 2024. Vremennaya dinamika morfologicheskix xarakteristik abkhazskix detej i podrostkov v menyayushchixsya usloviyax zhizni populyatsii [Temporal Dynamics of Morphological Characteristics of Abkhazian Children and Adolescents in Changing Living Conditions of the Population]. *Vestnik Moskovskogo universiteta. Seriya XXIII. Antropologiya* 1: 49–66.
- Kokoba, E. G., T. P. Chizhikova, and P. K. Kvitziniya. 2012. Vozrastnaya i sekulyarnaya dinamika total'nykh razmerov tela u abkhazov [Age and Secular Dynamics of Main Somatic Characteristics of the Abkhazians]. *Vestnik Moskovskogo universiteta. Seriya XXIII. Antropologiya* 1: 92–109.
- Kozlov, V. I. (ed.). 1987. *Abkhazskoe dolgozhitel'stvo*. [Abkhazian Longevity]. Moscow: Nauka. 294 p.
- Malina, R. M., M. E. Peña Reyes, S. K. Tan et al. 2004. Secular Change in Height, Sitting Height and Leg Length in Rural Oaxaca, South Mexico: 1968–2000. *Annals of Human Biology* 6: 615–633. <https://doi.org/10.1080/03014460400018077>
- Miklashevskaya, N. N. 1987. Rost i razvitie abkhazskix detej i podrostkov [Growth and Development of the Abkhazian Children and Adolescents]. In *Abkhazskoe dolgozhitel'stvo* [Abkhazian Longevity], ed. by V. I. Kozlov. Moscow: Nauka. 100–107.
- Miklashevskaya, N. N., V. S. Solov'eva, and E. Z. Godina. 1988. Rost i razvitie abkhazskix detej i podrostkov [Growth and Development of the Abkhazian Children and Adolescents]. In *Rostovye processy u detej i podrostkov* [Growth Processes in Children and Adolescents]. Moscow: MSU. 112–144.
- Pontzer, H. 2017. Paradoks fizicheskoy aktivnosti [Exercise Paradox]. *V mire nauki* 4: 26–33.
- Purundzhan, A. L. and V. E. Deryabin. 1979. Ob epokhalnoy preyemstvennosti geograficheskogo raspredeleniya nekotorykh antropometricheskix priznakov na territorii SSSR [On the Epochal Continuity of the Geographical Distribution of Some Anthropometric Features on The Territory of the USSR]. *Voprosy antropologii* 67: 23–41.
- Quetelet, A. 1871. *Anthropometrie*. Bruxelles. 251 p.
- Razina, A. O., S. D. Runenko, and E. E. Achkasov. 2016. Problema ozhireniya: sovremenny'e

- tendencii v Rossii i v mire [The Problem of Obesity: Current Trends in Russia and in The World]. *Vestnik Rossijskoj akademii medicinskix nauk* 71(2): 154–159.
- Rietsch, K., J. A. Eccard, and C. Scheffler. 2013. Biology Decreased External Skeletal Robustness Due to Reduced Physical Activity? *American Journal of Human Biology* 25(3): 404–410. <https://doi.org/10.1002/ajhb.22389>
- Scheffler, C. 2011. The Change of Skeletal Robustness of 6–12 Years Old Children in Brandenburg (Germany) — Comparison of Body Composition 1999–2009. *Anthropologischer Anzeiger* 68(2): 153–165. <https://www.jstor.org/stable/41262721>.
- Scheffler, C. and M. Hermanussen. 2014. Is There an Influence of Modern Life Style on Skeletal Build? *American Journal of Human Biology* 26(5): 590–597. <https://doi.org/10.1002/ajhb.22561>
- Smirnova, N. S. 1977. O mezhrupovoy dispersii somaticheskikh priznakov u shesti grupp russkogo naseleniya [On the Intergroup Dispersion of Somatic Characteristics in Six Groups of the Russian Population]. *Voprosy antropologii* 54: 151–163.
- Solov'eva, V. S. 1966. Morfologicheskie osobennosti podrostkov v period polovogo sozrevaniya (v etno-territorial'nom razreze) [Morphological Changes in Adolescents During Puberty (Ethno-Territorial Aspects)] Ph.D. dissertation, Moscow. 176 p.
- Wang, Yo., T. Lobstein. 2006. Worldwide Trends in Childhood Overweight and Obesity. *International Journal of Pediatric Obesity* 1: 11–25. <https://doi.org/10.1080/17477160600586747>