

ANALYSIS OF SPORTS RESULTS THROUGH SEXUAL DIMORPHISM IN WEIGHTLIFTING

(Research note)

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Abstract

Weightlifting has appeared as one of the most dynamic sports in the world recently. The growth of world records is amazing and weightlifter achievements prove the unlimited development of the human body. The report aimed to determine the functional and adapted abilities for the female contingent in weight lifting sports analyze results through sexual dimorphism. The aim of our study was to determine the differences of sports results through sexual dimorphism by age groups with registered world records until 2014. The object of the study are the registered world records in weightlifting until 2014. by age groups and sex, using system-structural analysis of protocols of the registered records IWF until 2014. The World records are compared by age and sex, and by different competitive exercises at the competition. The obtained results suggest on a differences regarded sexual dimorphism. Largest differences are noted in strength and speed-strength sports. Differences are noted between the strength and the speed strength abilities regarded the age as well as regarded the sex in the same age. On the basis of the registered world records we found that the best achievements in various competitive categories are in the young age, when the power component is more characteristic to the male contingent as well as the strength component - in the female contingent. In general, a research on this complex and multi engine quality as a force in women's heavy athletics is insufficient. Furthermore, the knowledge about the adaptation characteristics of the female body to intense the extreme training loads are also inadequate and the knowledge of the body's reserves of ordinary women are not relevant for assessing the functionality of women athletes demonstrating high sports results.

Keywords: *male & female weightlifters, world records, percentages*

INTRODUCTION

The involvement of women in weightlifting competitive practice since 1987. has had an important role. Natural development of human power abilities marks significant differences in the ontogenesis. It is known that there are many significant differences defined by the gender, anthropometric parameters, and the level of development of motor skills. They are identified both in terms of their values, dynamics, and various muscle groups. It was found that the men have more absolute power than the women (Lukanov, & Flameev (Лукянов & Фаламеев), 1973; Wirhed, 1985; Crapiet & Craplet, 1986. Soha (Соха), 2002), but this difference relative to every muscle mass unit is small to negligible (Krestovnikov (Крестовников), 1961) and in some cases (for separate muscle groups), women predominate the men Wirhed, 1985). Particularly important for determining the functional and adaptive abilities for women weightlifters is the analysis of sports results through the sexual dimorphism.

METHODS

The aim of our study was to determine the differences of sports results through the sexual dimorphism by age groups with registered world records until 2014.

In order to achieve the objective we have to do the following tasks:

- Analysis of the literature on sports results from a position of sexual dimorphism:
- Finding the differences in the competition results in the clean and the jerk by age and the sex,
- Finding the difference in the ratio between competing groups—in the snatch and the clean jerk.

The object of the study are the registered world records in weightlifting until the 2014. by age groups and sex. System-structural analysis of protocols of the registered records IWF until 2014. is made. The World records are compared by age and sex, and by different competitive exercises at the competition.

RESULTS AND DISCUSSION

The analysis of the sports results through sexual dimorphism given in the literature suggests that in different sports, they are not the same: the largest differences are noted in the strength and speed-strength sports. In literature, heavy athletics is the sport in which are predominate the dimorphic differences in sports performance (Panayotov (Панайотов), 2007. In swimming sports performance for men are over 10% and in the weightlifting they range from 23.4% to 34.4% in different weight

categories of registered world records until 1997.

The analysis of dimorphic differences in weightlifting until 2000. shows that these differences are (on average for all weight categories) above 30%. In the snatch - 32.17%, in the clean jerk - 30.38% and in the game - 31.37%. Registered for the period from 1998. to 2000. the world records for women - weightlifters increase on average by 7.1% and for men - weightlifters only by 0.92% (Soha (Coxa), 1999).

In sports where the force is predominantly used, the female contingent show high adaptation capacities. This is proved by the comparative analysis of world records in weightlifting - men / women, junior men / junior women and youth men / youth women (Figure 1.).

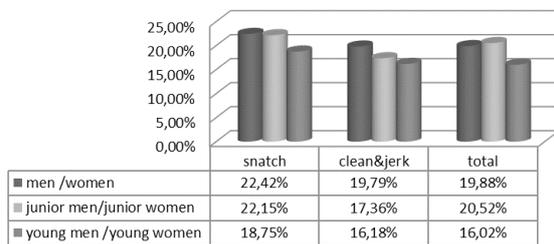


Figure 1. Differences in sports performances by age-sex groups

Collected data until 2014. show the differences between male and female contingent at about 20% which is significantly different in the three age groups. Average differences between men and women are: in the snatch - (22.42%) with a reduction for the period since 2000. with 9.75% in the clean jerk - (19.79%) with 10.59% and in competition - (19.88%). Boys and girls in the snatch are 22.15%, 17.36% of them in the clean jerk and in competition - 20.52%. However, in the category young men/young women, they are below 19%. In the snatch - 18.75%, 16.18% in the clean jerk the category young men/young women demonstrate better strength abilities than in competition 16.02 %.

Motor abilities of young men/young women and especially junior men/junior women do not differ from the adult weightlifters. According to some authors (Zaciorski (Зациорски), 1970; Lukjanov & Falmeev (Лукиянов & Фаламеев), 1973; Abadjiev & Furnadjiev (Абаджиев & Фурнаджиев), 1986; Gjurkov (Гюрков), 1992.), the absolute values of their results are lower because of logical reasons: smaller sports experience, strength power abilities, etc., which is confirmed by our study.

In all age groups, we found greater differences in competitive snatch, which requires greater speed-strength and coordination abilities. In the competitive clean jerk these differences are smaller, which supports some authors point of view that the relatively strongest in the female contingent appear lower limbs (hip zone may support heavy loads - the center of gravity is positioned low, which creates an advantage in the support of

the lower limbs), while the worst are the upper limbs and long back muscles (Gjurkov (Гюрков), 1992; Bojanov (Боянов), 1994).

Collected data related to differences between women and girls in Figure 2. show that juniors regarding to individual competitive exercises demonstrate improved strength abilities, i.e., the difference in competitive snatch is smaller.

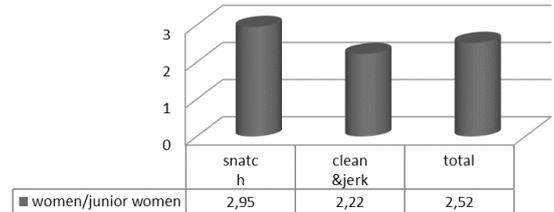


Figure 2. Differences between women and junior women

Meanwhile, the differences (Figure 3.) in the male contingent suggest that regarding to individual competitive exercises juniors show better speed-strength and coordination abilities, while in power they are not sufficiently adapted.

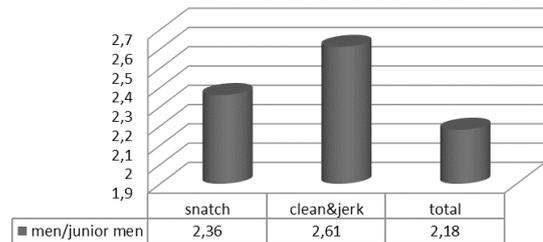


Figure 3. Differences between men and junior men

The more significant was the power differentiation in youth age more obvious is the tendency to convergence of achievements during the adulthood. On the basis of the registered world records we found that the best achievements in various competitive categories are in the young age, when the power component is more characteristic to the male contingent and strength component - in the female contingent.

According to data collected by analysis of the literature, some authors (Bojanov & Yankova (Боянов & Янкова), 2009) found that the age for women weightlifters is not related to the value of sport and technical results, while for the junior women the age is related in moderate and weak level to the sport an technical results. In the male contingent the dependencies are similar (Bojanov & Delcev (Боянов & Делчев) 1992; Bojanov (Боянов), 1995) which supports some of the authors' point of view (Bojanov & Delcev (Боянов & Делчев) 1992; Bojanov (Боянов), 1995; Bojanov & Yankova (Боянов & Янкова), 2009) that the duration of sports experience affects

the sports performance, not the age.

Differences on average between competitive exercises snatch and clean jerk by age groups and sex are illustrated on the Figure 4.

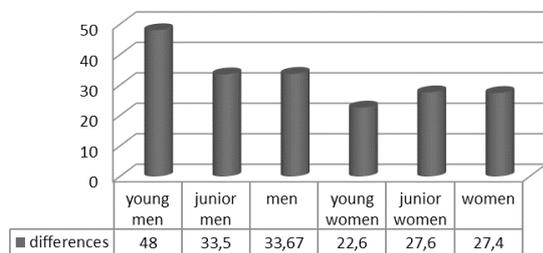


Figure 4. Differences in the ratio of competitive exercises

Average optimum ratio between the competitive exercises is about 25 kg. (Gjurkov (Гюрков), 1992). The data show that the female contingent differences are minimal, respectively: young women - 26.60 kg., women - 27.40 kg. and junior women - 27.60 kg. In the male contingent these differences are larger: junior men - 33.50 kg., men - 33.67 kg. and young men - 48.00 kg. These larger differences especially in the male contingent are due to individual weightlifters "phenomena" who have exceptional physical abilities, as well as that these records are not improved to the present day.

CONCLUSION

The analysis between male and female contingent in different age groups reveals a variation of about 20% lower in the female contingent, which differ significantly in the three age groups. Introduction of early specialization and its further deepening in the current circumstances is a natural and positive development in weightlifting. There is a gradual tendency towards convergence of the average equality.

Current level of knowledge does not allow determining which factors are related to these large differences in sports performance in weightlifting. Many scientists points to genetic factors. We assume that the main reason is insufficient research on speed-strength training for women. That plays an important role of the sports training which is confirmed by the high pace of growth of the sport mastery in women. Increasing the strength of the muscles in women equal to the increase in strength in men can be attributed to the improvement of the reflex regulation inside and intramuscular coordination and integration of the functions of the motor unit.

In general, researches on this complex and multi engine quality as a force in women's heavy athletics are insufficient. Furthermore, the knowledge about adaptation characteristics of the female body to intense extreme training loads are also inadequate and knowledge of the body's reserves of ordinary women are not

relevant for assessing the functionality of women athletes demonstrating high sports results.

REFERENCES

- Абаджиев, И., & Фурнаджиев, В. (1986). *Подготовка на тежкоатлета* [Preparation of weightlifters. In Bulgarian.] София: Медицина и Физкултура.
- Боянов, В. (1995). Опит за оптимизиране на индивидуалната подготовка на тежкоатлети – юноши [An attempt for optimizing the individual preparation of weightlifters - adolescents. In Bulgarian.] *Въпроси на физическата култура*, (12), 24-30.
- Боянов, В. (1994). *Културизъм* [Bodybuilding. In Bulgarian.] София: Дикта, АД.
- Боянов, В., & Делчев, Т. (1992) Опит за оптимизиране на индивидуалната подготовка на тежкоатлети [Aattempt for optimizing the individual preparation of weightlifters. In Bulgarian.] *Въпроси на физическата култура*, (2-3), 98-103.
- Боянов, В., & Янкова, Н. (2009). Сравнителен анализ и различия в индивидуалната подготовка на кадетки, девойки и жени-тежкоатлетки [Comparative Analysis and differences in the individual training of cadets, girls and female weightlifters. In Bulgarian.] *Спорт и наука*, 53(2), 19-23..
- Boyanov, V. (2014). Comparative analysis of the relationships between competitive and basic auxiliary exercises by men, juniors and cadets weightlifters. *Research in Kinesiology*, 42(1), 9-14.
- Evgeniev Obreshkov, D., & Boyanov, V. (2014). Optimizing the individual training of men power lifters. *Research in Kinesiology*, 42(1), 51-54.
- Гюрков, Д. (1992). *Тежка атлетика в детска и юношеска възраст* [Weightlifting in childhood and adolescence. In Bulgarian.] София: Медицина и Физкултура.
- Крестовников, А. Н. (1961). *Очерки по физиология физических упражнений* [Essays in physiology of physical exercises. In Russian.] Москва: ФиС.
- Лукиянов, М., & Фаламеев, А. (1973). *Вдигане на тежести за юноши*. [Weightlifting for adolescents. In Bulgarian.] София: Медицина и Физкултура.
- Панайотов, В. (2007). Сравнение на максималната и взривната сила на долните крайници на състезатели по вдигане на тежести, силов трибой и културизъм в зависимост от телесния състав [Differences between powerlifters, weightlifters and bodybuilders in maximal and explosive force abilities of lower limbs depending on the body composition. In Bulgarian.] *Спорт и Наука* 51(Приложение към брой 1), 74-81.
- Соха, С. (1999). Половой диморфизм в теории и практике современного спорта [Gender dimorphism in contemporary sports theory and practice. In Russian] *Теория и практика физической культуры*, (6), 4-11.
- Wirhed, R. (1985). *Anatomie et science du geste sportif* [Anatomy and science of sports movement. In French.] Paris: Edition Vigot,.
- Зацнорски, В.М. (1970). *Физически качества на спортиста* [Athlete's physical abilities. In Bulgarian.] София: Медицина и Физкултура.
- Craplet, C., & Craplet, P. (1986). *Physiologie et activiti sportive*. [Physiology and sports activity. In French.] Paris: Vigot.

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