

STUDY OF THE MAIN BODY DIMENSIONS THAT ARE USED IN THE SELECTION PROCESS, IN THE REPRODUCTIVE NUCLEUS OF THE ROMANIAN TROTTER HORSE FROM DOR MARUNT STUDFARM

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Abstract

This study is a part of an ample research regarding racing performance's improvement of Romanian Trotter horse breed. Study of average values of the main body dimensions that are used in horse selection process can offer an idea about the population genetic level, because, regarding to a population, the average of phenotypic value is equal with average of genotypic value. The main body dimensions that was analysed in this study and who are used in the selection process of horses in Romania, is: withers height, thoracyc perimeter and cannon bone perimeter. All this evaluation of Romania Trotter horses through the integration of individs in an evaluation class, it was made in accordance with selection methodology. The biological material is represented by 62 Romanian Trotter horses, 8 males and 54 females, at different ages, owned by Dor Marunt studfarm. The average performances of characters are presented in the paper. We can observe a small grade of variability with some differences between sexes. The average performances of the characters are between characteristic limits of the breed.

Key words: horse, racing, Romania, selection, trotter.

INTRODUCTION

Regarding to a population, the average of phenotypic value is equal with average of genotypic value. So, the studies of the average value of characters offer us an idea about the population genetic level (Marginean, 1997). This study have the principal purpose to analyse main body dimensions, of Romanian Trotter horse, who are used in selection process: withers height, thoracyc perimeter and cannon bone perimeter, through the integration of individs in an evaluation class, in accordance with selection methodology (Marginean et al., 2005; Maftei et al., 2015).

MATERIALS AND METHODS

The biological material is represented by 62 Romanian Trotter, 8 males and 54 females, at different ages, owned by Dor Marunt stood farm, representing the entire reproductive nucleus from the last years. The individuals were analyzed through individual performances, through stallions average

performance, through mares average performance, and, most important, through population average performance of body dimensions, related to selection criteria (Popa, 2009). We analyzed the withers height, the thoracic perimeter and the cannon bone perimeter using body measurements. All measurements were made in Dor Marunt studfarm, using an ANIMETER measuring belt and a height measuring stick. The males values are presented in Table 1.

Table 1. The body measurements values for stallions

No. crt.	Name	Withers height	Thoracyc perimeter	Cannon bone perimeter	Obs.
1	CHIRONE DEI	153	180	20.5	Imported
2	SELF OBSESED	156	182	20	Imported
3	NUROFEN	159	177	19	Romanian Trotter
4	VIS	151	182	19	Romanian Trotter
5	BIZAR	156	182	19	Romanian Trotter
6	OLIMP	157	184	20	Romanian Trotter
7	VARTEJ	153	180	19	Romanian Trotter
8	NELUTU	158	180	19	Romanian Trotter

For mares, the measurements for all three dimensions that was taken in to the study, is presented in Table 2.

Table 2. The body measurements values in mares

No. crt.	Name	Withers height	Thoracyc perimeter	Cannon bone perimeter
1	KINTA	157	184	19
2	RECEPTIA	157	175	19.5
3	CAMILA	154	173	20.5
4	STEMATA	155	171	19
5	VRAJA ZORILOR	154	174	19
6	SIAMEZA	156	177	19
7	BRENDA	156	182	19
8	KATRINA	156	178	19
9	RAZA DE LUNA	157	182	20
10	SIMETRIA	152	178	19
11	SOGUNA	157	178	20
12	IALTA NU	158	182	21
13	SOLOMIA	155	184	19
14	NEVADA	154	180	20
15	VRAJA SOU	153	184	19
16	REGINA ANA	156	184	19
17	KATIUSA	154	178	19
18	ROMANITA	157	172	19
19	DIACONITA	158	180	20
20	OSANDA	157	184	19
21	PAMFILA	154	178	19
22	VRAJA LIREI	156	178	19
23	AMICA III	154	182	19
24	PAMELA	153	184	19.5
25	NEDORA	154	180	19
26	ONDA	156	180	18.5
27	SARA	154	184	18.5
28	VOIAJORA	153	178	18.5
29	RELAXA	158	184	19
30	REGINA ANTOANETA	155	182	19.5
31	SULTANA	155	180	19
32	VICTORIA	152	180	19.5
33	KITTY	156	184	19
34	SORANA	151	180	19
35	KISS ME	158	184	19.5
36	SERENA	161	180	19
37	IRENA	159	180	19.5
38	FINUTA	158	184	19
39	VRAJA STANCA	154	186	19
40	SENIORITA	155	180	19
41	PATIMA	156	182	19
42	RASFATATA	158	184	19.5
43	VENERA	154	182	19.5
44	PANDORA	154	178	18
45	OPS	157	178	18
46	ASTARTE	158	184	19
47	VIDIA ROSIE	156	175	18
48	VRAJA ZAPEZII	155	178	18
49	KIRRA	161	182	19.5
50	RAMYA	156	179	18.5
51	NEMARA	155	179	18.5
52	KINA	154	176	18.5
53	SOLEDAD	159	176	19
54	SOPHIA	158	182	18.5

RESULTS AND DISCUSSIONS

Analyzing recorded data, we can observe some insignificant differences, for all characters, between stallions (Figure 1), between mares (Figure 2) and at population level (Table 3, Figure 3).

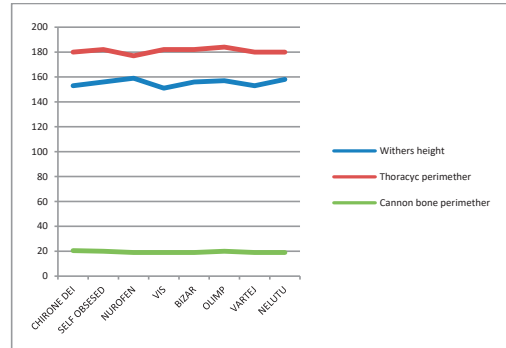


Figure 1. Withers's height distribution of values in stallions

In stallion case we find insignificant differences between individual performances, even if we analyzed six Romanian Trotter stallions and two imported stallions. The bigger value of withers height is 159 cm (stallion Nurofen, a Romanian Trotter), and the smallest was 151 cm (Vis stallion - Romanian Trotter). The other two imported stallions cannot influence the average value of character: stallion Chirone Dei - 153 cm, and Self Obsessed - 156 cm. The average performance of stallions was 155.38 cm, corresponding not to the best class (Record) and only to the next one (note 8 - Elite class). We must specify that the improving of withers's height values in Romanian Trotter it is a concern of specialists from this domain.

The thoracic perimeter value, was maximum 184 cm (Olimp - Romanian trotter stallion), and minimum 177 cm (Nurofen, Romanian trotter stallion). Average performance for thoracic perimeter was 180.88 cm, corresponding for note 10, respectively record class. Canon bones perimeter have maximal value at 20.5 cm (imported stallion Chirone Dei), and a minimal value at 19 cm (Nurofen, Vis, Bizar, Vartej, Nelutu), with an average value of 19.44 cm. Average value corresponding for note 9 but also for record class. Overall, regarding

corporal dimensions, the stallions meet criteria's to be sires.

In the mares effective, we cannot say that we have a similar situation. For withers height, we record a maximal value at 161 cm (Kira and

Serena), and a minimal value at 151 cm (Sorana). The average performance was 155.74 cm, corresponding for note 8, respectively elite class.

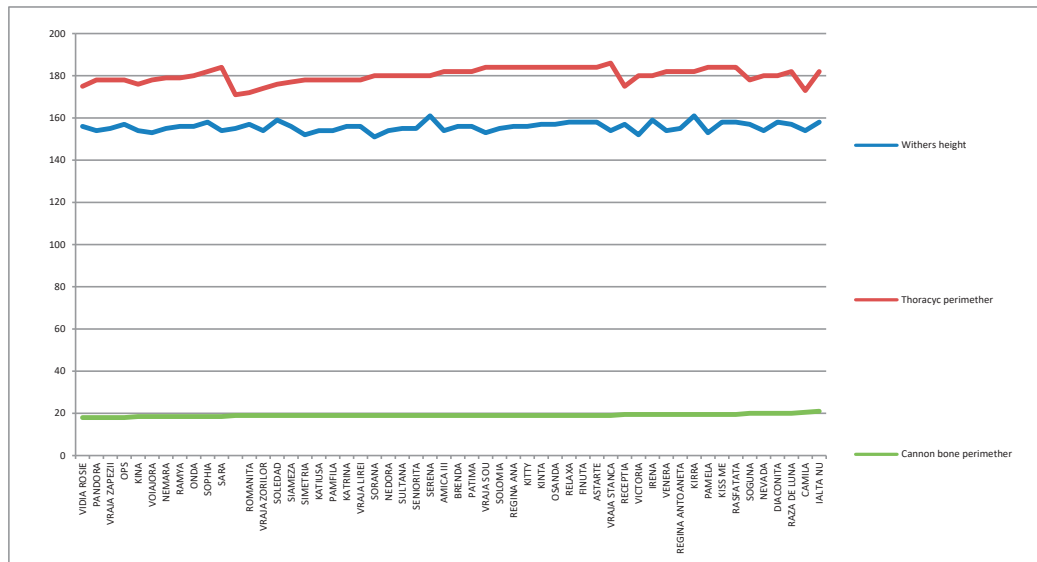


Figure 2. Wither's height distribution of values in mares

Table 3. Average values of analyzed characters (in cm) and statistics

Specifications		Wither's height	Thoracyc perimether	Cannon bone perymether
Males	<i>X</i>	155.3750	180.8750	19.4375
	<i>STDEV</i>	2.7742	2.1002	0.6232
	<i>Sx</i>	1.0486	0.7938	0.2356
	<i>cv%</i>	1.7855	1.1611	3.2062
Females	<i>X</i>	155.7407	180.0556	19.0833
	<i>STDEV</i>	2.1385	3.4827	0.5807
	<i>Sx</i>	0.2937	0.4784	0.0798
	<i>cv%</i>	1.3731	1.9342	3.0432
TOTAL	<i>X</i>	155.6935	180.1613	19.1290
	<i>STDEV</i>	2.2072	3.3348	0.5932
	<i>Sx</i>	0.2826	0.4270	0.0760
	<i>cv%</i>	1.4177	1.8510	3.1012

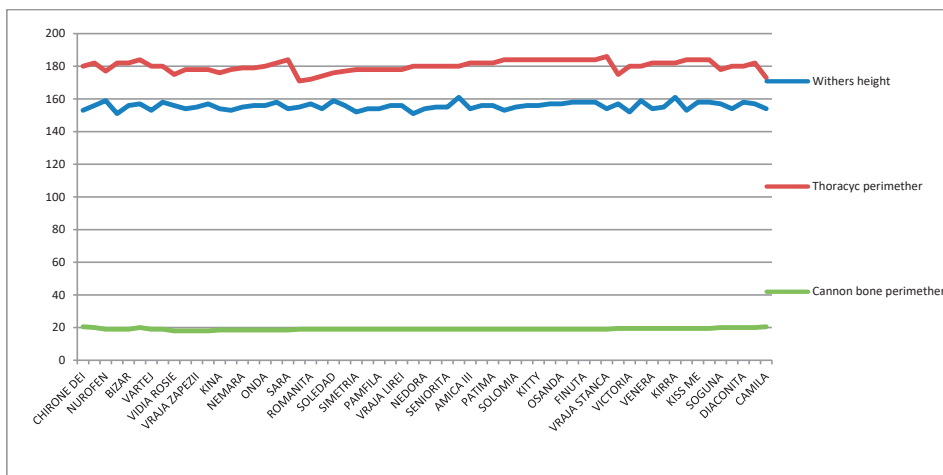


Figure 3. Distribution of character values in analyzed population: Romanian Trotter from Dor Marunt studfarm

Table 4. Average values of analyzed characters (in cm), and statistics

Stallions			Note	Mares		
Wither's height	Thoracic perimeter	Cannon bone perimeter		Wither's height	Thoracic perimeter	Cannon bone perimeter
164	184	20.5	9	164	186	20
162	182	20	10	162	184	19.5
160	180	20	10	160	182	19.5
158	178	19.5	9	158	180	19
156	176	19	8	156	178	18.5
154	172	18.5	7	154	175	18.5
152	168	18	6	152	172	18
150	166	17.5	5	150	168	17.5
-	-	-	4	148	166	17.5

Table 5. Ranking of Romanian Trotter by body dimensions

Specification	Wither's height		Thoracic perimeter		Cannon bone perimeter	
	Stallions	Mares	Stallions	Mares	Stallions	Mares
Body dimensions	9	8	8	7	7	7

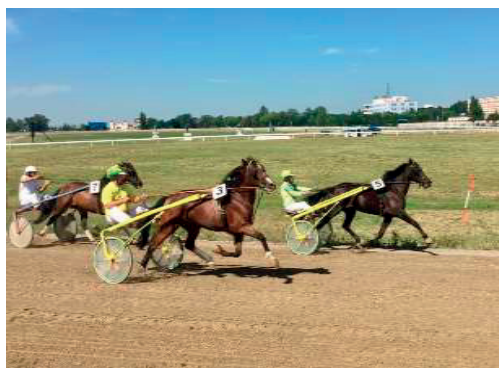


Figure 4. Aspects from testing process of Romanian Trotter

The thoracic perimeter had values between 186 cm (Vraja Stanca) and 171 cm (Stemata), with an average of 180.06 cm. However, the average performance includes mares stock in record class.

Regarding the cannon bone perimeter, 28 mares was recorded a value of 19 cm and only two mares had recorded over 20 cm for this character.

The average performance was 19.08 cm, corresponding for note 9 - record class.



Figure 5. View from a National studfarm

Regarding the ranking of Romanian Trotter through the average performances on body measurement, separate by sexes, it is obvious that the individuals qualify in class RECORD (Tables 4 and 5).

CONCLUSIONS

Analyzing the reproductive nucleus of Romanian Trotter horse from Dor Marunt studfarm, by average values of corporal dimensions, it's obvious that the individuals deserve to be the ancestors of a new generation. We strongly recommend increasing of reproductive nucleus, for this breed, associated with a very strong control of selection. Also, selection of individuals with wither's height values a little bit bigger could be the answer for low performances of Romanian Trotter in long

racing. Do not forget that it is a must to continue by using stallions from import with a good racing performance but also with the exceptionally genetic value, qualities that can make them succeed in reaching the status of Sire Stallions in the reproductive nucleus of Romanian Trotter. However, due to the small values of variability we can say that the average performances of characters is able to offer us a good and correct image of Romanian Trotter horse population from Dor Marunt studfarm.

ACKNOWLEDGEMENTS

This research work was carried out with the support of National Forestry Authority – Horse Breeding Department.

REFERENCES

- Maftai, M., et al. (2015). Study of the main body dimensions that are used in the selection process, in the reproductive nucleus of the Nonius horse from Izvin studfarm, *Scientific Papers Animal Sciences and Biotechnologies*, 48(1), Timisoara
- Mărginean, G. (2012). *Treatise on Hypology*. Bucharest, RO: Romanian Academy Publishing House.
- Mărginean, G., Georgescu, G., & Maftai, M. (2005) *Guide to practical work for the operation of horses*. Bucharest, RO: Agrotehnica Publishing House.
- Popa, R. (2009). *Breeding programs*. Bucharest, RO: Printech Publishing House.