

Study of Morphological Indices of English Thoroughbred (E.T.H.) Adult Equine Material Bred to Izvin Stud, Timis County

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Abstract

This research was conducted in order to establish very clearly the morphological indices of the E.T.H. race bred to Izvin Stud, and also to highlight its strengths, weaknesses and sports skills. Based on these assessments and morphological indices calculation we can give guidance on the improvement direction of this population of horses, usage of breeders and correct some deficiencies. The study was carried out on a number of 83 individuals of ETH race (7 stallions and 76 mares) belonging to Izvin Stud, Timis county and considered parameters were: height at withers, height at croup, height at the base of tail, diagonal length of the trunk, chest depth, chest width, torax width, croup width at hips, forearm length, flute length, thoracic perimeter, whistle perimeter, body weight. Obtained morphological index values show the superiority of breeding adults with 1.74% for the character height at withers and with 3.41% for the character body mass compared with data obtained from other locations in the country. Instead, the character chest depth recorded lower values with 0.75% and the character chest perimeter with 2.11% in the same conditions.

Keywords: adult equines, English Thoroughbred race, morphological indices

1. Introduction

We are in XXI century and we entered into a continuous and increasing dependence on technology, so the easiest is to see the horse as a means of entertainment or to practice equestrian sports at amateurs level or even performance equestrian sports [1, 2]. Looking more or less ago, we remember how the horse has played an essential role in everyday human activities [4, 5].

2. Materials and methods

Research has been carried out in 2008 on 83 specimens of E.T.H. races from Izvin Stud. Measuring and weighing of the herd was used as a working method and obtained biostatistics data

were processed to obtain typical values of morphological indices.

3. Results and discussion

E.T.H. race has currently the highest share in the sports horses sport group and it is necessary to know very well its morphological characters to obtain performances. As shown in Table 1, adults stallions and mares have a proper body development, being characterized by a slightly upward anterior-posterior upper line, a well developed body length, a sufficiently large croup with extensive perimeters and a body weight representative to speed races.

Values of analyzed morphological parameters are found in phenotypic characteristics of E.T.H. race and they are in agreement with those data published by Lungulescu [3]. Variability estimation indicates a good homogeneity of the analyzed animals, the coefficient of variation

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being between 2.6% for oblique length and 14.3% for body weight. Except the diagonal length of trunk and the height at base of the tail, the stallions have higher values compared with mares. Differences between the two sexes are very significant for height at withers, chest length, chest width, croup width at hip and body weight. Significant differences were found for forearm

length and flute length. All others parameters were insignificant.

Table 2 shows the values of morphological indices of the E.T.H. [3] which correspond to global trends in the selection and improvement of this race, as a consequence of the increase the difficulty degree of the horse competitions.

Table 1. Morphological indices of E.T.H. adult equine material from Izvin Stud [6,7]

No.	Feature	Total (n=83)		Stallions (n=7)		Mares (n=76)	
		X±Sx	Cv %	X±Sx	Cv %	X±Sx	Cv %
1.	Height at withers	159.40 ± 0.35	2.80	161.00 ± 0.62	1.01	159.26± 0.33*	1.78
2.	Height at croup	160.12 ± 0.57	4.10	161.14 ± 0.63	1.03	160.02± 0.57	3.08
3.	Height at the base of tail	152.19 ± 0.76	5.40	151.28 ± 0.90	1.47	152.28 ± 0.75	4.30
4.	Diagonal length of the trunk	159.42 ± 0.30	2.60	159.28 ± 0.64	1,06	159.44 ± 2.27	1.50
5.	Chest depth	68.72 ± 0.23	5.30	69.57 ± 0.78	2.96	68.65 ± 0.18	2.30
6.	Chest width	30.11 ± 0.17	7.40	33.00 ± 0.30	2.45	29.83 ± 0.16***	4.73
7.	Torax width	44.52 ± 0.46	14.20	49.42 ± 1.07	5.71	44.07 ± 0.40***	7.96
8.	Croup width at hips	49.02 ± 2.27	8.80	52.28 ± 0.95	4.80	48.72 ± 0.21***	3.69
9.	Forearm length	37.67 ± 0.17	6.80	38.85 ± 0.51	3,47	37.57 ± 0.14*	3.19
10.	Flute length	24.62 ± 0.19	12.00	25.71 ± 0,62	6.34	24.45 ± 0.15*	5.43
11.	Thoracic perimeter	180.75 ± 0.93	6.40	182.57 ± 1.53	2.21	180.44 ± 0.87	4.20
12.	Whistle perimeter	19.14 ± 0.05	4.80	19.57 ± 0,22	2.91	19.11 ± 0.04	1.83
13.	Body weight	495.85 ± 5.91	14.30	506,42 ±16.75	5.61	494.88 ±4.91***	8.65

Table 2. The main phenotypic characteristics of E.T.H. adult equines bred in Romania [3]

S. No	Feature	Total(n=157)		Stallions(n=11)		Mares (n=146)	
		X	±Sx	X	±Sx	X	±Sx
1.	Height at withers	156.62	0.28	158.63	1.23	156.47	0.21
2.	Diagonal length of the trunk	153.98	0.39	163.63	1.31	153.26	0.32
3.	Chest depth	70.17	0.29	71.23	0.81	70.10	0.25
4.	Thoracic perimeter	182.12	0.57	184.90	1.51	181.92	0.50
5.	Whistle perimeter	19.00	0.08	20.09	0.50	18.92	0.05
6.	Body weight	165.53	0.29	474.00	1.78	465.00	0.18

This trend can be seen in terms of the animals size and massiveness, variability estimation indicating a good and similar homogeneity in both sexes.

The data in Table 3 refers to the differences between the values of morphological indices of adults bred to Izvin Stud and the values of morphological indices of adults farmed in other studs of country. Data in this table show the superiority of adults from Izvin Stud (2.78 cm for

height at withers, which means a 1.74% increase and 5.44 cm for body weight, which means a 3.41%) increase.

Biological material belonging to Izvin Stud has lower values (1.37 cm respectively 0.75% for chest depth parameter and 1.45 cm respectively 2.11% for chest area) compared with biological material bred in Romania but in other locations.

Table 3. Morphological indices of E.T.H. adult equine material from Izvin Stud compared with those of adult equine material from others locations [Lungulescu 1999]

S.No.	Compared features	Izvin (n=83) X±Sx	Other locations (n=157) X±Sx	absolute difference (cm) / relative difference %
1.	Height at withers	159.40 ± 0.35	156.62 ± 0.28	+2.78 / +1.74
2.	Diagonal length of the trunk	159.42 ± 0.30	153.98 ± 0.39	+5.44 / +3.41
3.	Chest depth	68.72 ± 0.23	70.17 ± 0,29	-1.45 / -2.11
4.	Thoracic perimeter	180.75 ± 0.93	182.12 ± 0,57	-1.37 / -0.75
5.	Whistle perimeter	19.14 ± 0.05	19.00 ± 0,08	+0.14 / +073
6.	Body weight	495.85 ± 5.91	465.63 ± 0.29	+30.22 / +6.09

4. Conclusions

a) Data about the genealogical structure of E.T.H. material in our country reflects its membership to the most valuable genealogical lines. The share on lines of the herd from Izvin stud as a result of the conformation peculiarities and skills has changed lately in favor of the lines: Ronald Dorcas Gordon Dorouge, Rouge and Prince, while biological material owned to other lines is continuously decreasing.

b) The values of the morphological index estimated in E.T.H. adult equine subjects from Izvin stud are consistent with those reported in the last two years in our country.

c) In the adult herd E.T.H. from Izvin Stud, stallions body sizes differed from those of mares, which were determined by the orientation of the activities to improve the massiveness of the races in line with global trends as a result of an increasing of the degree difficulty of horse competitions.

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