

## Somatotype of Fasting and non Fasting Schoolboys from 14 to 16 Years of Age

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**Objective:** The purpose of this research was to study ups and downs of some bodily indices during the period of time in boys who fast and those who do not fast. The bodily indices are 10 anthropometric dimensions needed to calculate the anthropometric somatotype using the Heath-Carter method of somatotyping. Simultaneously we traced the somatotype alteration during the adolescence.

**Material and Methods:** We measured 3 times 142 schoolboys, 31 of them are from Ecclesiastical Seminary — Plovdiv, the rest of them are from Vocational College — Plovdiv; 75 boys aged 14, 67 boys aged 15. **Conclusions:** There are no statistically significant differences in measured anthropometrical indices between fasting and non fasting boys. Almost all indices increased in all groups. Fasting boys are balanced mesomorph. Initially non fasting boys are ectomorphic mesomorph and became to balanced mesomorph. The mesomorphy in the group of 15 years old boys increased.

*Key words:* fasting, somatotype, anthropometric indices.

Fasting plays an important role in Eastern Christian life. Apart from Great Lent and the forty days before Christmas, most Wednesdays and Fridays, a number of days before the Feast of Saints Peter and Paul, the first fourteen days of August, Holy Cross Day and the Vigils of several other great feasts are fasting days.

Fasting is of several kinds: During Cheese Week, the week before Great Lent, no meat may be eaten, but dairy products and fish are permitted. On most fast days no meat, fish or dairy products, wine or olive oil may be used. On days of a particularly severe form of fasting, nothing is eaten except for raw vegetables or vegetables cooked in water, with salt or vinegar. A strict interpretation of the fasting rules requires complete abstinence from food on certain days in the first week of Lent and on the last days of Holy Week. When a major feast occurs during a period of fasting, fish is normally permitted. On certain fasting days oil and wine are permitted.

The purpose of this research was to study ups and downs of some bodily indices during the period of time in boys who fast and those who do not fast. The bodily indices are 10 anthropometric dimensions needed to calculate the anthropometric somatotype using the Heath — Carter method of somatotyping. Simultaneously we traced the somatotype alteration during the adolescence in order to prove findings in a lot of investigations [1, 2, 5, 7, 8].

## Material and Methods

We measured 142 schoolboys, 31 of them are from Ecclesiastical Seminary — Plovdiv, the rest of them is from Vocational College — Plovdiv; 75 boys aged 14, 67 boys aged 15.

At time of first measurement the average age of boys is 14 years and 4 months and 15 years and 4 months at the second measurement respectively. The religious affiliations and keep to a fasting were evaluated by two inquiries made at one year interval.

The anthropometric measurements are 3. First measurement was provided at the beginning of November, forty days before Christmas. Second measurement was provided in the middle of May, after the end of Easter. Third measurement was done one year later. Ten anthropometric indices were evaluated using standard anthropometric equipment according Heath-Carter method of somatotyping. [6] The data were calculated by Macintosh “Stat View 4.5” statistic program.

## Results and Discussion

From inquire: most college students are orthodox Christians baptized in East Orthodox Church — 76.7%, not baptized — 19.4%, Muslims — 2.9%, and from other religions — 1%. All seminarists are orthodox Christians. Fasting are boys who fast during Great Lent — 48 days and the forty days before Christmas and some of the others fasting. In a group of 14 years old Seminarists are 57.9% and in a group of 15 years old boys they are 65.5%. Fasting is a tradition in families of 52% in group of 14 years old boys and 55% in group of 15 years old boys who fasting.

The anthropometric data are present in table 1.

The average somatotypes are present in table 2.

Body mass index increased at every measurement but remained in a range of standard (19–24.9).

The changes in average somatotype between first and third measurements define the somatotype dispersion distance (SDD) and the somatotype attitudinal distance (SAD):

14 years old fasting — SDD = 0.3, SAD = 0.1; non fasting — SDD = 1.0, SAD = 0.4

15 years old fasting — SDD = 1.4, SAD = 0.5; non fasting — SDD = 1.5, SAD = 0.6

## Conclusions

1. There are no statistically significant differences in measured anthropometrical indices between fasting and non fasting boys.
2. The height and the body mass increased in all groups. Growth is bigger in the group of 15 years old boys.
3. In the group of 14 years old boys increased mostly biepicondylar breadth of the humerus and biepicondylar breadth of the femur on a small scale.
4. Upper arm girth and calf girth increased.
5. Fasting boys are balanced mesomorph at all free measurements.
6. Non fasting boys are ectomorphic mesomorph at the first measurement. At the third measurement the average somatotype in the group of 14 years old boys are balanced mesomorph because of gradually augmentation of endomorphy and diminution of ectomorphy. We notice the same tendency in the group of 15 years old non fasting boys, although they remain ectomorph mesomorph.
7. The mesomorphy in the group of 15 years old boys increased.

Table 1. The anthropometric data of fasting and non fasting schoolboys from 14 to 16 years of age

14 y. FASTING	n=38 I meas.		n=38 II meas- urement		n=33 III meas- urement		15 y. FASTING	n=29 I meas- urement		n=29 II meas- urement		n=25 III meas- urement	
	X	SD	X	SD	X	SD		X	SD	X	SD	X	SD
Height (cm)	164.8	9.1	167.7	9	172.6	7.8	Height (cm)	173	6.6	174.2	6.7	175.3	6.5
Weight (kg)	56	11.1	59.4	11.1	64.3	11.7	Weight (kg)	65.2	10.8	67	10.3	70.6	10.7
Humerus breadth (cm)	6.5	0.4	6.7	0.4	6.8	0.4	Humerus breadth (cm)	6.8	0.4	6.9	0.3	6.9	0.4
Femur breadth (cm)	9.3	0.5	9.5	0.5	9.5	0.6	Femur breadth (cm)	9.7	0.7	9.8	0.5	9.8	0.5
Biceps girth (cm)	26.6	3.1	27.2	2.7	28.3	2.8	Biceps girth (cm)	29.3	3.5	29.6	3.3	31	3.5
Calf girth (cm)	34.1	3.7	34.8	3.7	36.1	3.8	Calf girth (cm)	36.1	3	36	3.1	37.5	3.1
Triceps skinfold (mm)	11.8	5.7	12.1	5.4	10.2	4.3	Triceps skinfold (mm)	10.8	4.8	11.7	6.2	11.5	5.7
Subscapular skinf. (mm)	9.4	4.6	9.4	3.7	9.4	3.5	Subscapular skinf. (mm)	10	4.9	9.9	4.7	10.4	4.9
Subscapular skinf. (mm)	9.6	5.9	9.8	6.4	9.7	5.4	Supraspinal skinf. (mm)	9.4	5.5	10	6.8	10.2	5.7
Med. calf skinfold (mm)	13.6	6.5	13.2	6.9	12.4	6.1	Med. calf skinfold (mm)	11.3	3.9	11.9	4.8	12.3	6
14 y. NONFASTING	n=37 I meas- urement		n=34 II meas- urement		n=34 III meas- urement		15 y. NONFASTING	n=31 I meas- urement		n=38 II meas- urement		n=25 III meas- urement	
	X	SD	X	SD	X	SD		X	SD	X	SD	Xu	SD
Height (cm)	167.4	6.7	170.4	6.6	173.5	6	Height (cm)	172.5	5.7	173.7	6.2	174.1	6.6
Weight (kg)	56.6	9.5	59.3	9.1	64.5	10.8	Weight (kg)	62.1	9.8	63.7	10.1	65.9	10.3
Humerus breadth (cm)	6.6	0.4	6.7	0.3	6.9	0.3	Humerus breadth (cm)	6.7	0.3	6.8	0.3	6.8	0.3
Femur breadth (cm)	9.4	0.5	9.5	0.4	9.5	0.5	Femur breadth (cm)	9.5	0.5	9.6	0.5	9.6	0.5
Biceps girth (cm)	27	3.3	27.2	3.3	29.1	2.7	Biceps girth (cm)	27.7	2.2	28.9	2.6	30.1	3.1
Calf girth (cm)	34.3	3	35.3	3.4	36	2.9	Calf girth (cm)	35.7	3	36.1	2.7	36.6	2.5
Triceps skinfold (mm)	10.3	4.3	10.6	5.1	10.7	4.7	Triceps skinfold (mm)	9.4	4.2	9.8	4.2	9.1	3.7
Subscapular skinf. (mm)	8.5	3.4	8.7	4.1	9.4	4.2	Subscapular skinf. (mm)	8.6	3.6	8.9	4.1	8.9	4.2
Supraspinal skinf. (mm)	7.7	4.2	8.4	6.1	9.5	6.2	Supraspinal skinf. (mm)	7.1	4	8.4	6.2	7.6	4.2
Med. calf skinfold (mm)	11.2	4.6	11.8	5.2	12.1	5.7	Med. calf skinfold (mm)	10.3	3.9	11	4.6	10.6	4.9

Table 2. The average somatotypes of fasting and non fasting schoolboys from 14 to 16 years of age

14 y. FASTING		Endomorphy	Mesomorphy	Ectomorphy	15 y. FASTING		Endomorphy	Mesomorphy	Ectomorphy
I measurement	X	<b>3</b>	<b>4.1</b>	<b>3.2</b>	I measurement	X	<b>3</b>	<b>4.5</b>	<b>3.2</b>
	SD	1.5	1.4	1.5		SD	1.4	1.7	1.9
II measurement	X	<b>3.1</b>	<b>4.2</b>	<b>3.1</b>	II measurement	X	<b>3.1</b>	<b>4.4</b>	<b>3.1</b>
	SD	1.4	1.3	1.5		SD	1.6	1.6	1.8
III measurement	X	<b>2.9</b>	<b>4.2</b>	<b>3.2</b>	III measurement	X	<b>3.2</b>	<b>4.8</b>	<b>2.8</b>
	SD	1.2	1.4	1.7		SD	1.5	1.5	1.6
14 y. NONFASTING		Endomorphy	Mesomorphy	Ectomorphy	15 y. NONFASTING		Endomorphy	Mesomorphy	Ectomorphy
I measurement	X	<b>3.2</b>	<b>4.2</b>	<b>3.5</b>	I measurement	X	<b>2.5</b>	<b>3.9</b>	<b>3.5</b>
	SD	1.2	1	1.2		SD	1.1	1	1.3
II measurement	X	<b>2.7</b>	<b>4.1</b>	<b>3.5</b>	II measurement	X	<b>2.6</b>	<b>4.2</b>	<b>3.4</b>
	SD	1.5	1.1	1.2		SD	1.3	1.2	1.4
III measurement	X	<b>2.9</b>	<b>4.2</b>	<b>3.2</b>	III measurement	X	<b>2.5</b>	<b>4.4</b>	<b>3.1</b>
	SD	1.5	0.9	1.2		SD	1.2	1.1	1.3

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