STUDY REGARDING SOME BODY DIMENSIONS TO HORSES FROM SHAGYA BREED FROM RĂDĂUŢI STUD FARM – ROMANIA

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Abstract

This paper is a study on 109 horses from Shagya breed which were selected for breeding to Rădăuţi stud farm.

In this study were determined three main body dimensions which are written also in the body evaluation sheet: withers height (158.41±0.22 cm), heart girth (175.42±0.43 cm) and canon perimeter (18±0.09 cm).

The obtained data for these body dimensions as well as those obtained for some body indexes such as, massiveness index (110.75 ±0.25%), bones index (11.36±0.05%) and dactyl- thoracic index (11.36±0.05%) falls within the breed standards.

Key words: equine, mares, stud, body dimensions, indexes

INTRODUCTION

The Rădăuţi stud farm is an old traditional one being considered one of the most important stud farm from the Austrian-Hungarian Empire.

Since 1998, the stud farm is focused on Shagya breed farming.

Currently, to the stud farm are found 8 well known bloodlines of this breed such as, Dahoman, El Sbaa, Gazal, Hadban, Koheilan, Mersuch, Shagya, Siglavy Bagdady.

Regarding the Shagya breed, it is well known that the specialists wanted to create a horse which kept the body harmony and the beauty of the Arabian horse but to be slightly higher and more robust [2, 5].

This research aimed to find out if from body dimensions point of view, the equines from Rădăuţi stud farm meet these requirements.

MATERIAL AND METHOD

The biological material was represented by 109 horses from Shagya breed, respectively 64 mares (reproduction mares) and 8 stallions that are the nucleus breeding of the Radauti stud farm to which were added 37 stallions from public mount. The horses pertains to 8 bloodlines: Dahoman, El Sbaa, Gazal, Hadban, Koheilan, Mersuch, Shagya, Siglavy Bagdady.

The study aimed to determine three body dimensions that interest in evaluation works, namely withers height, heart girth and canon perimeter [9].

The data obtained from body measurements were centralised and processed and eventually, statistically interpreted [1].

Also, there were calculated three body indexes, namely massiveness index= (heart girth/ withers height)*100; bones index= (canon perimeter/ withers height)*100; dactyl-thoracic index= (canon perimeter/ heart girth)*100 [2, 3, 4, 6, 7].

RESULTS AND DISCUSSION

After centralising and processing the data obtained from measurements (table 1) may be noticed that on total studied population, the withers height had an average value of 158.41±0.22 cm, the absolute values varying between 153 and 164; the maximum and minimum values were registered to mares.

The withers height average values, obtained depending on sex, were similar, the difference between them being only 0.47 cm.

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Compared to the average withers height value, registered on total studied population, the stallion's value was higher with 0.17% and mare's one smaller with 0.11%.

From this character point of view, the studied population was homogenous, the variability being 1.46%.

Table 1 Results obtained regarding the equine withers height from the studied population (cm)

Specification	Mares	Stallions	Public mount stallions	Total no of stallions	Total no of population
n	64	8	37	45	109
x	158.22	160.25	158.35	158.69	158.41
var	6.08	3.64	3.96	4.36	5.37
s	2.47	1.91	1.99	2.09	2.32
SX	0.31	0.68	0.33	0.31	0.22
V%	1.56	1.19	1.26	1.32	1.46
MIN	153.00	158.00	154.00	154.00	153.00
MAX	164.00	163.00	162.00	163.00	164.00

Depending on the bloodline (table 2, figure 1), may be noticed that in average, the higher withers height value was registered to Mersuch line (160±1.08 cm) and the lowest to the Hadban line (157.50±0.65 cm). The highest absolute value was registered to a mare from Shagya line (164 cm) and the lowest one to a mare from El Sbaa line (153 cm).

Table 2 The results obtained for equine withers height from the studied population depending the genealogic line (cm)

Specification	Dahoman	El Sbaa	Gazal	Hadban	Koheilan	Mersuch	Shagya	Siglavy Bagdady
n	18	15	9	10	22	4	15	16
x	157.89	158.53	157.56	157.50	158.82	160.00	158.67	158.75
var	4.46	4.98	2.03	4.28	6.82	4.67	8.81	4.20
s	2.11	2.23	1.42	2.07	2.61	2.16	2.97	2.05
SX	0.50	0.58	0.48	0.65	0.56	1.08	0.77	0.51
V%	1.34	1.41	0.90	1.31	1.65	1.35	1.87	1.29
MIN	154.00	153.00	156.00	155.00	154.00	158.00	155.00	156.00
MAX	163.00	161.00	161.00	160.00	163.00	163.00	164.00	162.00

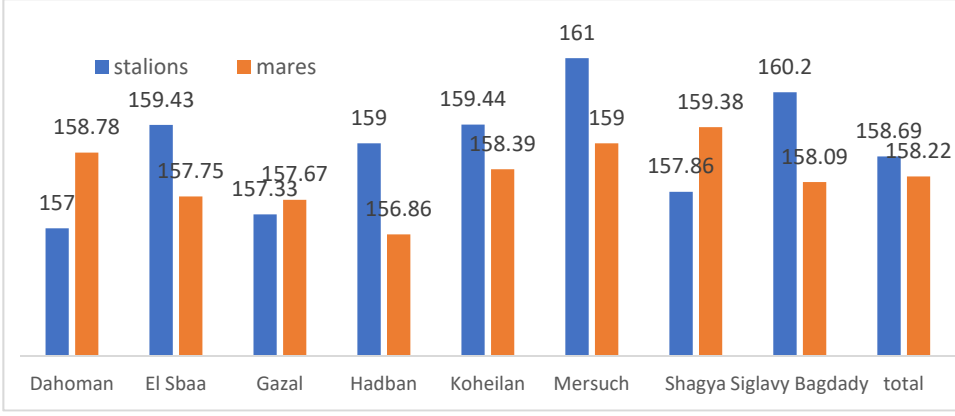

Fig. 1 Withers height average values depending on genealogic line and sex (cm)

To three from the eight bloodline (Dahoman, Gazal, Shagya), the withers height had average values higher to mares, to the others, the wither height was higher to stallions.

Regarding the heart girth, there was noticed an average value on the total studied population of 175.42 ±0.43 cm. to the mares, the heart girth registered an average value of 175.25±0.52 cm and to stallions of 175.67±0.73 cm; between sexes it was registered a difference of 0.25% (table 3).

Table 3 Results obtained regarding the heart girth to the studied population of equine (cm)

Specification	Mares	Stallions	Public mount stallions	Total no of stallions	Total no of population
N	64	8	37	45	109
X	175.25	178.38	175.08	175.67	175.42
var	17.30	17.41	24.30	24.27	20.02
S	4.16	4.17	4.93	4.93	4.48
SX	0.52	1.48	0.81	0.73	0.43
V%	2.37	2.34	2.82	2.81	2.55
MIN	160.00	171.00	158.00	158.00	158.00
MAX	184.00	183.00	183.00	183.00	184.00

Depending on the genealogic line, the heart girth average values varied between 174.59±1.13 cm (Koheilan) and 177.20±1.16 cm (Hadban). The highest heart girth absolute value was registered to a mare from Shagya line (184 cm) and the lowest to a stallion from El Sbaa line (158 cm).

Table 4 The obtained results regarding the heart girth to the equine from the studied population depending on the genealogic line (cm)

Specification	Dahoman	El Sbaa	Gazal	Hadban	Koheilan	Mersuch	Shagya	Siglavy Bagdady
N	18	15	9	10	22	4	15	16
x	176.67	175.20	175.89	177.20	174.59	175.50	175.53	173.88
var	14.59	29.31	13.36	13.51	28.16	17.67	21.41	14.38
s	3.82	5.41	3.66	3.68	5.31	4.20	4.63	3.79
SX	0.90	1.40	1.22	1.16	1.13	2.10	1.20	0.95
V%	2.16	3.09	2.08	2.07	3.04	2.40	2.64	2.18
MIN	171.00	158.00	171.00	172.00	160.00	170.00	166.00	167.00
MAX	183.00	180.00	182.00	183.00	183.00	180.00	184.00	180.00

Canon perimeter registered values which varied between 16 and 20 cm with an average of 18±0.09 cm. Depending on sex, to mares the average value for this character was 17.73±0.11 cm and for stallions of 18.83±0.13 cm.

Depending on the genealogic line (table 6), in average the thickest canon was registered to El Sbaa line (18.37±0.29 cm) and the thinnest to Hadban line (17.65±0.25 cm).

Table 5 The results obtained for the canon perimeter to the equine from the studied population (cm)

Specification	Mares	Stallions	Public mount stallions	Total no of stallions	Total no of population
n	64	8	37	45	109
x	17.73	18.88	18.27	18.38	18.00
var	0.73	0.48	0.76	0.75	0.83
s	0.85	0.69	0.87	0.87	0.91
SX	0.11	0.25	0.14	0.13	0.09
V%	4.82	3.68	4.77	4.72	5.07
MIN	16.00	18.00	17.00	17.00	16.00
MAX	20.00	20.00	20.00	20.00	20.00

Table 6 The results obtained for the canon perimeter to the equine from studied population depending on the genealogic line (cm)

t	Dahoman	El Sbaa	Gazal	Hadban	Koheilan	Mersuch	Shagya	Siglavy Bagdady
n	18	15	9	10	22	4	15	16
x	18.06	18.37	17.89	17.65	18.00	18.00	18.20	17.69
var	0.91	1.23	0.61	0.61	0.69	1.17	0.81	0.80
s	0.95	1.11	0.78	0.78	0.83	1.08	0.90	0.89
SX	0.23	0.29	0.26	0.25	0.18	0.54	0.23	0.22
V%	5.28	6.04	4.37	4.44	4.62	6.00	4.96	5.04
MIN	17.00	16.00	17.00	17.00	16.50	17.00	17.00	16.50
MAX	20.00	20.00	19.50	19.00	20.00	19.50	19.50	19.50

Calculating the massiveness index (table 7; figure 2) it was noticed that the average value was 110.75±0.25% for the studied population and respectively, 111.41±0.21% to mares and 110.72±0.50% to stallions.

Depending on the genealogic line, the average value of the massiveness index varied between 109.68% (Koheilan and Mersuch) and 112.30 (Hadban).

The lowest value for the massiveness index was registered to a stallion from El Sbaa line (98.14%) and the highest one to a stallion from Dahoman line (115.58%).

Bone index registered an average value of 11.36±0.05% for all studied population. To the mares, it had an average value of 11.29±0.06% and to the stallion 11.58±0.05%, the lowest (10.43%) and the highest (12.74%) values were registered to the Dahoman line.

Depending on the genealogic line, the average value of the bone index varied between 10.68% (Siglavy Bagdady) and 11.58% (El Sbaa) as it may be seen in figure 3.

Table 7 The results obtained for the body indexes calculated for the studied population (%)

Specification	Mare			Stallion			Total no population		
	MI*	BI**	DTI***	MI	BI	DTI	MI	BI	DTI
n	64	64	64	45	45	45	109	109	109
x	111.41	11.29	10.12	110.72	11.58	10.46	110.75	11.36	10.26
var	2.91	0.30	0.17	11.14	0.27	0.17	7.22	0.30	0.20
s	1.70	0.54	0.41	3.34	0.52	0.41	2.69	0.55	0.45
SX	0.21	0.06	0.05	0.50	0.08	0.06	0.25	0.05	0.04
V%	1.53	4.82	4.09	3.01	4.46	3.96	2.43	4.83	4.34
MIN	109.15	10.43	9.41	98.14	10.63	9.72	98.14	10.43	9.41
MAX	115.38	12.66	11.11	115.58	12.74	11.39	115.58	12.74	11.39

*Massiveness index
**Bone index
***Dactyl-thoracic index

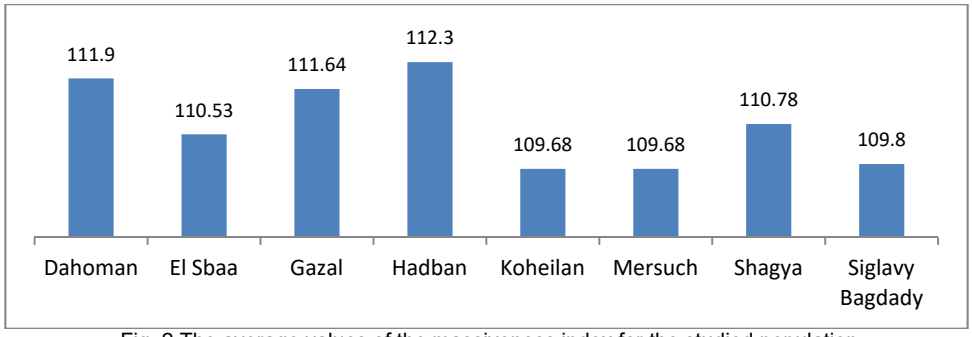

Fig. 2 The average values of the massiveness index for the studied population depending on the genealogic line (%)

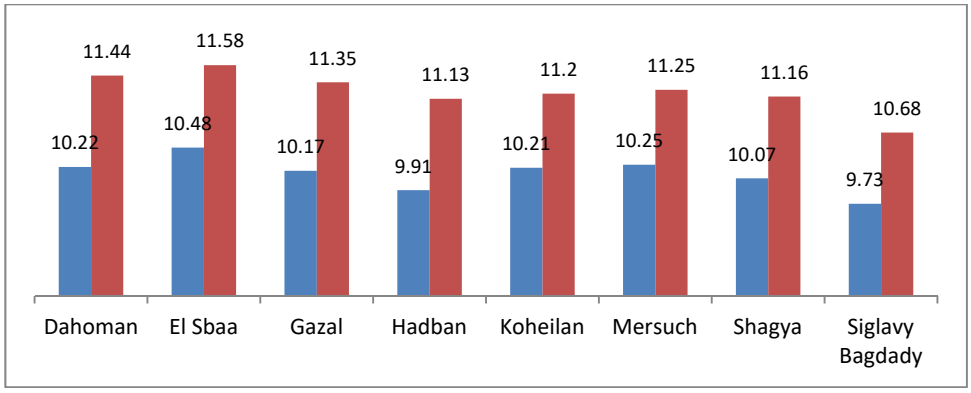

Fig. 3 The average values of the dactyl-thoracic index (blue colour) and bone index (red colour) to the studied population depending on the genealogic line (%)

The dactyl-thoracic index registered values which varied between 9.41% and 11.39%, with an average of 10.26±0.04%.

In average, the highest value was registered to El Sbaa line (11.58±0.15%) and the lowest to Siglavy Bagdady (10.68±0.05%).

The obtained results fall within the limits presented by specific literature [2, 4, 5, 6, 8]

CONCLUSIONS

After conducting the study done on the breeding horses of Shagya breed from Rădăuţi stud farm may be drawn the following conclussions:

- the withers height registered an average value of 158.41±0.22 cm, with limits between 153 and 164 cm;
- the heart girth had an average value of 175.42±0.43with limits between 158 and 184 cm;
- the canon perimeter registered an average value of 18±0.09 cm, with limits between 16 and 20 cm;
- the massiveness index had an average value of 110.75±0.25%, with limits between 98.14 and 115.58
- the bone index registered an average value of 11.36±0.05% with limits between 10.43 and 12.74%;
- the dactyl-thoracic index had an average value of 11.36±0.05% with limits between 9.41 and 11.39%;

The results which were obtained during the study fall within the breed standards and within the limits presented by specific literature.

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