

ANTHROPOPHYSIOLOGICAL TESTS OF THE HAND AT CONTEMPORARY BULGARIAN POPULATION FROM THE REGIONS OF PETRITCH AND MELNIK

575.17:159.943.75(497.2)

Tsvetan Minkov, Velislav Todorov, Nadejda Tosheva

SU "Sv. Kliment Ohridski", Faculty of Biology, Sofia, Bulgaria

Summary: In the study are investigated 200 individuals – Bulgarians of both sexes from the regions of Melnik and Petritch (100 men and 100 women of every group). It were explored the tests: Hand clasping, Arm folding and Clapping. At the test Clapping the most frequently was established the right type, at test Arm folding was established the left type and at the test Clapping was determined the neutral type. It were established significantly sexual and regional differences only at the test Arm folding. In comparison with the data for contemporary Bulgarian population, as a whole, it is seening that, the values at the tests Hand clasping and Arm folding are close, while at the Clapping test was established differences in the arranging (n d l to d n l). By means of the method T- criterium were determined significantly differences ($p < 0,01$) in comparison with the Bulgarian population as a whole.

Key words: Hand clasping, Arm folding, Clapping

During the last decades in anthropology are used some important genetical tests, that help for better characterization of the population. In our country are used, the most often, the tests Hand clasping, Arm folding and Clapping. The study of the anthropologo-physiological tests of the hands, carried out in Bulgaria, is made in three direction: ethnical – at the different ethnoses in our country (Boev, Todorov, 1973, Todorov, 1998-1999, Todorov, Vizev, 1995), in conection with the continuance of the life (Todorov, 1998-1999) and in regional aspect (Minkov et al., 2004-2007, Minkov et al., 2006, 2009, Todorov, 1998-1999).

Aim. The aim of this study is to be defined the frequencies of the types of realization and to be searched regionally differences eventually with these of the control group from the bulgarian population.

Material and method of work

In this study were investigated 100 men and 100 women from the region of Petritch and 100 men and 100 women from Melnik. They were studied the next anthropophysiological tests: Hand clasping, Arm folding and Clapping. They were used generally accepted methods of Lutz (1908) for Hand clasping, of Weiner (1932)

for Arm folding and of Blincoe (1962) for Clapping test. It was made a comparison with a control group of Bulgarian population of 1818 individuals (Todorov, 1998-1999). The data were processed by the method of t-criterion. The results received are represented on the tables 1-3.

Results

Hand clasping (crossing of the fingers). The results from the investigation are presented in table 1. It is characteristic for both excerpts, that it is not reported rarely meet neutral type of performance of the test. In both groups it was observed the characteristic for the Bulgarians predomination of the right type of performance, that is established in both sexes, more strongly expressed in women. It were established the next values: for the group from the region of Petritch – men with right type – 55,00%, left type – 45,00%, and in women – right type – 58,00% and left type – 42,00% respectively. For the persons from Melnik the values in men are 59,00% and 41,00%, and in women – 57,00% and 43,00%. It were not established significant differences between both sexes and between both studied groups ($k=1$; $x=1,2379$, $p>0,05$).

At comparison with a control group from the Bulgarian population (Todorov, 1998-1999) it were not established significant differences ($k=1$; $x=1,0719$, $p>0,05$). At both groups and the control, the differences between them do not exceed more than 4%. All the same, the values in studied excerpts are a little higher from these one of the control.

Table 1. Frequency of Hand clasping in the population from Petritch and Melnik

Tabela 1. Distribucija prekrštanja prstiju kod stanovništva Petriča i Melnika

groups/grupe	sexes/pol	N/%	left/levi	right/desni	neutral/neutralan
PETRITCH	women/žene	N	45	58	-
		%	42,00	58,00	-
	men/muškarci	N	45	55	-
		%	45,00	55,00	-
	total/ukupno	N	87	113	-
		%	43,50	56,50	-
MELNIK	women/žene	N	43	57	-
		%	43,00	57,00	-
	men/muškarci	N	41	59	-
		%	41,00	59,00	-
	total/ukupno	N	84	116	-
		%	42,00	58,00	-
control	women/žene	N	364	414	2
		%	46,67	53,03	0,25
	men/muškarci	N	459	574	5
		%	44,32	55,18	0,50
	total/ukupno	N	823	988	7
		%	45,27	54,34	0,39

Arm folding (crossing of the antebrachii). The results received are shown in table 2.

In both investigated groups, as a whole, predominates the left type of carrying out. This type predominates in both sexes from Petritch and in women from the region of Melnik. An exception show the men from Melnik with more included right type. We can notice, that the left type is more underlined in both studied groups. At comparison between the sexes were observed significant differences only in the group from Melnik ($k=1$; $x=20,615$, $p<0,01$).

At comparison with the control group the from Bulgarian population (Todorov, 1998 - 1999) was established, that in both studied groups from us, the left type is more included, than in the control group. There are no significant differences between the control group and both studied groups from us ($k=1$; $x=1,0381$, $p>0,01$).

Table 2. Frequency of Arm folding in the population from Petritch and Melnik
Tabela 2. Distribucija prekrštanja ruke kod stanovništva Petriča i Melnika

groups/grupe	sexes/pol	N/%	left/levi	right/desni
PETRITCH	women/žene	N	52	48
		%	52.00	48.00
	men/muškarci	N	56	44
		%	56.00	44.00
	total/ukupno	N	108	92
		%	54.00	46.00
MELNIK	women/žene	N	65	35
		%	65.00	35.00
	men/muškarci	N	45	55
		%	45.00	55.00
	total/ukupno	N	110	90
		%	55.00	45.00
control	women/žene	N	393	387
		%	50.38	49.62
	men/muškarci	N	547	491
		%	52.69	47.31
	total/ukupno	N	940	878
		%	51.70	48.30

Clapping. The data received from the investigation are presented in table 3.

In the studied groups, the most often was observed the neutral type of carrying out in both sexes. This result corresponds with the established increasing of the neutral type from nord to south in more early our investigations (Todorov, 1998-1999). In the group from the region of Petritch the values in women are: left type – 23,00%, right type – 29,00%, neutral type – 48,00%, and in men – 8,00%, 36,00%, 39,00% respectively, and as a whole for both sexes, the values are – 24,00%, 32,50% and 43,50%. In the group from the region of Melnik the values are the next: women – 8,00%, 26,00% and 66,00%; men – 6%, 15,00% and 79,00% and average – 7,00%, 20,50% and 72,50%. It were established, statistically significant differences between the both studied groups ($k=2$; $x=39,3266$, $p<0,001$).

In control group of the Bulgarian population (Todorov, 1998-1999) the spreading of the separate types is the next: the most often is observed the right type in both sexes (55,12% and 63,46%, average 58,69%), after that is the neutral type – 34,77% and 25,13%, average 30,64% and the most rarely in the control group, is the left type – 10,11%, 11,41% and average – 20,67%. This comparison show significant differences between the control group and both, studied from us, groups (for Petritch – $k=2$; $x=60,3628$, $p<0,001$, and for Melnik – $k=2$; $x=146,3998$, $p<0,001$).

Table 3. Frequency of Clapping in the population from Petritch and Melnik
Tabela 3. Distribucija načina pljeskanja kod stanovništva Petriča i Melnika

groups/grupe	sexes/pol	N/%	left/levi	right/desni	neutral/neutralan
PETRITCH	women/žene	N	23	29	48
		%	23.00	29.00	43.00
	men/muškarci	N	25	36	39
		%	25.00	36.00	39.00
	total/ukupno	N	48	65	87
		%	24.00	32.50	43.50
MELNIK	women/žene	N	8	26	66
		%	8.00	26.00	66.00
	men/muškarci	N	6	15	79
		%	6.00	15.00	79.00
	total/ukupno	N	14	41	145
		%	7.00	20.50	72.50
control	women/žene	N	105	572	361
		%	10.11	55.12	34.77
	men/muškarci	N	89	495	196
		%	11.41	63.46	25.13
	total/ukupno	N	194	1067	557
		%	10.67	58.69	30.64

Discussion.

The carried out investigation from us of these genetically determined traits, is an attempt for a definition of some specialitis of this excerpt from the population. The available, up to now, data for the characterization of these tests help us to show the peculiarities of the population from given region of the country, that probably are due to differences in its ethnogenesis.

From the results received, for the three studied tests, we can conclude the next:

1. For hand clasping. The studied two groups do not differences according to this trait and the excerpt is homogenous. It were observed some regional differences from the data for the Bulgarian population (Todorov, 1998-1999). These differences are expressed in the lack of rarely met neutral type of carrying out and comparatively higher values of the right type. This fact shows an diversion from the observed tendency of reduction of the right type from Nord to Sout (Todorov 1998-1999, Beckman, Elston, 1962).

2. For Arm folding. About this test, the regional differences are noted not so much toward the Bulgarian population as a whole (Todorov, 1998-1999), but more between the two studied groups from us. It is not observed differences with the Bulgarian population as a whole. The values received for the right type are more little from these one for the Bulgarian population as a whole and it is not observed its established increasing from Nord to Soud.

3. For Clapping. At this test are observed the biggest regional differences in comparison with these one of the other two tests – Hand clasping and arm folding. The two studied groups differ considerably as between them, so in respect to the control group. Common trait for the two groups is the fact, that the neutral type meets the most often. The values of the all types of carrying out, strongly vary – right type – from 20,50% to 43,50%, left type – from 7,00% to 24,00%, neutral type – from 43,50% to 72,00%. At the group from Petritch was not established, the noted decreasing of the left type in direction from Nord to Soud. The differences are considerably and toward the control group, in which is observed the most often the right type. We think, that, according to this test were established underlined regional differences.

Conclusion

1. In the studied groups from the regions of Petritch and Melnik it were established definite regional differences in comparison with the data for the Bulgarian population.

2. At the hand clasping test was observed a definite homogeneousness between the both groups and a little differences between them and the control.

3. At the Arm folding test were established sexual differences only in the group from Melnik and there are no differences with the control.

4. At the Clapping test were established significant differences, as between the studied groups ($p < 0,001$), so and between them and the control ($p < 0,001$).

References

- Beckman, L., R. Elston – Data on bilateral variation in man: handedness hand clasping and arm folding in Swedes. *Human biology*, v.34, N1, 1962, 99-103.
- Blincoe, H. – Significant hand clasping types women according to relative lengths of fingers. *Am. J. phys. Anthropol.*, 20(1), 1962, 45-48.
- Boev, P., Todorov, V. – Das Hand clasping bei den Bulgaren. *Antropologie*, XI, 1, 2, 1973, 91-93.
- Lutz, F. E. – The interitance of the manner of clasping the hand. *Am. Nat.*, 42, 1908, 195-196.
- Minkov, C., N. Paraskova, V. Todorov – Antropoloska karakteristika Bugarkog stanovnistva u nekim regijonima Zapadne Trakije prema antropofizioloskim i seroantropoloskim obelezjima. *Glasnik antropoloskog drustva Jugoslavije*, sv.39, . 2004, 87-92.
- Minkov, Tsv., B. Minkov, V. Todorov – Antropophysiological test of Bulgarian population the region of Jakoruda and Belitsa. *Glasnik antropoloskog drustva Jugoslavije*, sv.41, 479, 2006, 133-137.
- Minkov, C., V. Todorov., B. Minkov – Kombinovani testovi ruku kod bugarskog stanovnistva u Severozapadnoj Bugarskoj. *Glasnik antropoloskog drustva Jugoslavije*, sv. 42, 454, 2007, 39-42.
- Minkov, Tsv., V. Todorov, B. Minkov, N. Tosheva – Antropophysiological characterization of Bulgarian population from the regions of Panagurishte and Strelcha. *Glasnik antropoloskog drustva Jugoslavije*, sv. 44, 2009, 483-489.

- Todorov, V. – Promene antropoloških karakteristika u toku starenja. Disertacija doktora nauka, Beograd, 1998-1999, 62-71.
- Todorov, V., St. Vizev – Istraživanje nekih antropofizioloških obeležja kod ljudi iznad 90 godina. Glasnik antropološkog društva Jugoslavije, sv.31, 1995, 47-51..
- Weiner, A. S. – Observation on the manner of clasping the hand and folding the arms. Am. Nat., 66, 1932, 365-370.

ANTROPOFIZIOLOŠKI TESTOVI RUKU KOD RECENTNOG BUGARSKOG STANOVNIŠTVO GRADOVA MELNIK I PETRIČ

Izvod

Istraživanjem je obuhvaćeno 200 osoba bugarske nacionalnosti oba pola, po 100 muškaraca i 100 žena. Urađeni su sledeći testovi: prekrštanje prstiju, prekrštanje nadlaktica i pljeskanje. Kod prekrštanja prstiju najčešće se nalazi desni, a kod prekrštanja nadlaktica levi i kod pljeskanja neutralni tip. Značajne polne i regionalne razlike su nađene kod prekrštanja ruku. U komparaciji sa savremenom bugarskom populacijom nisu nađene razlike u prekrštanju prstiju i šaka. Međutim, nađene su razlike kod pljeskanja u odnosima tipova (neutralni =n, desni =d, levi =l, prema dnl), a srednje vrednosti testirane T - testom pokazale su signifikantnu razliku ($p < 0,01$).

Ključne reči: prekrštanje prstiju, nadlaktica, pljeskanje