# SOME ASPECTS ON THE MODIFICATIONS - IN TIME - THE GROWTH AND DEVELOPMENT IN TEEN-AGERS FROM SOME RURAL COMMUNITIES OF THE JASSY COUNTY

#### BY

## MARIA ȘTIRBU<sup>1</sup>, GEORGETA MIU<sup>1</sup>, MARIA ISTRATE<sup>1</sup>

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The authors analyze the average values of the main bodily dimensions and ratios - on classes of age and sex - on a group of 1,462 teen-agers (739 boys and 723 girls), between 11 and 16 years, coming from some rural communities in the vicinity of the Jassy city, investigated in 2003, comparatively with the results recorded - in 1985 - on a group of subjects of the same age, from the same places.

The main conclusions drawn evidence that today's teen-agers have larger sizes than those studied in 1985, which shows that growth's acceleration process is still manifesting. Significant modifications are to be recorded, too, as to the temporary sexual dimorphism, which is shorter, for certain characters, in the present batch, comparatively with the 1985 one. More than that, the actual teen-agers evidence a tendency of longilinization, *versus* the former ones.

As to the puberty, taken into study only for girls, it is more early in the present than in the past group, the average age of puberty being of 13 years and 2 months - today - comparatively with 13 years and 9 months - in the 1985 group.

The results of the investigations developed along the year 2003, on a group of 11-16 year old teen-agers coming from some rural communities of the Jassy county - considered comparatively with those obtained, by the same methodology, in 1985 - illustrate that the acceleration of growing and development in children and teen-agers is in progress.

The group studied in 2003 comes, with only one exception (the village of Comarna being replaced by Holboca), from the same places in which similar researches have been performed in 1985, the villages being in the vicinity or quite close to the city of Jassy, which explains the numerous urban influences manifested upon the life of such places.

<sup>&</sup>lt;sup>1</sup> Romanian Academy, The Iași Branch, Department of Anthropology

#### Materials and method

The material of the present study is constituted by a number of 1,462 teen-agers (739 boys and 723 girls), with ages ranging between 11 and 16 years, coming from rural communities situated in the vicinity of the Jassy city.

Mention should be made of the fact that investigations on the teen-agers of the same places have been undertaken by the Jassy team of anthropology in 1985 and 1964, as well. The statistical processing of the data collected assumed calculation of the average values and of the standard deviation on classes of age, at the level of each sex, for the main bodily dimensions and ratios.

All results obtained with the actual series have been interpreted comparatively with those recorded in 1985 for the series of similar origin.

#### Results

The stature is obviously taller with the actual series, comparatively with those of 1985 (Tables I and II).

Stature's acceleration rates, higher in boys than in girls, increase progressively for both sexes, from 11 to 13 for girls and from 11 to 14, respectively, for boys, so that in the former case, the acceleration rate at the age of 16 is of 1.36 cm comparatively with the maximum one - of 4.69 -, while, in the latter case, it is of 4.16 *versus* 5.99 with both sexes, the stature increasing at higher rates in the first 3 classes of age, and, on the contrary, at lower rates in the last 2, comparatively with those taken as reference.

The maximum growing rates, with slightly higher values in the present series, *versus* the old ones, occur nevertheless within the same time interval, namely between 11 and 12 years for girls and, respectively, between 13 and 14 years for boys.

A differentiated analysis of the growth recorded by stature's main segments evidences that, as already known, the inferior member is more affected by acceleration than the bust (sitting stature). The situation is well reflected by the average values of the skelic index, seen as superior in the present series, comparatively with the reference one (with the exception of the 12 year - old boys, when they are equal). More than that - and especially in boys - the differences grow with the age. Nevertheless, one should mention, within the same milieu, that, with both series of girls, the maximum value of the skelic index is recorded at the age of 12, followed by an amplier diminution of its value from 12 to 13 years, for the present series, and highly attenuated in the reference series. In the case of boys, however, although the prepuber pusseu of stature's growth occurs - for both series - within the same interval of age (13-14 years), being slightly more intense in the actual series, the maximum value of the skelical index is to be recorded one year later for the 2003 series, a still higher number of teen-agers are subjected to the prepuber pusseu of stature's growth at the age of 15.

The trunk's horizontal dimensions record only slight modifications in time. The - generally - very reduced differences favourize the actual series only for boys'width of shoulders. In the case of girls, shoulders' width and - in the case of both sexes - basin's breadth, record slightly higher average values in the 1985 series. The result - as reflected, too, by the average values of the acromio-iliac index (Tables I and II) - is a less rectangular shape of the trunk in the actual series, comparatively with the 1985 one. Actually, the average of relatives values of both shoulders' width and basin breadth are, in both sexes, inferior in the 2003 series, *versus* the 1985 one, which evidences a slight longilinization tendency of today's teen-agers, comparatively with those in the past.

## The trophicity characters

In absolute values, weight is - on the average - higher in the present series, comparatively with the 1985 one, for both sexes. The differences get more pronounced with age, in the case of boys between 11 and 15, being diminished at the age of 16, and between 11 and 13, for girls, followed again by a diminution, so that in the last 2 classes of age they become negligible. The weight: stature ratio, expressed by the values of the Rohrer index, records differences amounting to maximum 1/2 u.i., which, in the case of girls are - with the exception of the age of 13 - in favour of the 1985 series, while, in boys, it oscillates from one class of age to the other, favourizing one or another of the two series. The assertion may be therefore made that the values of the Rohrer index in girls and for the last classes of age in boys plead for a relative longinilization of the actual series, comparatively with the reference one.

Members' perimeters (maximum of arm's in flexion and maximum of thigh) record absolutely superior average values for the boys of the present series *versus* the 1985 one. The situation is similar for girls, with the exception of the last 2 classes of age (15 and 16 years) for arm's perimeter.

Having all these in view, special mention should be made of the fact that, generally, the acceleration rates are higher in boys than in girls and significantly higher for thigh's perimeter *versus* arm's perimeter. By the relative values (members' perimeters *versus* stature), the differences between the two series are attenuating and, more than that, with only one exception (the 11 year old boys), they favour - in the case of the arm - the 1985 series.

## Puberty

Unfortunately, our data on puberty refer exclusively to girls. On the average, the moment of puberty's installation suffered modifications along period there about 2 decades. Indeed, the girls of the actual series have an average age at the puberty with 7 month earlies than those of the 1985 group (*i.e.* 13 years and 2 months *versus* 13 years and 9 months). The situation is correspondingly illustrated both by curving of the pubery children' frequency on classes of age (Table III), and by the curve of their frequency as a function of the age at menarche (Table IV).

Thus, the frequency of pubery girls on classes of ages is obviously superior in the actual series *versus* that of 1985, between 11 and 14 years, but highly inferior at ages of 15 and 16.

If, at the age of 16, the difference is very small, being actually caused by a single case of unrealized puberty, - which may be an exception -, at the age of 15 the ratio of pubery children in our series is about 4.5% lower than the value of the 1985 series. The situation might be caused by a heterogenous structure - from the view point of 15 and 16 year old teen-agers'origin. One should also notice that at the secondary schools from the communities taken into study, the number of 15 and 16 year old children is quite low, so that the sample group had to be completed with teen-agers from the agricultural high schools of the communities near Jassy, among them a few children being from more remote places.

As to the frequency of pubescent children as a function of their age at menarche, the ratios recorded are clearly superior to our series, comparatively with the reference one, at ages between 11 and 13, and, on the contrary, inferior between 14 and 16 years. Indeed, the ratio of pubery girls below 13 years is of about 80% in the present series, *versus* about 50% in the 1985 series, while the frequency of those with menarche between 14 and 16 years is of about 20% in the former series comparatively with 50% - recorded in the latter.

### Modifications of sexual dimorphism

Stature's curves show that the duration of the transient sexual dimorphism, characterized by average values higher in girls than in boys, was not modified, comparatively with 1985, although the sexual differences are more attenuated, in the actual series, up to the age of 13. Instead, at the age of 14, when the boys exceed the girls, the difference in favour of the former ones is - in the actual series - of 2.68 cm *versus* only 0.37, the value recorded in 1985. In such a situation, crossing of stature's curves over the interval between 13 and 14 years should be placed closer to the debut of this interval in the actual series *versus* the 1985 one.

If considering also the first crossing of stature's curves, it may be ascertained that the duration of the transient sexual dimorphism became shorter, as, in the present series, the girls exceed the boys in stature over the 10-13 year interval, and not between 9 and 13 years - as noticed with the series investigated two decades ago. A possible explanation might be the result of a rate of growth's acceleration higher in boys than in girls, as actually evidenced above. The duration of the transient sexual dimorphism for the become shorter with the actual series comparatively with the 1985 one. Indeed, in the former series, the boys exceed the girls - as to the bust - at the age of 15 and not of 16, as it happened in 1985. The difference in favour of boys is of about 0.50 cm at the age of 15, increasing at 2.62 at the age of 16. Worth mentioning is the fact that, with the 1985 series, the difference in favour of boys at the age of 16 was of 2.07, that is about 0.50 more reduced than with the present series.

Sexual dimorphism at the level of the inferior member evidences no significant modifications from one moment to another. The observation may be nevertheless made that, unlike the 1985 series, with which negligible sexual differences oscillated over the age interval of 11-13 years, in favour of one or another of the two sexes, in the present series the girls exceed the boys at the age of 12 while, starting with the ages of 14 years, with both series, the length of the inferior member records average values clearly superior for boys.

As to the sexual dimorphism at the level of the skelic index, expressing the ratio between the inferior member and the bust, it is manifesting in the same direction in both series (boys being more macroskelical than girls, for all classes of ages), although the sexual differences are more pronounced in the present series.

Modifications of the sexual dimorphism are to be met, too, at level of shoulders' width which, for the present series, is - over the whole interval of 11 to 16 years - slightly higher in boys than in girls while, for the 1985 series, the boys recorded average values higher than the girls only at the age of 16.

Transient sexual dimorphism for weight, in absolute value, has a shorter duration in the actual series *versus* the 1985 one, as a result of the fact the first crossing of the curves of weight increase takes place at an older age in the 2003 series, comparatively with the old one (12 years now comparatively with 10 years in the past) while, on the contrary, the second crossing - at an earlier age (15 years with the actual series versus 16 years in the past).

In other words, the girls exceed the boys as to weight, in absolute value, exclusively between 12 and 14 years. The modifications, in time, as to the stature-weight ratio refer to the fact that, while in the actual series the sexual differences are obvious at 11 and 12 years in favour of boys becoming then favourable for girls, in the 1985 series, between 11 and 13 years, the differences are almost negligible and oscillating, becoming obviously in favour of girls only from 14 years on.

As to the sexual dimorphism expressed by the values of members' perimeters, slight modifications are also to be noticed. Thus, the growth curves of flexed arm's perimeter are crossed - in the actual series - two times: once at the age of 12, when the girls exceed the boys, and the second time at 14 years, when the boys exceed the girls.

With the 1985 series, the girls register higher values than the boys up to the age of 15 years, the latter ones exceeding the girls only at 16 years. In the actual series, thigh's perimeter registers average values practically equal until the age of 11 for both sexes, after which the differences increase progressively with age, in the favour of girls. In the 1985 series, the sexual differences in the favour of girls are relatively constant between 11 and 14 years, increasing only after these ages.

## Conclusions

The analysis performed in the present study evidences the fact that the teenagers of the rural medium suffered - in the last 2 decades - a longinilization process.

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Indeed, both 11 - and 16 year old boys and girls are taller, more macroskelical, with a less rectangular trunk and a stature-weight ratio taking inferior or at least equal values comparatively with the 1985 series. The sexual differences are more pregnant, while the urban-rural differences are more attenuated. Girls'puberty is installing earlier, the average pubescent age being now of 13 years and 2 months versus 13 years and 9 months recorded in 1985. These results from here that the acceleration process is still present, being more intenselly manifested at the level of the vertical segments. In this respect, mention should be made here of the fact that evidencing of the acceleration process necessarily requires a comparison between series coming - in at least 80-90% ratios - from the same regions. As a matter of fact, if comparing our results with those of M. Vasilov and coworkers only 4 years ago (in 1999), important differences are to be noticed in favour of our series. As the time considered for the analysis is too short for justifying such differences, we explain them by the structure of sampling. Indeed, while the teen-agers forming our series come from rural communities in the vicinity of the city of Jassy, the ones constituing M Vasilov's series live in collectivities situated at appreciable distances from the above-mentioned urban agglomeration.

Consequently, while in the villages studied by us the influence of urbanization is considerable, in those considered by M. Vasilov such factors are absent on the whole, which explains the fact that the latter series (studied in 1999) is - from a physical view point - inferior not only to the 2003 but also to the 1985 one.

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| Age                      | 11     |      | 12     | ,    | 13     |      | 14     | ŀ    | 15     | 5     | 16     | ō    |
|--------------------------|--------|------|--------|------|--------|------|--------|------|--------|-------|--------|------|
| Dimensions               | М      | δ    | М      | δ    | М      | δ    | М      | δ    | М      | δ     | М      | δ    |
|                          |        |      |        | В    | OYS    |      |        |      |        |       |        |      |
| Weight                   | 34.18  | 6.62 | 39.29  | 7.51 | 43.41  | 8.49 | 49.14  | 8.62 | 53.78  | 10.74 | 56.78  | 7.30 |
| Stature                  | 140.83 | 6.65 | 147.70 | 7.74 | 154.50 | 8.73 | 161.84 | 9.06 | 165.61 | 9.11  | 170.00 | 6.03 |
| Sitting stature (Bust)   | 74.10  | 3.36 | 76.50  | 3.76 | 79.66  | 4.78 | 83.38  | 4.90 | 85.02  | 5.17  | 87.74  | 3.76 |
| Sy-sol                   | 73.00  | 4.34 | 75.08  | 4.61 | 79.06  | 5.19 | 82.92  | 5.03 | 84.71  | 5.25  | 85.64  | 3.50 |
| A-A                      | 30.81  | 1.79 | 31.20  | 2.18 | 32.60  | 2.45 | 34.37  | 2.53 | 35.47  | 2.75  | 36.59  | 1.95 |
| Ic - Ic                  | 22.22  | 1.54 | 22.79  | 1.82 | 23.41  | 1.88 | 24.81  | 2.06 | 25.50  | 2.19  | 25.87  | 1.78 |
| Perim.of the arm in      | 20.97  | 2.29 | 21.65  | 2.28 | 22.58  | 2.70 | 23.91  | 2.34 | 25.06  | 2.97  | 26.03  | 2.56 |
| flexion                  |        |      |        |      |        |      |        |      |        |       |        |      |
| Perim. of the thigh      | 40.71  | 4.13 | 41.68  | 3.95 | 42.64  | 4.60 | 44.95  | 4.03 | 46.34  | 4.66  | 46.87  | 4.03 |
| Indices                  |        |      |        |      |        |      |        |      |        |       |        |      |
| Rohrer ind.              | 11.96  | 1.37 | 12.06  | 1.44 | 11.55  | 1.48 | 11.50  | 1.28 | 11.72  | 1.45  | 11.58  | 1.33 |
| Skelic ind.              | 91.13  | 5.05 | 92.70  | 4.96 | 93.60  | 4.56 | 94.16  | 4.59 | 95.05  | 6.04  | 94.09  | 5.79 |
| Ic-Ic/A-A ind.           | 72.12  | 3.45 | 72.05  | 6.55 | 71.89  | 3.78 | 72.29  | 3.91 | 71.97  | 4.32  | 70.67  | 4.76 |
| A-A/stature ind.         | 21.75  | 0.89 | 21.09  | 1.10 | 21.01  | 0.87 | 21.14  | 0.91 | 21.31  | 1.04  | 21.49  | 0.90 |
| Ic-Ic/stature ind.       | 15.74  | 0.84 | 15.36  | 1.14 | 15.12  | 0.89 | 15.23  | 0.81 | 15.32  | 0.97  | 15.20  | 0.94 |
| Perim. fl.arm/stat. ind. | 14.64  | 1.28 | 14.39  | 1.40 | 14.40  | 1.41 | 14.64  | 1.31 | 14.94  | 1.44  | 15.08  | 1.41 |

Table I Position and dispersion parameters for the main bodily dimensions and ratios at the 2003 rural series

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| Age                       | 11     | -    | 12     | 2    | 13     | -    | . 14   | ŀ    | 15     | 5    | 16     | <u>j</u> |
|---------------------------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|----------|
| Dimensions                | М      | δ    | Μ      | δ    | Μ      | δ    | Μ      | δ    | Μ      | δ    | Μ      | δ        |
| Perim. thigh/stat. ind.   | 28.38  | 2.45 | 27.98  | 2.24 | 27.35  | 2.50 | 27.64  | 2.31 | 27.72  | 2.52 | 27.39  | 2.32     |
| Dimensions                |        |      |        | _    |        | GIR  | LS     |      |        |      |        |          |
| Weight                    | 33.06  | 6.38 | 39.06  | 6.78 | 46.34  | 8.11 | 49.12  | 7.32 | 51.83  | 8.23 | 53.20  | 7.09     |
| Stature                   | 142.15 | 7.47 | 149.43 | 7.24 | 156.02 | 6.57 | 159.16 | 5.53 | 159.80 | 5.35 | 160.06 | 5.96     |
| Sitting stature (Bust)    | 75.07  | 3.60 | 78.01  | 3.80 | 82.18  | 3.68 | 84.12  | 3.35 | 84.67  | 3.15 | 85.12  | 2.76     |
| Sy-sol                    | 72.93  | 4.73 | 76.46  | 4.07 | 79.87  | 4.20 | 81.89  | 3.94 | 81.61  | 3.62 | 80.49  | 4.28     |
| A-A                       | 30.36  | 2.02 | 31.06  | 1.90 | 32.46  | 1.84 | 33.57  | 1.61 | 33.80  | 1.58 | 33.44  | 1.72     |
| Ic - Ic                   | 22.32  | 1.59 | 22.81  | 1.61 | 24.00  | 1.70 | 24.99  | 1.75 | 25.45  | 1.91 | 25.00  | 1.84     |
| Perim.of the arm in       | 20.50  | 2.19 | 21.44  | 2.37 | 22.87  | 2.46 | 23.82  | 2.49 | 24.37  | 2.49 | 24.95  | 2.12     |
| flexion                   |        |      |        |      |        |      |        |      |        |      |        |          |
| Perim. of the thigh       | 40.70  | 4.15 | 43.22  | 4.55 | 47.08  | 5.04 | 48.35  | 4.35 | 50.27  | 4.63 | 51.45  | 3.83     |
| Rohrer ind.               | 11.91  | 1.23 | 11.63  | 1.68 | 12.08  | 1.45 | 12.14  | 1.59 | 12.61  | 1.64 | 12.89  | 1.61     |
| Skelic ind.               | 90.13  | 4.75 | 91.56  | 4.89 | 90.16  | 4.49 | 89.31  | 5.24 | 88.73  | 4.77 | 88.21  | 4.81     |
| Ic-Ic/A-A ind.            | 73.58  | 3.80 | 73.56  | 4.03 | 73.88  | 4.07 | 74.52  | 4.38 | 75.13  | 4.75 | 74.70  | 5.42     |
| A-A/stature ind.          | 21.33  | 1.00 | 20.60  | 1.05 | 20.66  | 0.91 | 21.00  | 0.91 | 21.09  | 0.84 | 20.89  | 1.20     |
| Ic-Ic/stature ind.        | 15.70  | 0.88 | 15.22  | 1.00 | 15.31  | 0.86 | 15.64  | 1.03 | 15.80  | 1.00 | 15.52  | 1.12     |
| Perim. arm fl./stat. ind. | 14.24  | 1.23 | 14.23  | 1.63 | 14.55  | 1.47 | 14.83  | 1.63 | 15.28  | 1.39 | 15.02  | 1.43     |
| Perim. thigh/stat. ind.   | 28.41  | 2.42 | 28.69  | 2.76 | 29.93  | 2.82 | 30.16  | 2.75 | 31.30  | 2.61 | 32.05  | 2.47     |

| Age                         | 11     |      | 12     | 2    | 13     | 5    | 14     | ŀ    | 15     | 5    | 16     | 5    |
|-----------------------------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|
| Dimensions                  | М      | δ    | М      | δ    | М      | δ    | М      | δ    | Μ      | δ    | М      | δ    |
|                             |        |      |        | BC   | OYS    |      |        |      |        |      |        |      |
| Weight                      | 31.90  | 4.33 | 35.38  | 5.48 | 38.89  | 5.57 | 44.87  | 7.75 | 48.45  | 9.03 | 54.92  | 8.08 |
| Stature                     | 139.40 | 6.05 | 145.09 | 7.25 | 148.78 | 7.36 | 155.85 | 8.92 | 160.36 | 9.19 | 165.84 | 7.29 |
| Sitting stature             | 73.19  | 2.96 | 75.32  | 3.53 | 77.30  | 3.58 | 80.75  | 4.57 | 83.43  | 5.34 | 86.80  | 4.27 |
| Sy-sol                      | 66.21  | 4.11 | 69.77  | 5.11 | 71.48  | 4.74 | 75.10  | 5.27 | 76.92  | 4.63 | 79.03  | 4.36 |
| A-A                         | 29.85  | 1.48 | 30.81  | 1.69 | 31.81  | 1.82 | 33.20  | 2.22 | 34.55  | 2.57 | 36.20  | 2.28 |
| Ic - Ic                     | 22.06  | 1.29 | 22.84  | 1.52 | 23.72  | 1.45 | 24.68  | 1.78 | 25.46  | 1.88 | 26.68  | 1.76 |
| Perim.of the arm in flexion | 19.95  | 1.64 | 20.78  | 1.76 | 21.74  | 1.65 | 23.22  | 2.13 | 24.07  | 2.64 | 25.44  | 2.42 |
| Perim. of the thigh         | 37.85  | 2.63 | 39.16  | 2.91 | 40.80  | 2.91 | 42.70  | 3.37 | 43.59  | 4.02 | 45.48  | 4.19 |
| Rohrer ind.                 | 11.74  | 1.00 | 11.53  | 0.83 | 11.78  | 1.01 | 11.78  | 1.00 | 11.63  | 0.80 | 12.01  | 1.29 |
| Skelic ind.                 | 90.51  | 5.07 | 92.71  | 6.48 | 92.52  | 5.30 | 93.07  | 5.19 | 92.32  | 4.42 | 91.17  | 5.14 |
| Ic-Ic/A-A ind.              | 73.97  | 3.37 | 74.20  | 3.90 | 74.63  | 3.36 | 74.41  | 3.66 | 73.77  | 3.59 | 73.77  | 3.41 |
| A-A/stature ind.            | 21.42  | 0.80 | 21.24  | 0.79 | 21.39  | 0.75 | 21.31  | 0.87 | 21.54  | 0.81 | 21.83  | 0.97 |
| Ic-Ic/stature ind.          | 15.84  | 0.73 | 15.75  | 0.80 | 15.95  | 0.66 | 15.84  | 0.66 | 15.87  | 0.68 | 16.08  | 0.68 |
| Perim. arm fl./stat. ind.   | 14.32  | 1.06 | 14.32  | 0.89 | 14.63  | 1.00 | 14.90  | 1.05 | 14.99  | 1.07 | 15.34  | 1.31 |
| Perim. thigh/stat. ind.     | 27.20  | 1.50 | 27.00  | 1.60 | 27.40  | 1.70 | 27.40  | 1.60 | 27.20  | 1.80 | 27.40  | 2.20 |

Table II Position and dispersion parameters for the main bodily dimensions and ratios at the 1985 rural series

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| Age                         | 11     |      | 12     | ,    | 13     |      | 14     | ł    | 15     | 5    | 16     | 5    |
|-----------------------------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|
| Dimensions                  | M      | δ    | М      | δ    | М      | δ    | М      | δ    | М      | δ    | М      | δ    |
| Dimensions                  |        |      |        |      |        | GIR  | RLS    |      |        |      |        |      |
| Weight                      | 32.88  | 6.13 | 37.04  | 6.95 | 40.23  | 6.20 | 46.59  | 6.73 | 51.53  | 5.85 | 53.01  | 2.36 |
| Stature                     | 140.84 | 7.50 | 146.53 | 7.41 | 151.33 | 6.49 | 155.48 | 5.30 | 158.08 | 4.80 | 158.70 | 6.02 |
| Sitting stature             | 74.25  | 3.54 | 77.06  | 4.22 | 79.62  | 3.61 | 82.66  | 2.98 | 84.73  | 2.74 | 84.93  | 2.59 |
| Sy-sol                      | 66.58  | 4.67 | 69.47  | 4.37 | 71.71  | 4.02 | 72.82  | 3.42 | 73.34  | 3.47 | 73.77  | 4.35 |
| A-A                         | 30.30  | 1.78 | 31.59  | 1.77 | 32.76  | 1.84 | 33.58  | 1.97 | 34.71  | 1.61 | 34.86  | 1.82 |
| Ic - Ic                     | 22.99  | 1.72 | 23.99  | 1.72 | 25.07  | 1.67 | 26.07  | 1.47 | 27.01  | 1.30 | 27.52  | 1.87 |
| Perim.of the arm in flexion | 20.41  | 2.08 | 21.38  | 2.11 | 22.19  | 2.06 | 23.57  | 1.93 | 25.26  | 1.86 | 25.67  | 2.33 |
| Perim. of the thigh         | 39.79  | 3.58 | 41.99  | 4.36 | 43.46  | 3.77 | 46.46  | 4.16 | 49.37  | 3.39 | 49.96  | 4.59 |
| Indices                     |        |      |        |      |        |      |        |      |        |      |        |      |
| Rohrer ind.                 | 11.68  | 1.11 | 11.69  | 1.29 | 11.56  | 1.23 | 12.37  | 1.46 | 13.03  | 1.16 | 13.26  | 1.82 |
| Skelic ind.                 | 89.68  | 4.70 | 90.27  | 5.51 | 90.15  | 4.90 | 88.16  | 4.36 | 86.63  | 4.56 | 86.85  | 4.52 |
| Ic-Ic/A-A ind.              | 75.90  | 3.75 | 75.97  | 3.66 | 76.57  | 4.12 | 77.76  | 4.67 | 77.93  | 4.40 | 79.10  | 5.88 |
| A-A/stature ind.            | 21.52  | 0.75 | 21.57  | 0.82 | 21.66  | 0.84 | 21.61  | 1.13 | 21.96  | 0.93 | 21.98  | 1.13 |
| Ic-Ic/stature ind.          | 16.32  | 0.75 | 16.37  | 0.75 | 16.56  | 0.79 | 16.77  | 0.74 | 17.09  | 0.73 | 17.35  | 1.07 |
| Perim. arm fl./stat. ind.   | 14.49  | 1.20 | 14.60  | 1.25 | 14.67  | 1.22 | 15.16  | 1.19 | 15.99  | 1.19 | 16.19  | 1.50 |
| Perim. thigh/stat. ind.     | 28.20  | 2.00 | 28.60  | 2.30 | 28.70  | 2.20 | 29.90  | 2.50 | 31.20  | 2.00 | 31.50  | 2.90 |

| Age |       | 2003   | series |       | 1985 series |        |     |        |  |  |  |
|-----|-------|--------|--------|-------|-------------|--------|-----|--------|--|--|--|
|     | Non - | pubery | Put    | bery  | Non -       | pubery | Put | bery   |  |  |  |
|     | N     | %      | Ν      | %     | Ν           | %      | N   | %      |  |  |  |
| 11  | 83    | 95.40  | 4      | 4.60  | 122         | 99.18  | 1   | 0.81   |  |  |  |
| 12  | 76    | 85.39  | 13     | 14.61 | 115         | 91.27  | 11  | 8.73   |  |  |  |
| 13  | 73    | 47.71  | 80     | 52.29 | 79          | 78.21  | 22  | 21.78  |  |  |  |
| 14  | 26    | 14.62  | 145    | 85.38 | 39          | 38.23  | 63  | 61.76  |  |  |  |
| 15  | 14    | 9.40   | 135    | 90.60 | 4           | 4.93   | 77  | 95.06  |  |  |  |
| 16  | 1     | 1.35   | 73     | 98.65 | -           | -      | 73  | 100.00 |  |  |  |

Table III Percent distribution of pubery and non pubery girls, on classes of age, at the 2003 series, versus the 1985 one

Table IV Percent distribution of pubery girls as a function of the age at menarche

| Age    | 10     | 11    | 12     | 13     | 14     | 15     | 16    |
|--------|--------|-------|--------|--------|--------|--------|-------|
| Series | 3.10 % | 9.09% | 25.72% | 40.35% | 18.85% | 2.44%  | 0.49% |
| 2003   |        |       |        |        |        |        |       |
| 1985   | 1.21%  | 2.02% | 15.78% | 34.81% | 31.17% | 12.95% | 2.02% |

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