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INFLUENCE OF SPORTS TRAINING ONTO MENARCHE AGE OF WOMEN STUDENTS AT THE ACADEMY OF PHYSICAL EDUCATION AND SPORT IN GDAŃSK, POLAND

ABSTRACT: The aim of the study is to determine the menarche age of women training and not training different sports disciplines and to show the relationship between proportions of body build and menarche age.

KEY WORDS: Sports training – Menarche age – Maturation – Proportions of body build – Poland

INTRODUCTION

Sports training is one of many environmental factors of development. It is generally accepted that training loads have an adverse effect upon the developmental level of morphological traits and cause retardation of maturation.

Individuals with early maturation obtain better results of physical activity for the sake of more profitable body build, i. e. greater body height and weight (Tanner 1962). They are eliminated by individuals with late maturation and more profitable body build with age. It is proved by a comparison of women competitors with delayed maturation with their counterparts whose maturation took place earlier (Malina 1983, Laska-Mierzejewska 1993). The delay is higher, the higher sports level is.

OBJECTIVE

The aim of the study is to determine the menarche age of women training and not training different sports disciplines

and to show the relationship between proportions of body build and menarche age.

MATERIAL AND METHODS

Research materials were the results of investigations of 67 second year women students aged 21 from the Academy of Physical Education and Sport in Gdańsk, Poland.

Body height and weight were analysed. The material also consisted of information collected from questionnaires about the menarche age and sports training. The Rohrer's index was used to describe the body build type. The Body Mass Index was calculated. Basic statistical calculation methods were used in the paper (Guilford 1960). Average differences were analysed by Mollison's rate.

RESULTS

The results of research are presented in *Figures 1–15*.

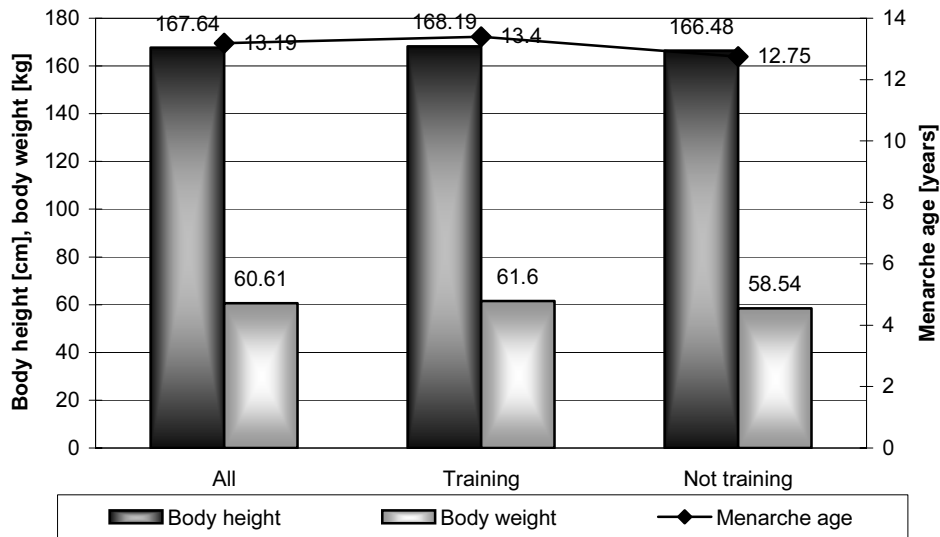


FIGURE 1. Body height, weight and age at menarche of second year women students training and not training sports from the Academy of Physical Education and Sport in Gdańsk, Poland.

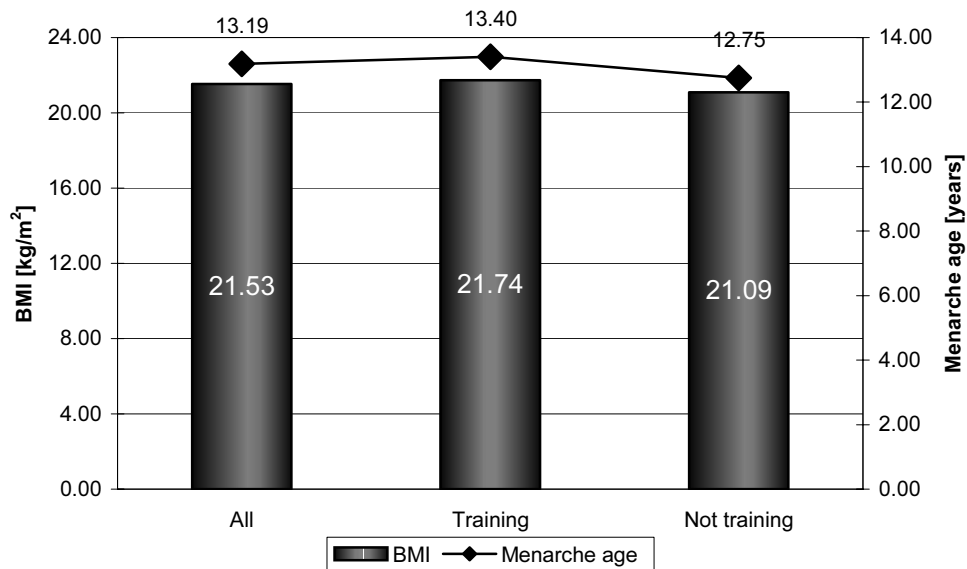


FIGURE 2. Body Mass Index and menarche age of women.



FIGURE 3. The Rohrer's index and menarche age of women students.

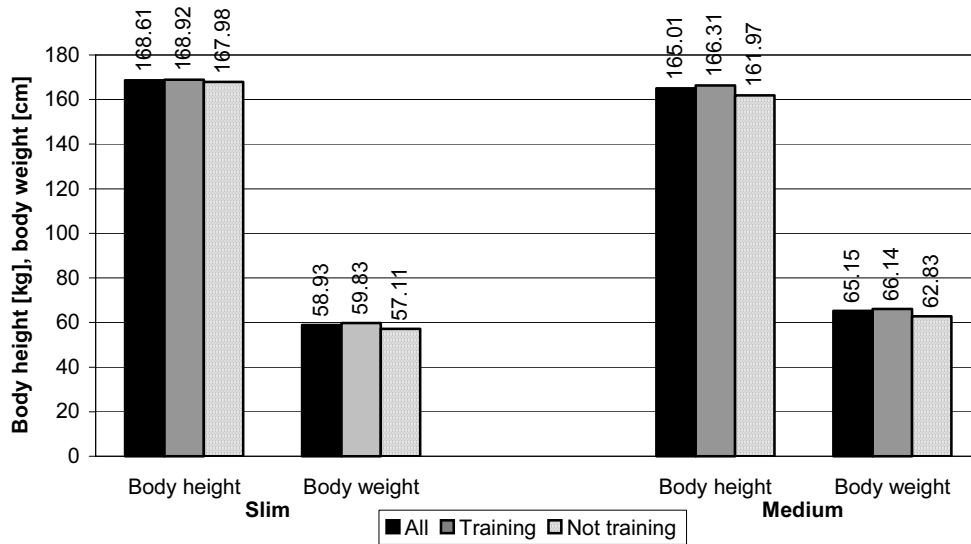


FIGURE 4. Body height and weight of women training and not training sports disciplines in terms of Rohrer's index.

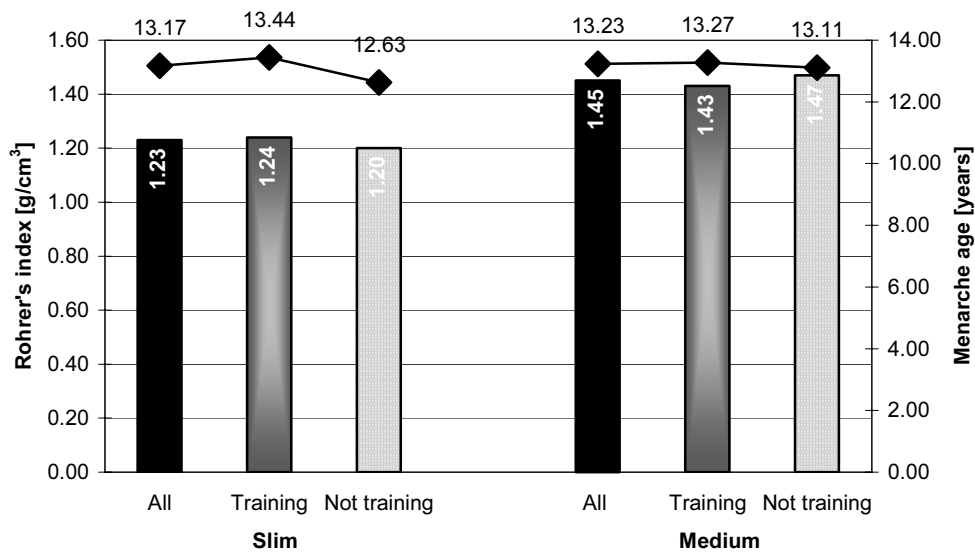


FIGURE 5. The Rohrer's index and menarche age of slim and medium body women training and not training sports disciplines.

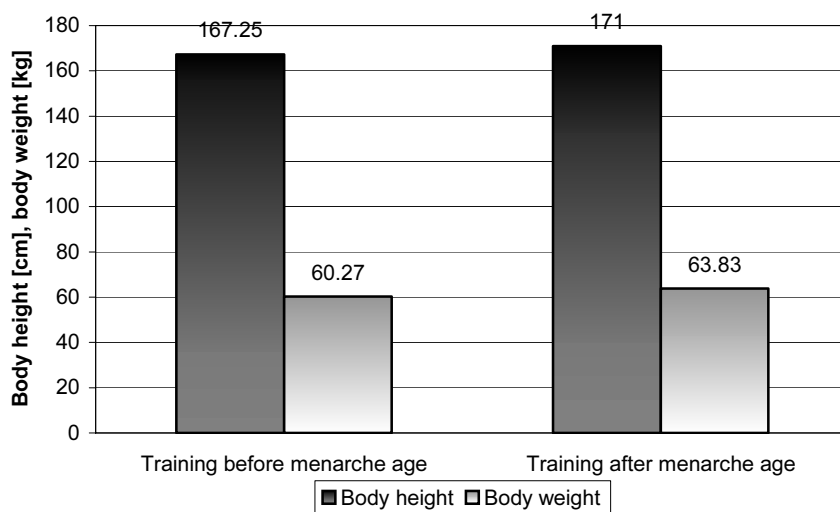


FIGURE 6. Body height and weight of women taking up training before and after menarche age.

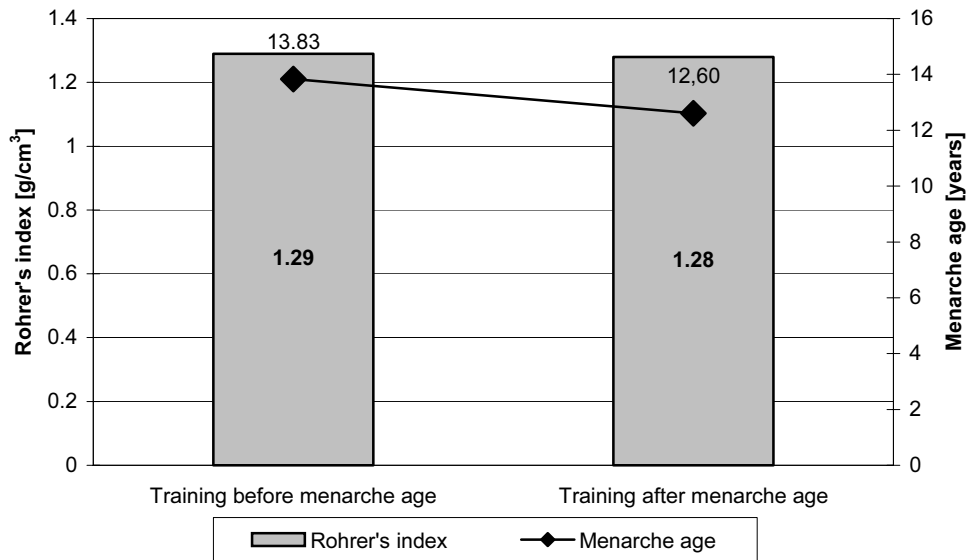


FIGURE 7. The Rohrer's index and menarche age of women taking up training before and after sexual maturity.

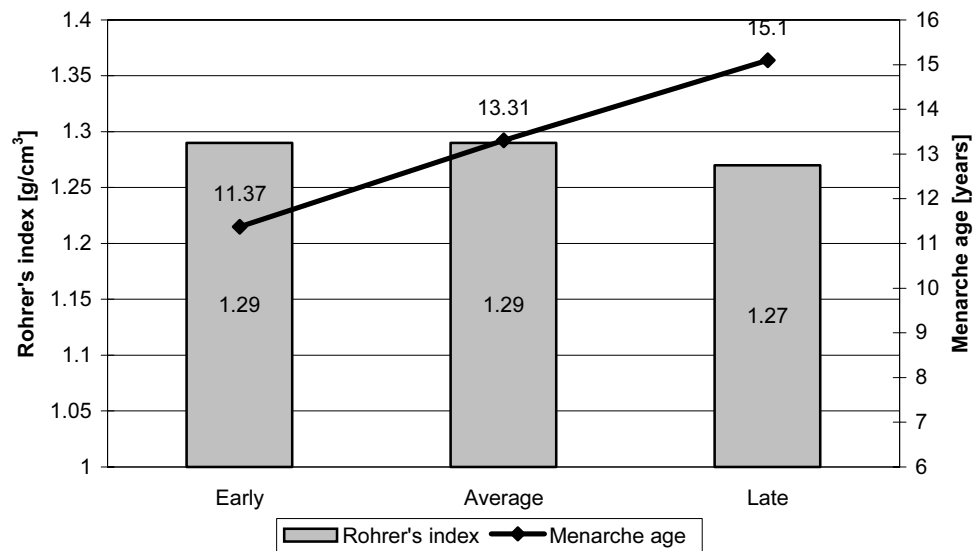


FIGURE 8. The Rohrer's index and menarche age of all women students of early, average and late age of puberty.

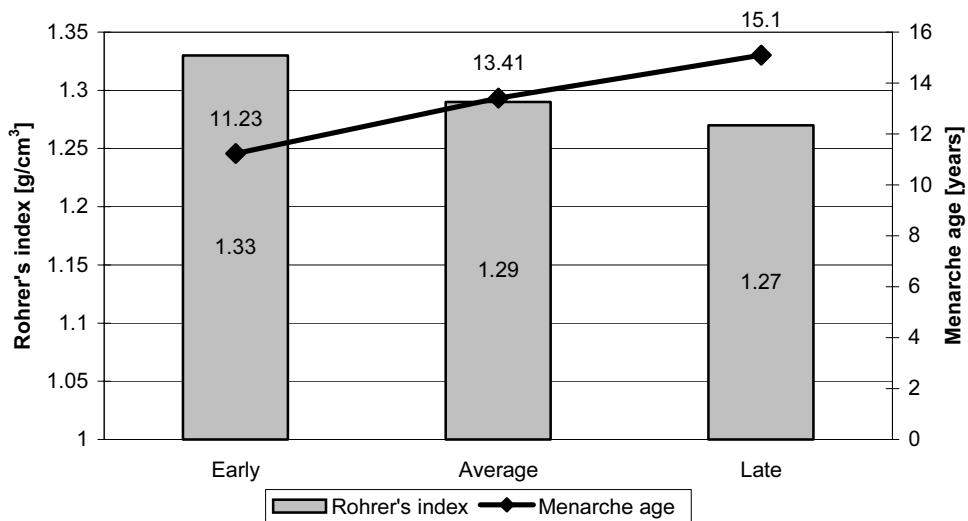


FIGURE 9. The Rohrer's index and menarche age of women training sports disciplines with early, average and late sexual maturation.

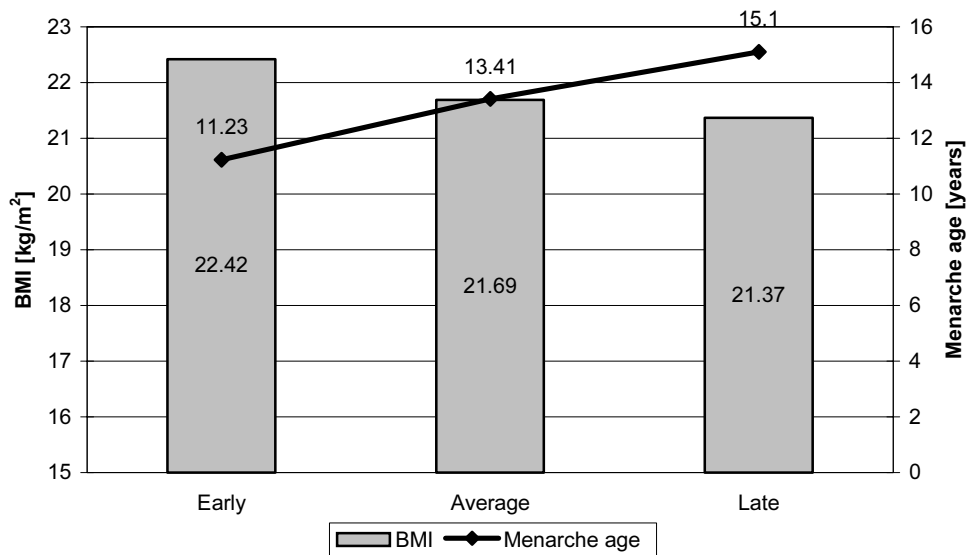


FIGURE 10. Body Mass Index and menarche age of women training sports disciplines with early, average and late sexual maturation.

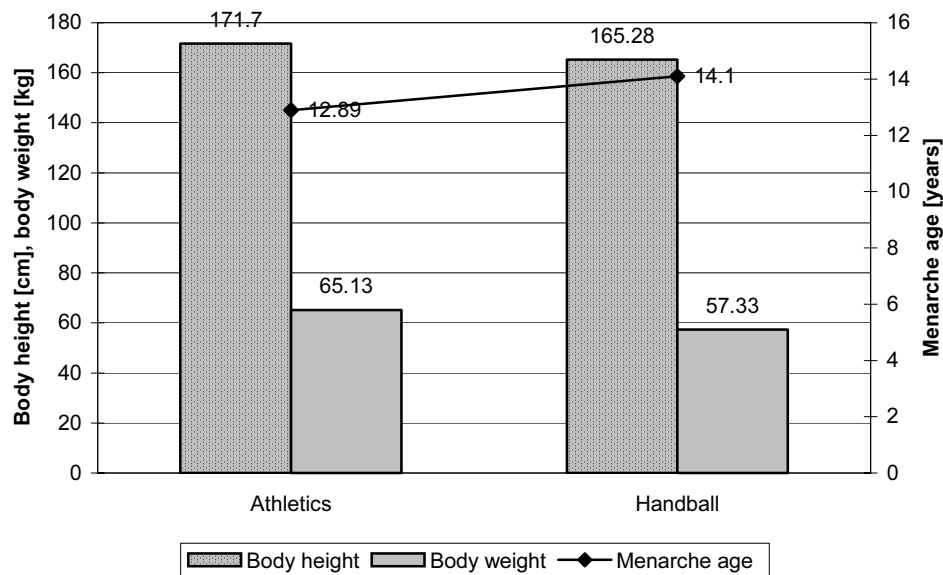


FIGURE 11. Body height and weight and age at menarche of female athletes and handball players.

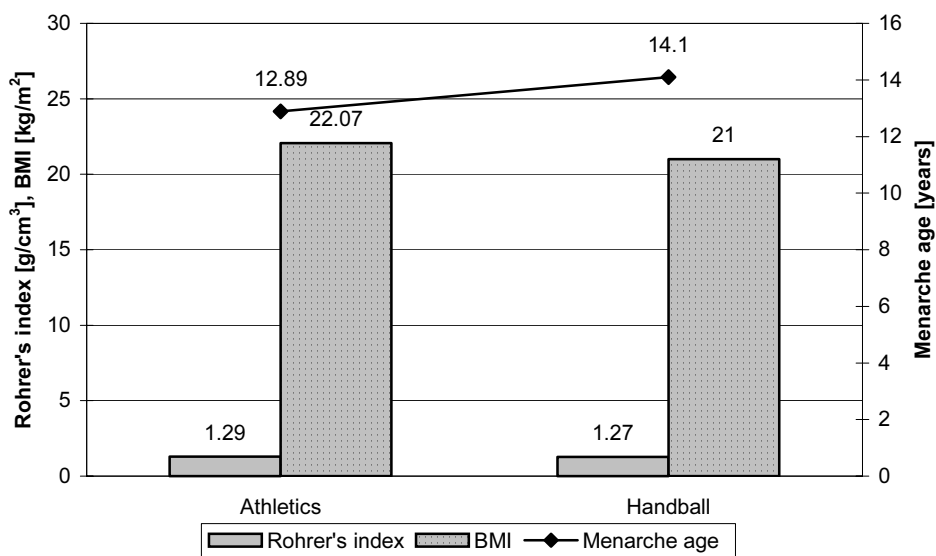


FIGURE 12. The Rohrer's index, BMI and menarche age of female athletes and handball players.

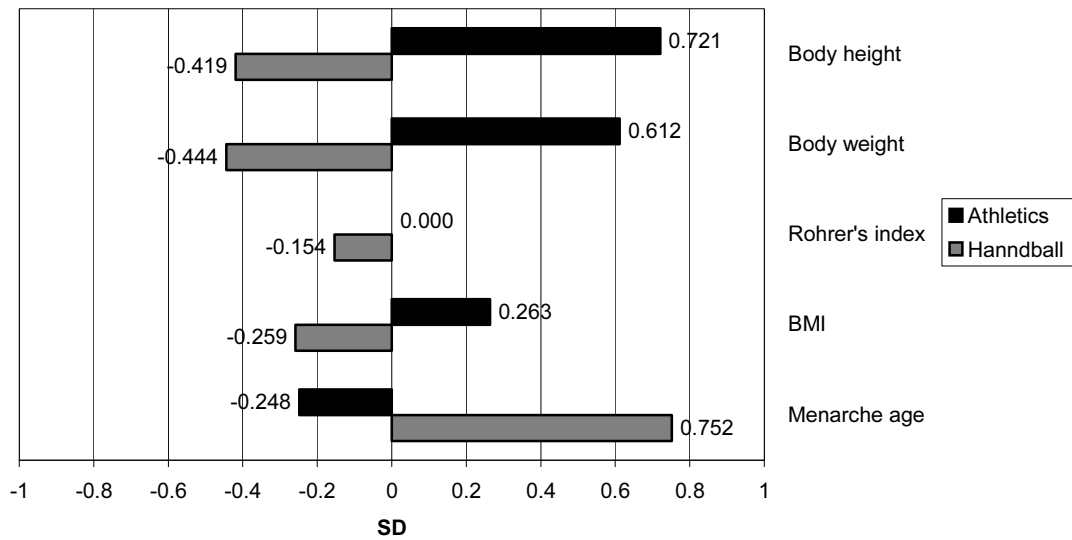


FIGURE 13. The Mollison's rate for female athletes and handball players.

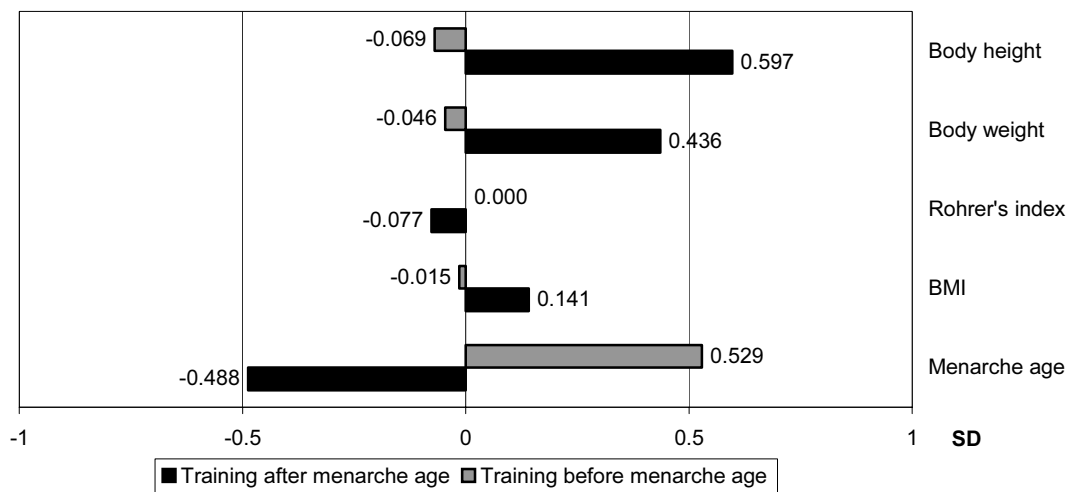


FIGURE 14. The Mollison's rate for women taking up training before and after menarche age.

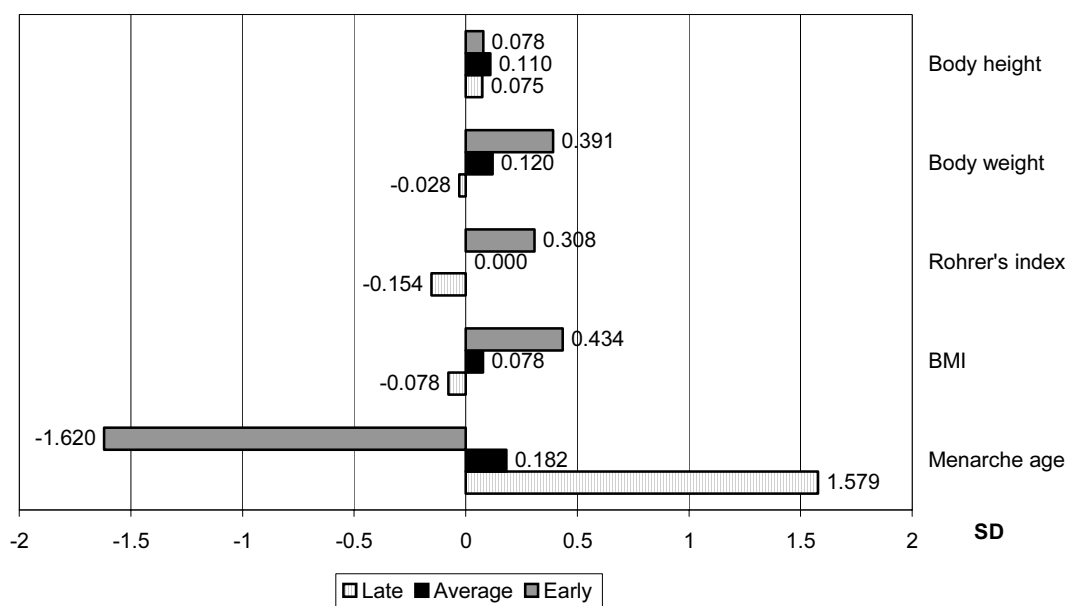


FIGURE 15. The Mollison's rate for women training sports disciplines with early, average and late sexual maturation.

1. Training students have higher menarche age, height and weight than their physically inactive counterparts (*Figure 1*).
2. The Rohrer's index and BMI in training and not training females are similar – slightly but insignificantly higher in the training group (*Figures 2, 3*).
3. Medium build training students (*Figure 4*) have lower Rohrer's index with higher menarche age compared with their not training counterparts. In the group of slim students, such a dependence has not been observed (*Figure 5*).
4. Body height and weight values of students who begun sports training before menarche are lower than those who started training after maturation (*Figures 6, 7, 14*).
5. Students with late maturation have more slender figures (*Figure 8*). The same relationship was observed in training group of students (*Figures 9, 10, 15*).
6. Comparing students practising athletics and handball, the following was observed: the former mature earlier, have higher weight and height and the Rohrer's and BMI indices than the latter (*Figures 11, 12, 13*).

CONCLUSION

The obtained records are primarily addressed to the practitioners and theorists of sport. They indicate that the rate of maturation should be an important criterion in selection of sport.

REFERENCES

- GUILFORD J. P., 1960: *Podstawowe metody statystyczne w psychologii i pedagogice*. PWN, Warszawa.
- ŁASKA-MIERZEJEWSKA T., 1993: The relationship between the maturation rate and the ponderal index and its role in sport's selection. In: Gładkowska-Rzeczycka J. (Ed.): *Człowiek w czasie i przestrzeni*. Pp. 140–144. Wydawnictwo Gdańskie, Gdańsk.
- MALINA R. M., 1983: Menarche in athletes, a synthesis and hypothesis. *An. Hum. Biol.* 10,1: 1–24.
- TANNER J. M., 1962: *Growth at adolescence*. Blackwell Scientific Publ., Oxford.

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