

Determination of Somatic Parameters in Czech Senior Population

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Abstract

In this article are presented results of testing 569 Czech adult people (273 males and 296 females) older than 18 years. In this contribution there are discussed results in 6 physical development parameters: fitness score, body height, body weight, BMI, fat tissue percentage and waist hips rate, which were measured by machine Inbody 720. By questionnaire were learned parameters of sport practicing, life status and education. Presented results show rather negative trends. Parameters of body weight, BMI, fat tissue percentage and waist hips rate seem to be mutually connected. Body weight increases according higher age in all watched periods, both in groups of males and of females, too, though the body height decreases. This influences also BMI, when most of male groups and two oldest female groups are of overweight. Similarly results can be seen in parameters of fat tissue percentage and waist hips rate. Fitness score parameters show greater decrease in male groups when the younger groups have the better results. This parameter in female groups keeps more equal balance and slightly falls after age of 49. Those who practice sport or are single or possess good education have better results in these watched parameters.

Key words: somatic parameters, Czech adult population, sport practicing, life status, education level

Introduction

Nowadays in the life of human being the movement activities play all the time more and more important role. The purpose of any recreational movement activity is the health increase and prolonging of active life. The care of individual health is a first-rate duty of each man. To keep needed level of health and movement performance all the life is a very difficult task. It

needs systematic effort, self discipline, endurance and strong willing. Movement activity as a mean of keeping the demanded level of physical fitness can be can not be substituted with anything else. There is shown that lack of movement activity leads to lowering of physical fitness, this is parallel manifested by negative trends in somatic parameters and of course also the parameter fitness score is decreased; this of course very often negatively influences the quality of individual life.

Socio-demographic analysis show in Europe and also in Czech Republic that quantity and also the quality (intensity) of sport activity among adult population are insufficient as a whole. Most Europeans state that the main reason for absence of sports activities is lack of time. One third of European Union citizens (34%) never play sport due to a lack of time. The second reason for not been involved in is a fact of not liking sport (25%). However, neither the fee (4%) nor the lack of suitable facilities (3%) seems to be significant reasons for the lack of sports activity. It was shown (Eurobarometer, 2004) that adult men exercise more than women. In 2004 41% of men claimed that they play sport at least once a week, but women stated only 35%. Regarding age the situation shows that frequency decreases as the age category rises; from 60% in age 15 – 24 it falls to 28% in age over 55 years. The practice of sports is directly linked to the level of education; the more years a men was attending school, the more time is devoting the sport and movement activities. The analysis also show that most frequently is sport practiced „elsewhere“ (over 60%); fitness and sport centers cited about 30% of European (more often youngsters) like a condition for sport activity. Neither the fee nor the lack of facilities prevents Europeans from doing some sports activity. It is more due to the constraints of the typical way of life in modern society (lack of time due to professional activities or family responsibilities), which prevent citizens of the Union from playing sports

on a regular basis. Generally a strong majority of citizens in the European Union cite the improvement of health as being the principal benefit of sport (78%). It shows the good level of education in the field of positive influence of sport and movement activities as a benefit to one's physical and mental health and for remaining active life. Other reasons for sport practicing are the development of physical performance (46%), relaxation (43%), having fun (39%) and fact of being with friends (31%). Supports rates for other propositions are considerably weaker.

In adult Czech Republic population is prevailing overweight and obesity. Near 52% of adult Czech population have BMI over normal value. From it is 35% overweight and 17% is in the category obesity. Difference from last researches (6 years) is plus 3% more with overweight. To this great population overweight contribute more often men and older people. In the adult population is near 60% men with overweight, but only 46% of women. Among adults in age 18 – 44 years is with normal body weight 67%, but over 45 years it is only 30%. One fifth of population underestimates his/her overweight, more often this is subjective feeling among men than among women. An analyze shows that overweight in childhood influence occurrence of overweight in adult age. It is also clear that occurrence of overweight is firmly connected with overweight in the family. Child overweight is significantly more probable if parents are also overweight. In general the time devoted by population to physical activity has been shortened. Czech population daily walks about 1 hour and 30 minutes in slower speed, 1 hour and 5 minutes devotes house works and about 41 minutes to exercise or movement. Comparison with former researches show decrease mainly in walking (2 hours 30 minutes less per week), in more challenging movement activities (loss from 4 on 3 hours per week) – recommended quantity is minimally 3 hours 30 minutes per week; this fulfill only one third of

Czech adult population. Comparison with former researches respondents devote to the most watched activities significantly less quantity of time; with the exception of sleeping and TV watching. People with overweight spend significantly more period of time with watching TV and with housework, but significantly less time is devoted to sport and movement activities, occupation, school and self study.

Objectives

In this contribution we want to show on Czech adult population its somatic parameters changes in accordance with age and determination of these parameters by movement activity and some selected socio-cultural characteristics.

Methods

In this article are presented results of testing 569 Czech adult people (273 males - M and 296 females - F) older than 18 years. In this contribution there are discussed results in 6 somatic parameters: fitness score (FS), body height (BH), body weight (BW), BMI, fat tissue percentage (%FAT) and waist hips rate (WHR), which were measured by machine Inbody 720. We were working with fundamental statistical data, like means (\bar{x}), median, minimum and maximum, standard deviation (s) of the whole group and separately of men (M1 - M6) and women (F1 - F6) and also according to age.

Movement activity of Czech adult population we learned by questionnaire. There were 19 various questions. In this contribution we watch influence of the whole group answers on questions do you regularly practice sport (yes - not), than we discuss relations of life status (single - married - divorced - widowed - registered partnership) and education level (none education - fundamental - trainee - GCE exam - university) on somatic parameters.

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Results and discussion

1. Level of somatic parameters of present Czech adult population

Tab. 1 Fundamental statistical data

Groups	n	FS [1]		BH [cm]		BW [kg]		BMI [1]		%Fat [%]		WHR [1]	
		x	s	x	s	x	s	x	s	x	s	x	s
M1: 18-28	111	84.5	7.2	180.7	6.7	79.0	10.7	24.1	3.0	13.7	5.9	0.87	0.04
M2: 28,1-38	65	81.1	7.8	179.0	8.1	82.3	13.7	25.6	3.9	18.9	7.0	0.89	0.04
M3: 38,1-48	43	82.2	7.5	179.2	7.0	86.8	11.9	26.9	2.6	21.0	6.0	0.90	0.03
M4: 48,1-58	20	78.9	5.2	176.1	6.4	81.5	11.4	26.2	3.0	21.4	5.2	0.91	0.04
M5: 58,1-68	19	79.1	11.6	173.1	5.0	84.2	15.4	28.0	4.5	24.3	8.8	0.92	0.05
M6: > 68,1	15	74.4	12.5	171.4	7.0	83.0	11.3	28.2	3.5	28.9	5.0	0.92	0.04
M1 – M6	273	80.0	8.6	178.8	6.7	81.9	14.3	26.5	4.7	18.3	6.3	0.89	0.04
F1: 18-28	86	75.5	5.8	169.2	7.1	64.1	10.2	22.3	3.1	25.3	6.3	0.84	0.04
F2: 28,1-38	67	76.6	6.8	167.8	6.9	67.3	12.8	23.8	4.0	26.5	7.4	0.85	0.05
F3: 38,1-48	36	75.8	5.5	166.9	5.6	67.3	9.8	24.1	2.9	28.7	5.7	0.87	0.03
F4: 48,1-58	23	74.3	7.3	164.2	6.0	67.6	12.3	24.9	3.9	30.6	6.6	0.88	0.06
F5: 58,1-68	54	72.2	10.3	161.1	7.0	70.0	12.4	26.9	4.3	34.2	7.8	0.90	0.05
F6: > 68,1	30	75.5	15.2	159.6	6.6	69.1	11.2	27.1	4.1	35.9	7.5	0.90	0.05
F1 – F6	296	75.0	8.5	172.1	6.5	74.1	11.4	25.0	3.7	30.2	6.9	0.88	0.05

The Fitness Score is an arbitrary score based on the measured muscle and fat mass for the motivation of the subjects. Normal range of it is from 70 to 90. We can see that Czech men reach in the whole group an average value, while the whole group of women have lower than central value (80,0). At groups of men the first three decades (18 – 49 years) have slightly higher values like is central value. This central value among women has only the youngest

group; the rest of groups of women and those older men reach lower than central values. Body height shows us the tendency of slowing down the secular trends that were watched from 50-ies to 90-ies, when youths accelerated each 20 years for 2 – 5 cm and after it started to be reduced. It is shown both in groups of men and women, when the youngest groups do not differ very much, while those older have continuously smaller values of body height. The other parameters (BW, BMI, %Fat and WHR) show us together with BH the body composition and distribution of fat tissue and also muscles mass. From this point we can value Czech adult population rather in negative way. At men only M1 group reach normal values in BMI; in %Fat and in WHR only M1 a M2 can be considered like normal, all the others male groups overweight or over recommended values. In BMI parameter women are slightly better. Like overweight can be evaluated only groups F5 a F6. But in parameters %Fat and WHR reach similar values like male groups. It seems that especially older groups of men and women, too, reach from the point of the view of somatic parameters negative values; the older they are the more negative values they have.

2. Determination of somatic parameters by socio-cultural characteristics

Tab. 2 Means of watched parameters after question „do you practice sport“(yes - not)

	n	FS	BH	BW	BMI	%Fat	WHR
yes	165	80,7	173,6	74,1	24,5	20,7	0,87
not	404	77,7	171,5	74,3	25,1	25,0	0,88

First question on sport practice of Czech adult population shows that over 71% do not do any sport activity. This fact confirms latest researches about bad situation as well as negative

trends; it seems that there is a permanent increase of adult people who do not do any more intensive movement activity. This is of course reflecting in our watched somatic parameters. In this sample those who do not practice any sport possess lower level of fitness score parameter; the level is under central value 80. On the contrary those who practice sport are slightly above this average level (fig. 1). The group who practice sport is slightly taller (1,8 cm). Parameters body weight, BMI and waist hip rate are slightly higher in group that do not practice sports and look near the same. But when we realize that this group is smaller, than the view on the differences must be far more critical. This opinion confirms the parameter fat tissue percentage, where is watched clear difference (4,3%); here we must mention, that also the 20,7% of %Fat in group of practicing sport look enough high, even they are united men with women (fig. 2, 3).

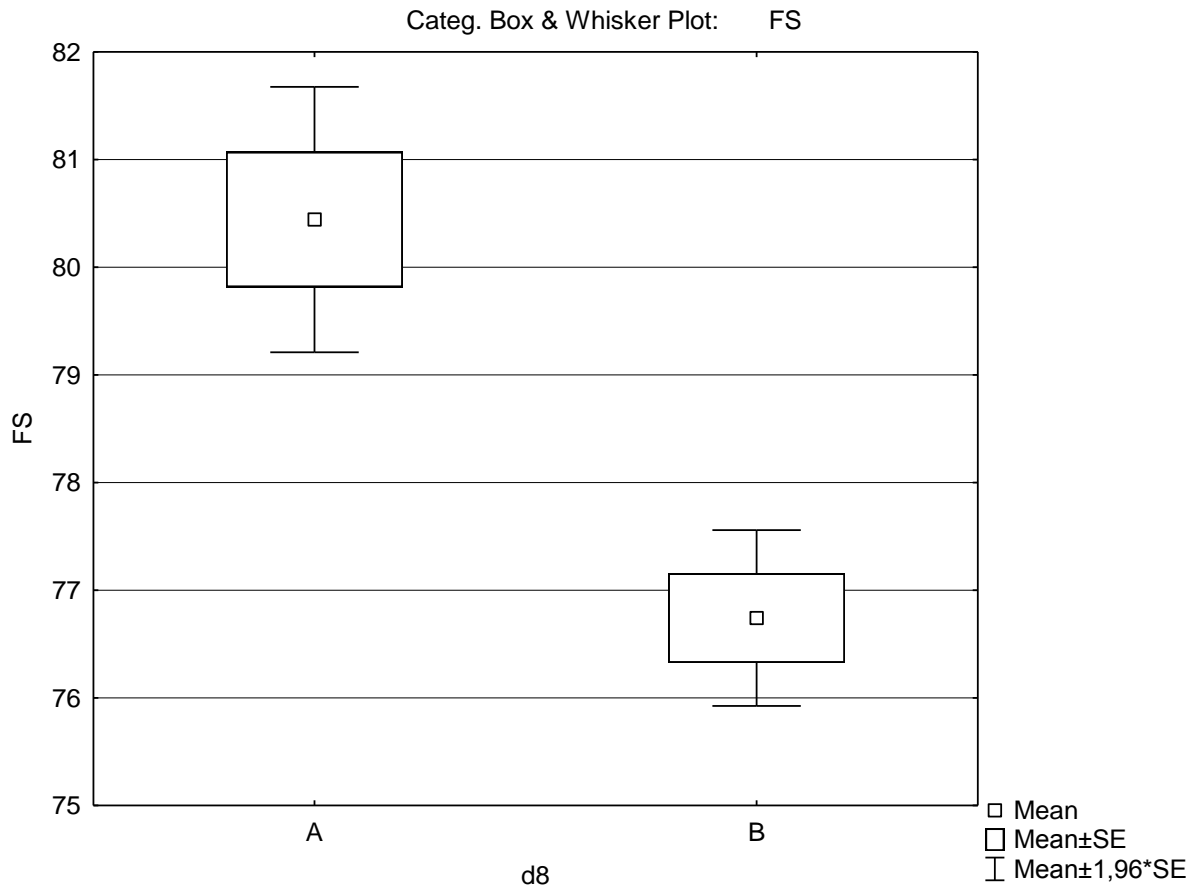


Fig. 1 Fitness score of those who practice (A) and do not practice (B) sport

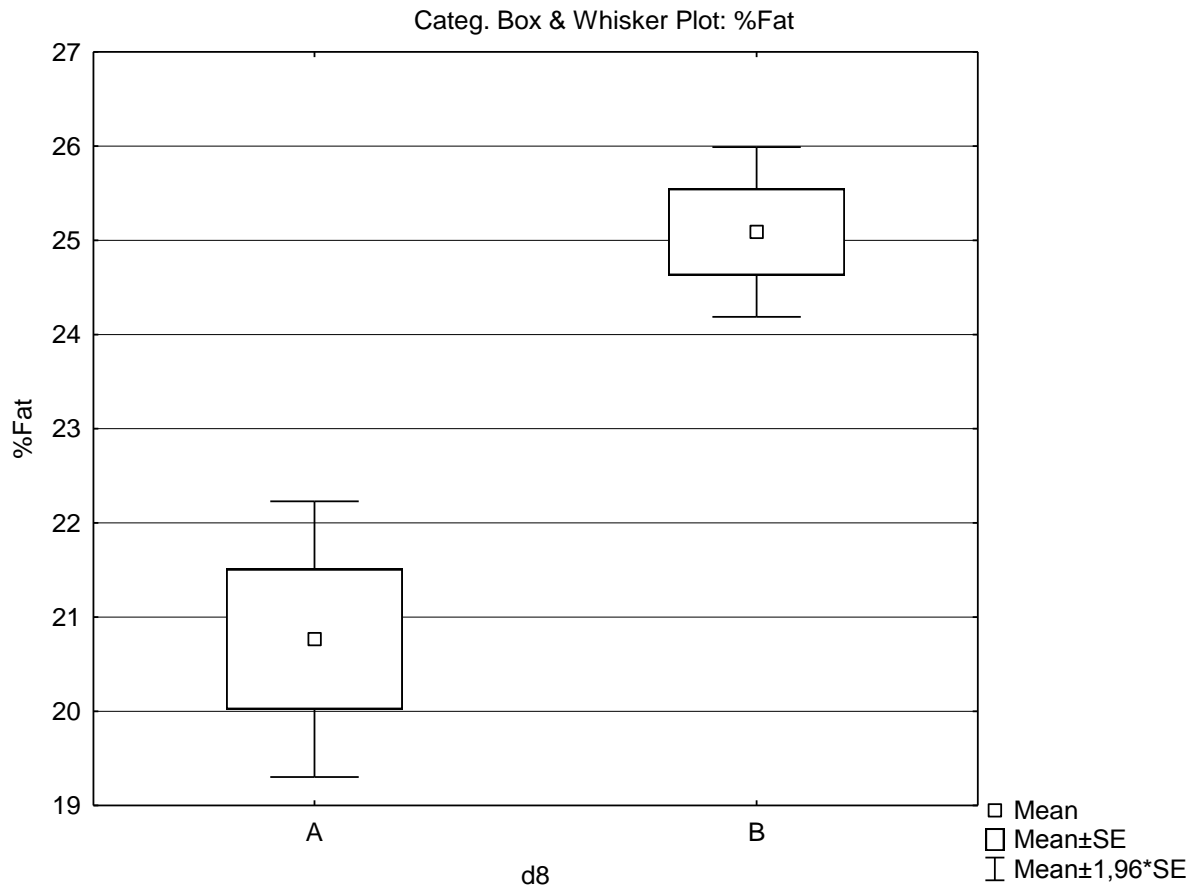


Fig. 2 %Fat of those who practice (A) and do not practice (B) sport

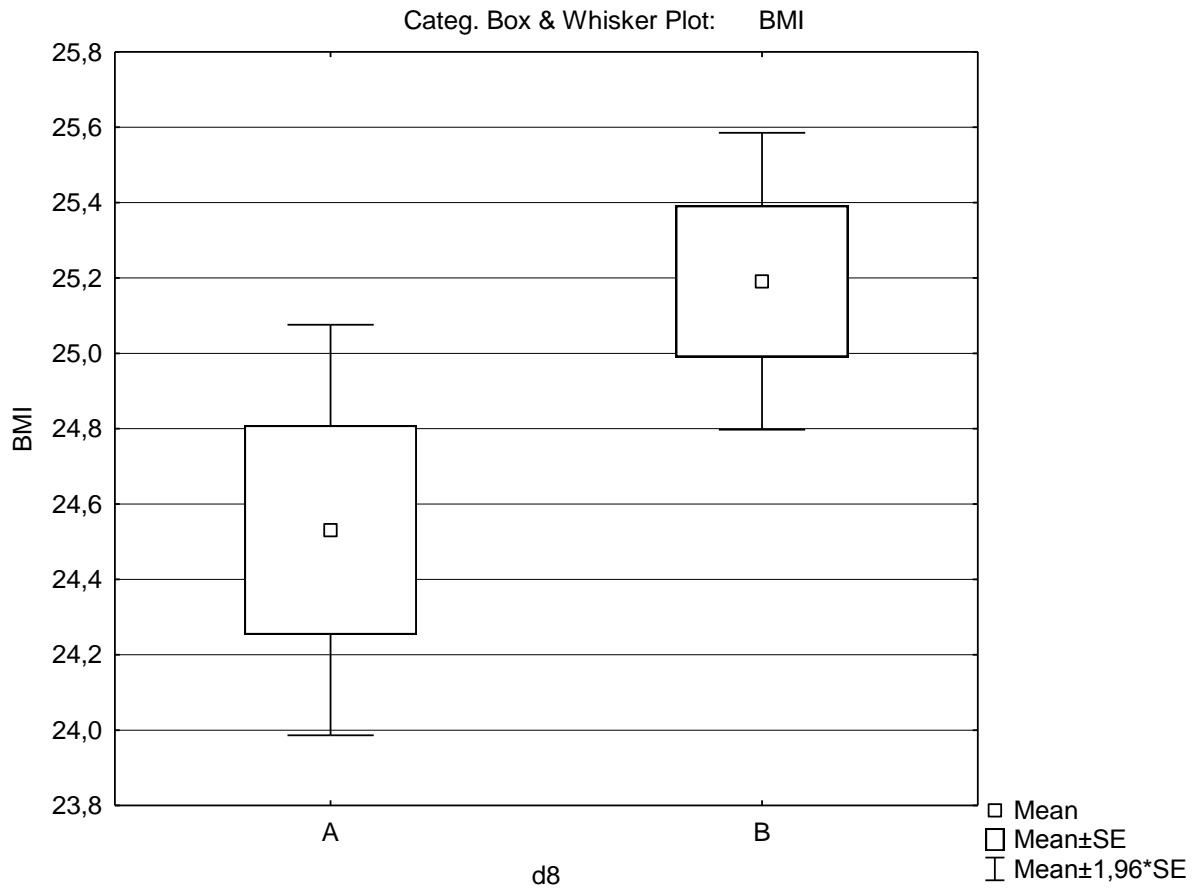


Fig. 3 BMI of those who practice (A) and do not practice (B) sport

Tab. 3 Arithmetical means of watched parameters after question about life status (single - married –divorced – widowed - registered partnership)

life status	n	FS	BH	BW	BMI	%Fat	WHR
single	245	80,5	175,5	73,1	23,6	19,0	0,86
married	239	77,0	170,5	76,8	26,3	27,0	0,89
divorced	59	76,2	168,5	70,2	24,6	27,3	0,87
widowed	26	79	162,4	69,5	26,2	31,4	0,89
reg. partner.	0						

Distribution resulting from second watched question about life status shows that majority of adult Czech population have not any partner. Parameter fitness score shows that average level of it possess those who are either single or widowed. Married and divorced have rather lower level of this parameter. Parameter body height shows that the tallest are those single, married and divorced are slightly smaller and smallest are those widowed. Though we do not watch age, we think that in this group the youngest are singles and the oldest are widowed. From this view also BH in this distribution according „life status“ is respecting secular trends of Czech population (fig. 4). Other 4 parameters again confirm negative trends in population. Married have the greatest BW, this also influence overweight BMI; near the same level possess in BMI the widowed, though they have slightly smaller BW, but also they are rather smaller. Parameter %Fat shows that only level in group of singles can be accepted. Other three groups have pretty high values; indirectly it also confirms that the older adults are the more negative this parameter is (fig. 5). Parameter WHR has also negative trends, because of smaller BH in groups of married, divorced and mainly in widowed.

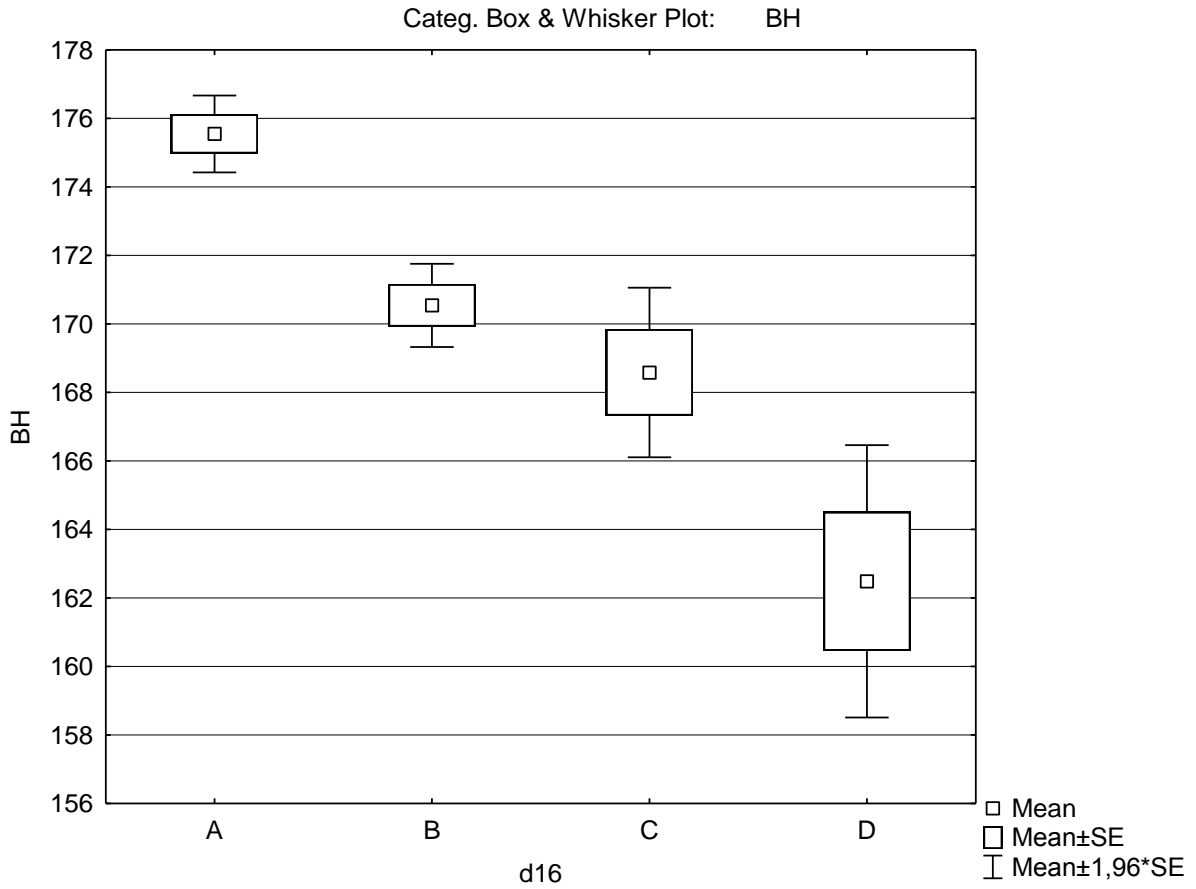


Fig. 4 Body height according life status(single-A, married-B, divorced-C, widowed-D)

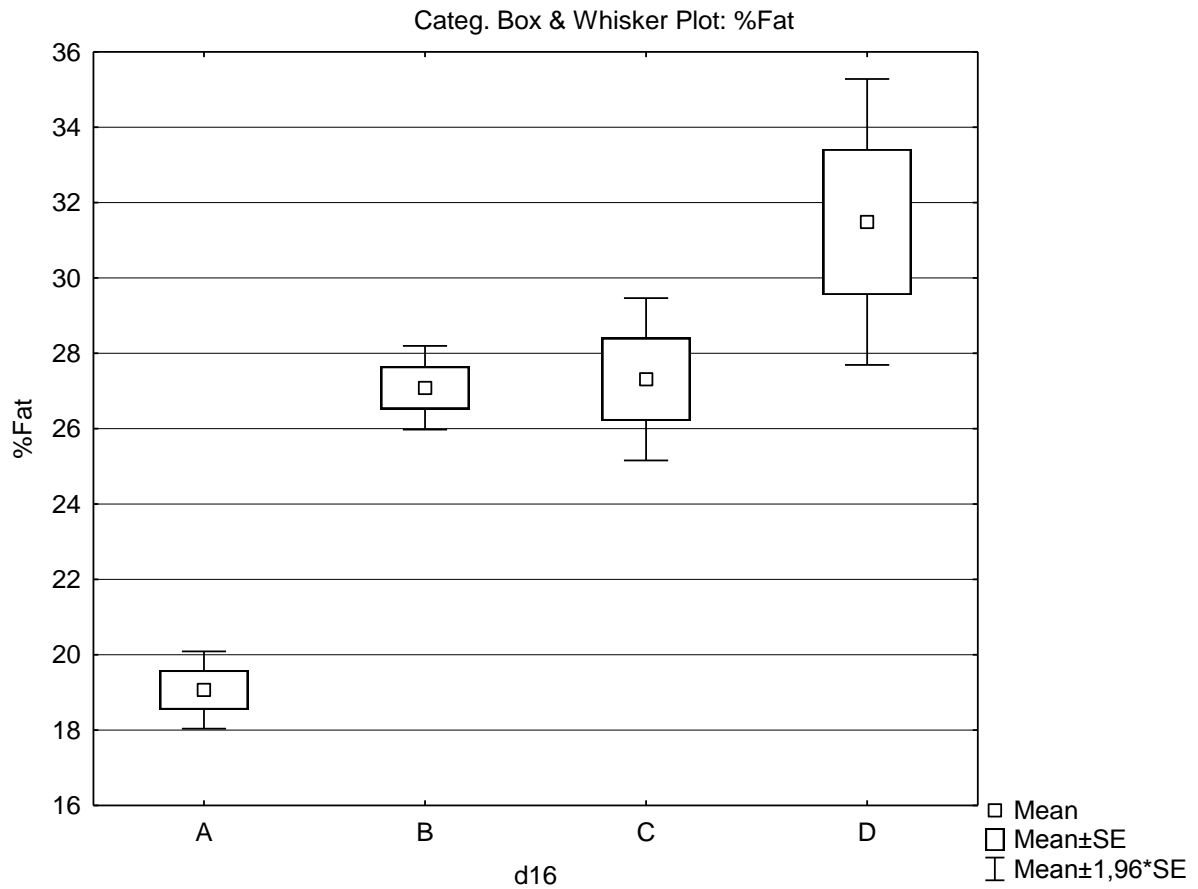


Fig. 5 % Fat according life status (single-A, married-B, divorced-C, widowed-D)

Tab. 4 Means of watched parameters after question about education level (none education - Fundamentals – trainee - GCE exam - university)

education	n	FS	BH	BW	BMI	%Fat	WHR
fundamental	23	80,2	169,0	68,7	23,9	23,9	0,86
trainee	85	77,4	170,8	80,1	27,3	27,3	0,91
GCE exam	264	78,5	171,3	72,8	24,7	23,5	0,87
university	197	78,9	174,1	74,3	24,4	22,7	0,87
none education	0						

The level of reached education shows majority of population (near 60%) possess either GCE or trainee level. Pretty large group have university education (near 35%), while without education is nobody and fundamental education possess only 4%. This shows good education level in the Czech society. Parameter FS shows smallest level of trainee group, but differences comparing also other groups are not very great; all groups are near central value 80. Parameter BH shows that university students are only slightly taller from other groups that do not differ mutually very much. Other 4 parameters indicate that group of trainees possess the worst status. This group has clear the greatest values in all parameters. BMI, %Fat and also WHR are beyond recommended values. It is probable that this group of respondents would have the greatest problem with regular sport practicing.

Conclusions

1. Fitness score parameter of Czech adult population has mostly normal values. Women have slightly lower level. Both sexes the older they are, the clear decrease of this parameter is watched.
2. Also in this research there is confirmed the slow down of secular trends in somatic characteristics mainly in parameter body height.
3. Mainly older groups of both sexes have negative values of watched somatic parameters (body weight, BMI, fat tissue percentage and waist hips rate).
4. Majority of Czech adult population do not practice regularly any sport activity.
5. Insufficient movement activity of adult Czech population changes in negative way watched somatic parameters; mainly body weight, BMI, fat tissue percentage and waist hip rate.
6. Life status and level of reached education also influence somatic parameters. Better parameters possess singles, married and divorces are slightly worse, while widowed and with lower level of education are clear the worst.

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