

PHYSICAL DEVELOPMENT OF ALGERIAN SCHOOL-CHILDREN

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Within the framework of Czechoslovak-Algerian cultural cooperation there was carried out in the school-year 1969/70, under the auspices of the Algerian Ministry of Youth and Sports and the Algerian Ministry of National Education, representative measurement of the physical development and physical fitness of Algerian school-children at the age of 11 to 14 years. The measurement of physical development was conducted by workers of the Centre of Sports Medicine of the National Centre for Physical Culture and Sports (C.N.E.P.S.) in Alger, in cooperation with Czechoslovak expert advisors to the Algerian Ministry of Youth and Sports. The measurement of physical fitness was carried out with the assistance of Algerian students of physical culture and sports. The head of the research team was Z. Šprynar.

This paper contains information obtained in the first phase of the evaluation of the results. These results were used at the end of 1970 for the publication of norms of physical development and physical fitness of Algerian pupils. These standards of physical development, worked out in the form of graphic representation of average ($\bar{x} \pm 1/2 s$), above-average ($+1/2 s$ to $1 1/2 s$), and below-average development channels ($-1/2 s$ to $-1 1/2 s$), should assist the Algerian health and pedagogical workers in the evaluation of the physical development of their school-children. (Šprynar, Šprynarová, 1970.)

The selection of the representative sample was made in two stages and with respect to the proportional representation of the school-types (elementary, specialized and lycée schools), of the population of big, intermediate and small towns and the countryside villages, and of the population living in the coastal strip (littoral — north of the plateaux), in the region of plateaux (hautes plaines), and in Sahara. The group of homogeneous villages from which one elementary school was selected included approximately 300,000 people, according to the 1966 census. The schools were selected by lot according to the school register for the academic year 1968/69. Specialized and lycée schools were selected by a lot according to nation-wide registers of these institutions. With respect to the number of pupils of the desired age we chose the standards for the selection of 12 to 15 school-children. If the sufficient

and desired number of school-children could not be measured (low numbers of children in the age group, or disputed birth-date) there were included in the sample children from other villages of the same category. Measurements were taken only on children with officially registered day, month and year of birth. The 11-year age group included children who at the moment of measurement were 10.50 to 11.49 years old, etc. Though at the present time first classes of elementary schools are attended by almost 100 % of the population, school attendance of the age-groups examined amounted to only 60 to 70 % of the boys of the respective age.

Of the somatic characters there were measured body height and weight of the whole representative sample of 2,087 boys. The body height of the children was measured with exactness to 1 mm. The children were weighed barefooted, only in underwear, and the body weight was registered with exactness to 0,1 kg on lever weighing machine. In some samples examined there were measured characters: circumference of head and thorax, and thickness of the layers of subcutaneous fat. These values were measured by Z. Šprynar, under whose supervision and guidance the weight and height values of the whole sample were registered. The thickness of skin-folds was measured by caliper (after Best) at ten places of the body surface (Pařízková, Čapková, 1958). According to regressive equations for the relation between the total body fat (found on the basis of body density weighed under water) and the thickness of skin-folds worked out for boys (Pařízková, 1961, 1962) the authors calculated the percentage of fat in the body. Because the regressive equations has been calculated in measurements of Czech population, and the relation mentioned may show different parameters in different populations, the authors publish in this article not only the percentage of fat in the body as calculated from the measurements of skin-folds, but also the total thickness of ten skin-folds. Of the statistical methods the authors used t-test on 5 % level of significance.

RESULTS AND DISCUSSION

As shown by the first analysis of the material obtained, the average height and weight values

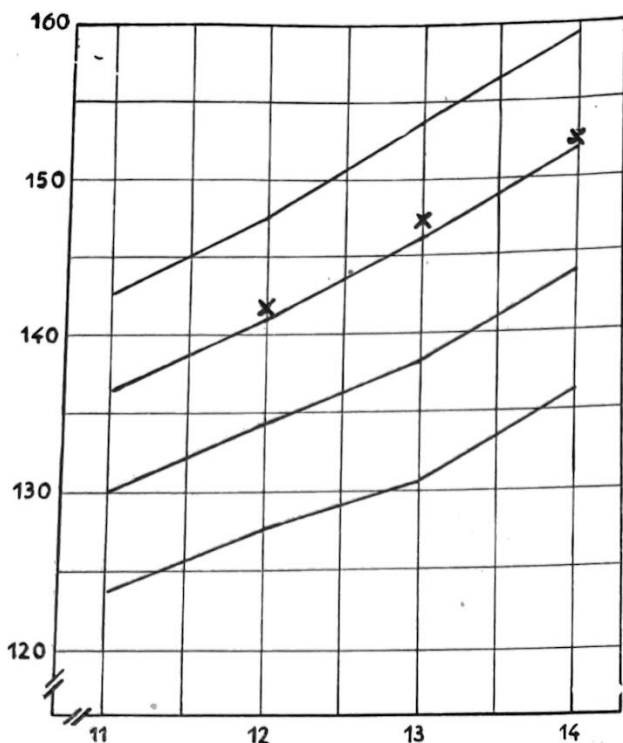


FIG. 1

The position of mean height values of lycée pupils in the statistical zones obtained from the measurement of the school population in Algeria.

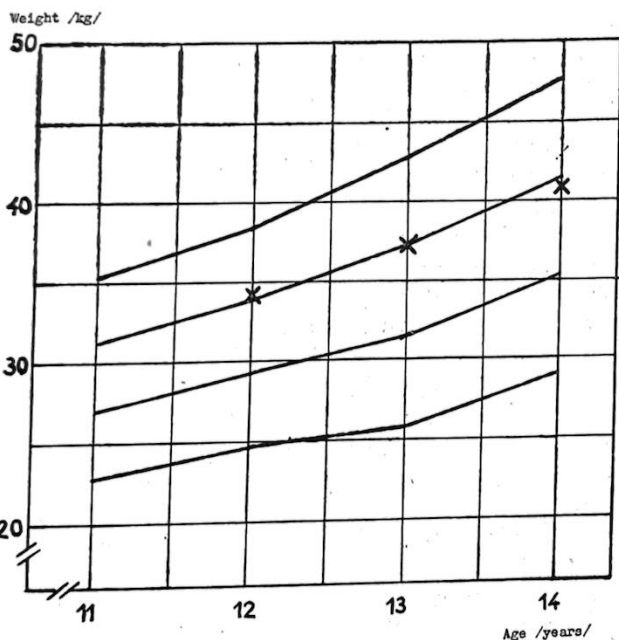


FIG. 2

The position of mean weight values of lycée pupils in the statistical zones obtained from the measurement of the school population in Algeria.

representative sample were registered only in lycée schools and in the school in the Djanet Oasis in Central Sahara, which was the southernmost of all schools selected at random. For this reason it will be interesting to describe here in more detail the measurement values registered in these schools.

Because of the age of pupils entering the lycée schools the authors could measure sufficiently numerous groups of boys aged 12 and over. The height and weight values of the pupils of three lycée schools in the cities of Alger, Boufarik and Mascara, included in the graphs of development standards of the Algerian population, were in body height in the zone of above-average values (graph 1), in body weight at the upper limit of the average value zone (graph 2). A comparison of the body height and weight of the whole representative sample with the values of the pupils from the three mentioned lycée schools shows that lycée boys were in all three age groups significantly heavier and taller than the average Algerian school children. With regard to the fact that lycée schools are attended by children from higher social classes and from families with better social standing, we can state that socio-economic conditions of the children influence significantly the basic indices of their somatic development.

For a comparison with the Djanet Oasis we selected one of the lycée schools of the capital city Alger, the Okba lycée. No height and weight differences were found between the boys from the Okba lycée and those from the elementary school in the Sahara oasis (graphs 3 and 4). Significant differences were found at the age of 13 in the values of the total thickness of ten skin-folds and in the percentage of body fat. Both these values were higher in the lycée boys of the capital city. Some differences were also ascertained in the circumference of head, which showed significantly higher values in the lycée pupils aged 12 and 13, while no significant differences were found between the two groups in the circumference of thorax. The economic situation of the Algerian countryside is, according to official statistical data, worse than that of the city population, especially of the families who can afford to send their children to lycée schools. Consequently, it could be expected that the boys from the Djanet Oasis would show lower height and weight values when compared with lycée pupils of the capital city. The absence of any such difference between the boys from the Sahara oasis and those from the capital city in fundamental somatic characters may therefore be ascribed rather to ethnic influences than to socio-economic conditions. The latter, however, cannot be ruled out completely, because the elementary school in the Djanet Oasis was attended for the most part by children from better situated local families with relatively higher living standards. The authors are of the opinion that this phenomenon is related first of all with a high percentage of negroids elements in the population of the Djanet Oasis, while the Arabic and Berber population of the northern parts of Algeria belongs to the Mediterranean type. These ethnic influences, which seemed to counterbalance the economic ones, are also apparently

confirmed by significant differences in head circumference between the two groups examined.

In specialized literature there has not been found so far any data on the height and weight of representative samples of children and youth in Arab countries, and there have been found only a few

publications that make possible a comparison between the measurements described in the present article and those taken on other Arab populations. Al Mandilawi, (1969) published a study dealing with the physical development of 8 to 13-year old pupils of Baghdad schools, coming from areas

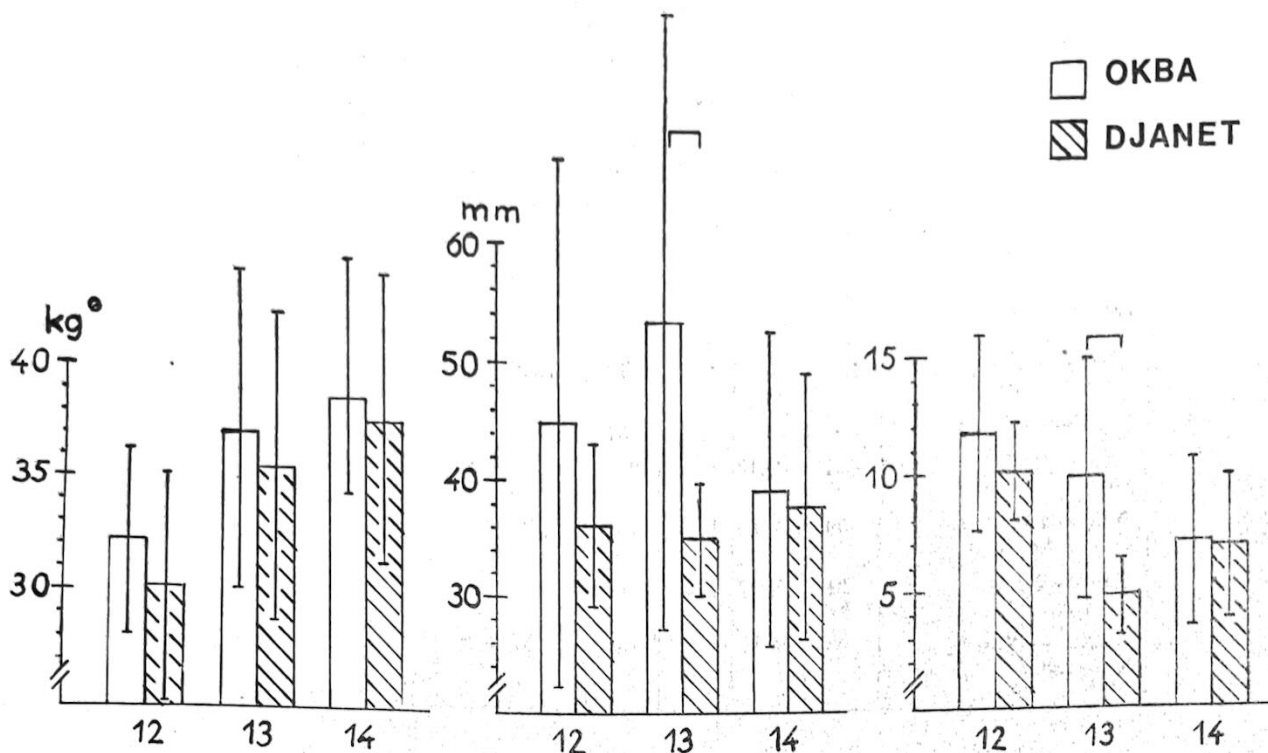


FIG. 3
Weight, total thickness of 10 skinfolds and percentage of body fat in the Okba lycée boys of the capital city and in elementary school boys in the Djanet Oasis.

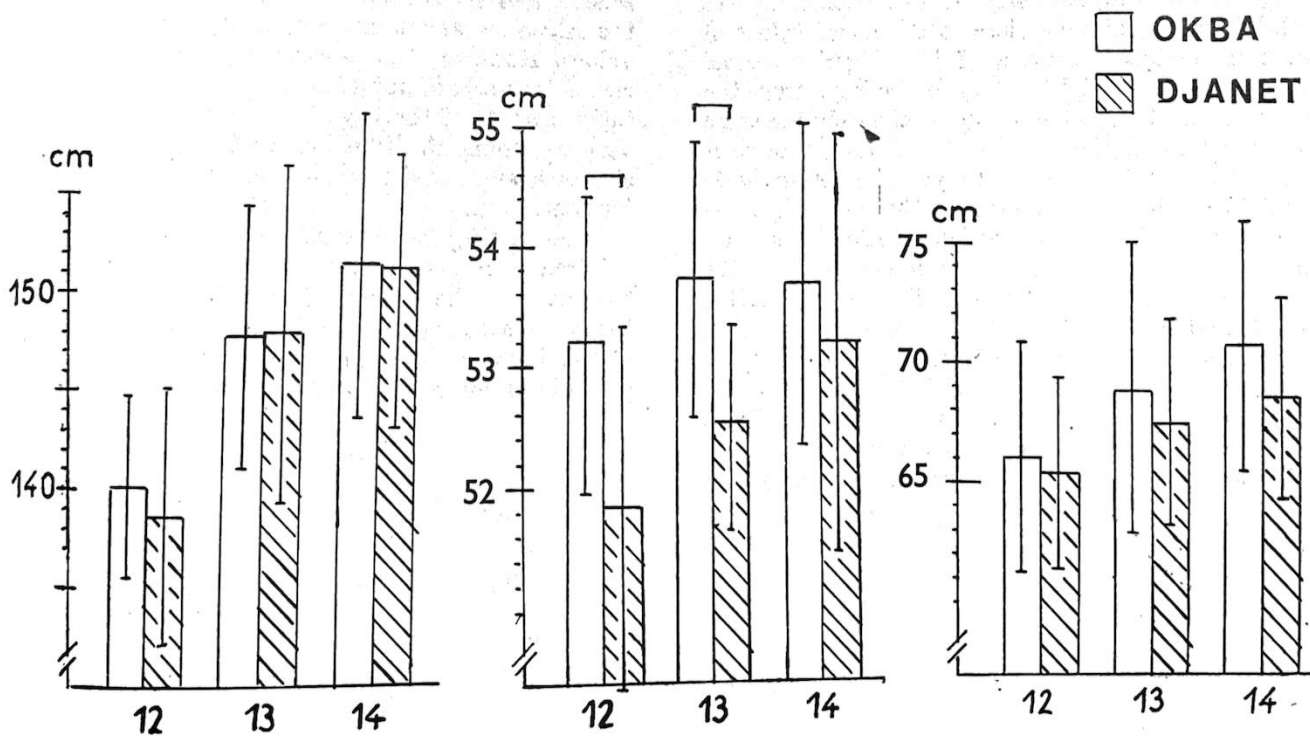


FIG. 4
Height, head circumference and thorax circumference of the Okba lycée boys in the capital city and of the elementary school boys in the Djanet Oasis.

TAB. 1
Height and weight comparisons of Algerian pupils (results of the present authors)
with boys from Baghdad (Al Mandilawi) and Tunisia (Merhautová)

Character	Characteristic groups	11 years			12 years			13 years			14 years		
		n	\bar{x}	s	n	\bar{x}	s	n	\bar{x}	s	n	\bar{x}	s
Height	Algeria — representative sample	403	133.35	6.40	570	137.79	6.75	514	142.33	7.76	599	147.88	7.67
	Algeria — lycée pup.	—	—	—	31	141.84	6.24	36	147.55	6.36	49	152.46	8.93
	Iraq — Baghdad poor classes	200	133.40	7.76	282	137.99	6.59	205	144.28	9.13	—	—	—
	Iraq — Baghdad rich classes	39	136.43	6.67	150	141.56	6.24	37	145.51	5.88	—	—	—
	Tunisia — Tunis elem. schools	31	136.7	6.0	—	—	—	—	—	—	—	—	—
	Tunisia — Tunis lycée schools	29	142.2	6.3	100	145.5	7.7	—	—	—	—	—	—
Weight	Algeria — representative sample	404	29.09	4.20	570	31.63	4.64	514	34.40	5.77	599	38.24	6.31
	Algeria-lycée pup.	—	—	—	31	34.15	5.70	36	37.40	5.40	49	41.07	7.51
	Iraq — Baghdad poor classes	200	30.13	4.92	282	33.53	5.45	205	37.01	6.57	—	—	—
	Iraq — Baghdad rich classes	39	32.64	5.87	150	37.19	6.60	37	40.62	8.12	—	—	—
	Tunisia-Tunis elem. schools	31	31.43	4.47	—	—	—	—	—	—	—	—	—
	Tunisia — Tunis lycée schools	29	36.83	7.10	100	38.49	8.40	—	—	—	—	—	—

with predominantly poor and predominantly rich population, respectively. His findings are found, for reasons of comparison, in Table 1. The height values of the sample of boys from the poor district of Baghdad stand very close to the mean values of the representative sample of the Algerian school population. The height values of the boys from the rich district of Baghdad are approximately the same as the height of the Algerian lycée boys, though it seems that at the age of 13 years Algerian lycée pupils are somewhat taller than the boys from the rich Baghdad district. The weight of Algerian school-children, however, is somewhat lower, both in the comparison between the Algerian representative sample and the boys from the poor Baghdad district, and in the comparison between the Algerian lycée boys and the boys from the rich Baghdad district. Al Mandilawi, (1969) says that living conditions in the Iraqi countryside are much worse than in the cities and consequently, though the values of the Iraqi population may stand close to those of the people from the poor Baghdad district, the Baghdad population very probably cannot be considered as a representative sample of the whole Iraqi population.

The present article also contains some information from Tunisia. There, the examinations were carried out by Merhautová and others (Merhautová, Pařízková, Horná, Mojžíšová, Velenský, Er-raï, 1970), and were concentrated mainly upon lycée

pupils of the capital city aged 11 to 12 (Table 1) and upon a control group of elementary school pupils aged 11. The boys from Tunisian elementary schools and lycée schools aged 11 were taller than the Algerians and their weight also showed higher values. However, the difference in weight between elementary school pupils in Tunis and the representative sample of the Algerian school children is not very pronounced. Tunisian lycée pupils aged 12 are taller and heavier when compared with Algerian lycée children.

In evaluating the physical development of Algerian children it is also necessary to take into account the effects of the national war of liberation, because the war period represented in the early development of the 14-year old children one half and of the 11-year old children one third of their life.

SUMMARY

Basic values of physical development were measured on a sample of 2,087 boys representing the Algerian school population aged 11 to 14. Though detailed analysis of the sample according to the division into social groups and classes has not yet been carried out, the results point to the conclusion, which is in keeping with generally held opinion, that the physical development of children is most profoundly influenced by socio-economic conditions.

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