

Schwarz sind. Eines der Hauptmerkmale sind auch Dehromation und vorzeitiger Laubfall [2, 3].

Die Einführung natürlicher Entomophagen und Krankheitserreger von *C. arcuata* können die wirksamste Schutzmethode zu sein, da die chemische Behandlung keinen nachhaltigen Schutz bietet: die können ernährt sich nicht nur in Eichenblätter, sondern auch in andere Pflanzen (z.B. *Malus sylvestris*, *Ulmus minor*, *Acer platanoides*, *Castanea sativa* und andere). So können die Netzwanze in angrenzenden Gebieten leben, die nicht chemische Behandlung werden, und so können sie Eichenwälder wieder bevölkern. Es ist in den kommenden Jahren möglich, der Massentrocknung von Eichen in ganz südlichen Teil unseres Landes beginnt, wenn keine wirksamen Schutzmaßnahmen gefunden werden.

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### FACTORS AFFECTING THE SPORT PERFORMANCE OF HORSES OF THE RUSSIAN RIDING, TRAKENEN AND HANOVER HORSE BREEDS

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**Abstract:** This work is devoted to the determination and comparison of the features of measurements of articles and exterior indicators and the degree of their

*influence on the athletic performance of horses of the Russian riding, Trakenen and Hanover breeds.*

**Keywords:** *horse, sport performance, russian riding breed, trakenen breed, hanover breed.*

A horse is an animal that has been accompanying man for centuries. They were horses that made an invaluable contribution to the development of civilization. Although in the modern world horses have been replaced by cars - interest in horses is only growing.

The sports direction in horse breeding is currently the most developing and widespread industry. A sports horse is strong and hardy, able to perform complex elements and overcome high obstacles.

The decisive feature in rearing horses for sport is performance. At the same time, there are certain desirable requirements for the exterior of the horse, which can have a significant impact on the duration and effectiveness of use. That is why raising a good athletic horse is a very expensive, long and laborious process. In order for the efforts to bring results, it is necessary to initially choose promising horses. Such a horse can be obtained after a thorough assessment and selection of offspring.

Relevance of the topic. Every year, the requirements for sports horses are increasing, and the competition is becoming more complicated. All this dictates a significant improvement in sports horses. The Russian horse breed of horses is one of the most widespread breed of horses in Russia, and the Trakenen and Hanover breeds are in the world. Currently, the selection of sports horses is carried out mainly on the exterior and origin. Studying the relationship between the main exterior indicators and body indices with indicators of sports performance can provide a better selection of horses, thereby improving the breed and increasing their distribution around the world. In this regard, this work is relevant.

The aim of this work is to determine the degree of influence of measurements of articles, exterior indicators and other indicators on athletic performance in horses of Russian saddle, Trakenen and Hanover breeds.

The research was based on the results of testing horses at the 2-year-old age of the Starozhilovsky stud farm, as well as the results of testing horses that took part in the all-Russian trials of pedigree young horses of the sporting direction in the period 2004-2014. A total of 261 horses were examined, of which: 100 heads of the Russian saddle breed, 100 heads of the Trakenen breed and 61 heads of the Hanover breed.

There are many different factors that, to one degree or another, affect a horse's performance. These factors are: age, state of health, feeding, conditions of detention, state of ammunition, temperament, working conditions and daily routine, professionalism of the caretaker, as well as exterior indicators, measurements and others.

The horse, which has reached a full age state, has the highest degree of working capacity. By old age, the horse's performance is gradually declining. It should be noted that the better the conditions of feeding, keeping, training, the longer the high level of horse's working capacity remains, and vice versa, the worse these conditions are, the faster the degree of working capacity worsens.

For effective work, horses of a strong balanced moving type are most desirable. Such animals are energetic, active, at the same time calm, good-natured, easily trained. Horses of bad temperament are undesirable for work, they are difficult to control, do not allow themselves to be cleaned, forged, saddled, they lift their heads, show disobedience, bite, stand on a “candle”, etc.

The degree of fitness is an important factor affecting its performance. In the process of systematic training, the horse’s body gradually adapts to perform certain tasks with less energy, which increases its performance. In the process of systematic work, the horse increases the activity of the cardiovascular, neuromuscular, excretory and respiratory systems. The task of training a young workhorse is to develop her abilities and endurance for long work.

The fundamental factors affecting the athletic qualities of a horse are measurements of articles and exterior indicators. These indicators include: height at the withers, chest girth, metacarpus circumference, oblique body length, shoulder blade angle, shoulder angle, neck exit, croup width and tilt, and others. All this affects the mechanics of movements and the technique of jumping a horse.

An analysis of all these factors allows us to develop technological recommendations for the cultivation of half-breeds with a view to their further successful sports use. To accomplish this task, the young of the Russian riding, Trakenen and Hanover breeds (261 head in total) was divided by sex into stallions and filly. All horses were evaluated on three indicators: exterior, body indices and indicators of sports performance.

In order to determine the presence of links between measurements, body indices with sports qualities, a correlation coefficient was used. The correlation coefficient ( $r$ ) is to show the dependencies of two random variables. The table 1 presents the data after computer processing.

*Table 1*

***Correlation coefficients between measurements and body build indices of young horses of the Russian riding, Trakenen and Hannoverian breeds with sporting qualities***

Breed	Exterior	Sport qualities		
		Motional qualities	Jumping qualities	Sport performance
Russian riding breed	Height at withers	<b>***0,40</b>	-0,06	<b>**0,32</b>
	Chest girth	<b>*0,24</b>	-0,09	0,16
	Girth metacarpus	<b>***0,34</b>	0,05	<b>**0,32</b>
	Massiveness index	-0,14	-0,06	-0,15
	Bony index	0,06	0,12	0,12
		Motional qualities	Jumping qualities	Sport performance
Trakehner breed	Height at withers	<b>***0,33</b>	0,02	<b>**0,28</b>
	Chest girth	0,03	0,13	0,11
	Girth metacarpus	<b>**0,28</b>	-0,02	<b>*0,21</b>
	Massiveness index	<b>*-0,23</b>	0,15	-0,08
	Bony index	0,09	-0,04	0,05
		Motional qualities	Jumping qualities	Sport performance
Hannoverian breed	Height at withers	0,18	-0,21	-0,04
	Chest girth	-0,14	-0,11	-0,20
	Girth metacarpus	0,09	-0,13	0,001
	Massiveness index	<b>*-0,29</b>	0,05	-0,18
	Bony index	-0,04	0,01	0,04

The data in the table allow us to establish that the height of the withers ( $r = ***0.40$ ), chest circumference ( $r = *0.24$ ) and metacarpus circumference ( $r = ***$ ) have

the most significant effect on motor qualities in Russian riding horses. 0.34). A significant positive effect on the motor qualities of Trakenen horses is exerted by the height at the withers ( $r = *** 0.33$ ) and the circumference of the metacarpus ( $r = ** 0.28$ ). In Hanoverian horses, no reliable positive relationships were found between measurements, body indices, and motor qualities. It should be noted that the improvement of motor qualities in all three horse breeds is affected by the mass index for horses of the Russian riding breed -  $r = -0.14$ , for the Trakenen horses  $r = * - 0.23$  and for horses of the Hanover breed -  $r = * - 0.29$ .

The hopping qualities of Russian riding horses are positively, but slightly affected: metacarpal girth ( $r = 0.05$ ) and bone index ( $r = 0.12$ ), and in Hanoverian horses: massiveness index ( $r = 0.05$ ) and bone index ( $r = 0.01$ ). However, all these dependencies are unreliable. The mass index ( $r = 0.15$ ) has a positive effect on hopping qualities in trakenen horses. This suggests that of the three breeds, Trakenensky is the best breed for show jumping. A decrease in height at the withers, chest and grasp of the metacarpus in horses of the Russian riding and Hannover breeds will entail an improvement in hopping qualities. It should be understood that such a decrease will entail a decrease in motor qualities in horses of these breeds. Therefore, during breeding, you need to clearly understand for what purposes the offspring of a particular breed is produced.

The athletic performance of Russian riding horses reliably has a high positive correlation with height at the withers ( $r = ** 0.32$ ) and metacarpus circumference ( $r = ** 0.32$ ). In horses of the Trakenen breed, the correlation with the height at the withers ( $r = ** 0.28$ ) and the circumference of the metacarpus ( $r = * 0.21$ ) is significant. A slight effect of the metacarpal girth ( $r = 0.001$ ) and the bone index (0.04) were found in horses of the Hanover breed. It should be noted that a decrease in the mass index in horses of all three breeds will lead to an improvement in athletic qualities.

There were no significant positive relationships between type assessment and athletic qualities in all horse breeds.

### **Findings**

1. The greatest reliable influence on motor qualities in Russian riding horses is exerted by height at the withers ( $r = *** 0.40$ ), chest girth ( $r = * 0.24$ ) and metacarpus girth ( $r = *** 0.34$ ). A significant positive effect on the motor qualities of Trakenen horses is exerted by the height at the withers ( $r = *** 0.33$ ) and the circumference of the metacarpus ( $r = ** 0.28$ ). In Hanoverian horses, no reliable positive relationships were found between measurements, body indices, and motor qualities. The improvement of motor qualities in all three horse breeds is affected by the mass index for horses of the Russian riding breed -  $r = -0.14$ , for Trakenen horses  $r = * - 0.23$  and for horses of the Hanover breed -  $r = * - 0.29$ .

2. The hopping qualities of Russian riding horses are positively, but slightly affected: metacarpal circumference ( $r = 0.05$ ) and bone index ( $r = 0.12$ ), and in Hanoverian horses: massiveness index ( $r = 0.05$ ) and index bone bones ( $r = 0.01$ ). The mass index ( $r = 0.15$ ) has a positive effect on hopping qualities in trakenen horses. This suggests that of the three breeds, Trakenen breed is the best breed for show jumping. The athletic performance of Russian riding horses reliably has a high

positive correlation with height at the withers ( $r = **0.32$ ) and metacarpus circumference ( $r = ** 0.32$ ). In horses of the Trakenen breed, the correlation with the height at the withers ( $r = ** 0.28$ ) and the circumference of the metacarpus ( $r = * 0.21$ ) is significant. A slight effect of the metacarpal girth ( $r = 0.001$ ) and the bone index (0.04) were found in horses of the Hanover breed. It should be noted that a decrease in the mass index in horses of all three breeds will lead to an improvement in athletic qualities.

3. There were no significant positive relationships between type assessment in all horse breeds.

### Suggestions

1. When scoring horses of a sports direction, depending on their intended use in various disciplines of equestrian sports, pay special attention to signs that are positively related to indicators of sports performance, namely:

- In horses of the Russian riding breed, the height at the withers, chest, and metacarpus affect motor qualities. The overall athletic performance is positively affected by the height at the withers and the circumference of the metacarpus.

- In horses of the Trakenen breed, the motor qualities are affected by the height at the withers, metacarpal girth and massiveness index. The overall athletic performance is positively affected by the height at the withers and the circumference of the metacarpus.

- In horses of the Hanover breed, the motor index is affected by the mass index.

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## SEASONAL DYNAMICS OF THE FUNCTIONAL QUALITY OF DIFFERENT VERTICAL LEVELS OF SMALL WATER ECOSYSTEMS IN MOSCOW

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*Abstract: Local ecosystems of Moscow ponds with communities of various plants and animals and associated abiotic conditions are a complex vertically*