

STUDY REGARDING THE PERCENTAGE OF ENGLISH THOROUGHBRED BLOOD IN THE LAST FIVE GENERATIONS FOR THE BEST JUMPING HORSES IN THE WORLD

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Abstract

In many breeding areas the special role for Thoroughbred stallions was to lighten and to make more athletic traditional horses used in agriculture. For this research we examine the first 103 jumping horses from FEI&WBFSH World Ranking List for Jumping Horses April 2014, divided in 6 groups for breed variable, and 3 groups for sex and age variables. The results show that the percent of English thoroughbred blood in the last five generations for this horses varies from 8.59 to 58.59 with an mean of 34.75. For breed variable the results show that the percent of English thoroughbred blood in the last five generations was evaluated as being significantly higher ($p<0.05$) in case of horses that belong to warmblood breeds from France than in case of horses that belong to warmblood breeds from Germany, horses that belong to warmblood breeds from Belgium and horses that belong to warmblood breeds from Great Britain. For sex variable the results show that the percent of English thoroughbred blood in the last five generations was evaluated as being significantly higher ($p<0.05$) in case of stallions than in case of geldings. In conclusion we can say that the modern sport horse breed requires Thoroughbred blood also in the future, but they will not enjoy a privileged status.

Key words: thoroughbred blood, jumping, ranking, sport horses, warmblood

INTRODUCTION

The English Thoroughbreds played over time a vital role in creating the modern sport horse.

In the twentieth century the Thoroughbred stallions enjoyed a privileged status (especially in Europe) resulting in the need for a more lighten and athletic riding horse compared to the traditional breeds used in agriculture. Also, the Thoroughbred blood was used to reduce the degree of inbreeding and to increase the genetic diversity.

However, in recent decades, with few exceptions (Lauries Crusader XX in dressage and Heraldik XX in show jumping), most English thoroughbred stallions used for breeding in the sport horse breeds tended to damage the quality of canter and jumping [2].

Also, for most breeds of sport horses it had been created a very well developed

selection program, obtaining an elegant horse with outstanding athletic ability and making the need for the use of thoroughbred horses to be extremely rare and very selective. Furthermore, with the widespread use of frozen and chilled semen, genetic diversity that Thoroughbreds contributed can be made in another way[2].

MATERIAL AND METHOD

1. Animals

For this research we examine the first 103 show jumping horses from FEI&WBFSH World Ranking List for Jumping Horses April 2014 [4].

The age variable was divided into three categories: horses under 10 years, horses aged between 10 to 14 years and horses older than 14 years, the divisions being dictated by the fact that horse jumping peak of form is obtained within the range of age 10 to 14 years. The horses distribution for the three variables taken into account (sex, age and breed) is shown in Table 1.

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The manuscript was received: 17.11.2014

Accepted for publication: 20.01.2015

Table 1 Horse distribution according to gender, age and breed

Breed	Sex			Age			N
	s	m	g	<10 years	10-14 years	>14 years	
SBG	11	10	17	2	34	2	38
SBN	3	4	12	3	13	3	19
SBF	4	3	2	1	8	0	9
SBB	3	8	13	5	18	1	24
SBUK	1	7	2	0	9	1	10
SBS	1	2	0	0	3	0	3

SBG: sport breeds from Germany, SBH: sports breeds from The Netherlands, SBF: sport breeds from France, SBB: sport breeds from Belgium, SBUK: sports breeds from UK, SBS: sport breeds from Sweden, s: stallions, m: mares and g: gelding, N: total number

For these horses the percentage of Thoroughbred blood (TB) in the last five generations was calculated using international database sporthorse-data.com [3].

2. Statistical analysis

Data was manipulated using Excel 2007 (Microsoft) and was analyzed using SPSS Version 21 for Windows (IBM, USA).

The aim of the statistical analysis was to explore any differences in the percentage of Thoroughbred blood in the last five generations between horses from different breed, sex and age. The value of alpha was set at 0.05 for all statistical tests.

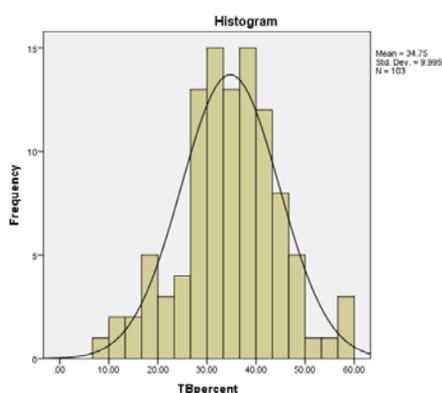


Fig. 1 Normal distribution of the percentage of TBs blood in the studied population

RESULTS AND DISCUSSION

The results shows that the percentage of Thoroughbred blood in the last five generations for the 103 horses taken into study vary between 8.59 and 58.59, with an average of 34.75.

1. Age

For the age variable the results from the statistical analysis shows that the percentage of Thoroughbred blood in the last five generations doesn't present statistically significant differences for the 0.05 significance level ($F = 0.180$, $p = 0.835$).

Table 2 Descriptive statistics for the age variable

Age variable	N	\bar{X}	s	$\pm s_{\bar{x}}$	Minim	Maxim
over 14 years	7	34.7098	13.72293	5.18678	8.59	53.91
between 10 and 14 years	85	34.5320	10.15708	1.10169	10.73	58.59
under 10 years	11	36.4707	5.97402	1.80123	28.32	49.61
Total	103	34.7512	9.99479	0.98482	8.59	58.59

Therefore, we can say that, regarding the percentage of Thoroughbred blood in the last five generations, there are no statistically significant differences between horses aged

over 14, horses aged between 10 and 14 and horses younger than 10 years.

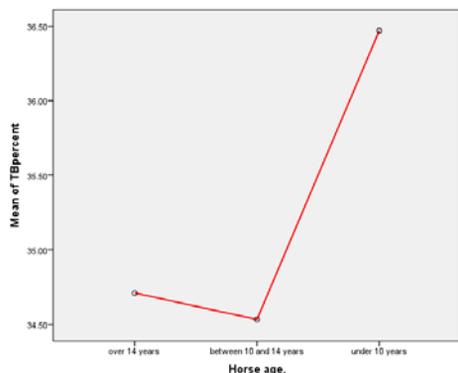


Fig. 2 Means Plots of the percentage of TBs blood in the last five generations for age variable

Table 3 Descriptive statistics for the sex variable

Sex variable	N	\bar{X}	s	$\pm s_{\bar{x}}$	Minim	Maxim
mare	34	34.2704	10.02819	1.71982	13.09	58.59
stallion	23	40.1422	10.07115	2.09998	18.75	58.59
gelding	46	32.4110	9.08125	1.33896	8.59	49.61
Total	103	34.7512	9.99479	0.98482	8.59	58.59

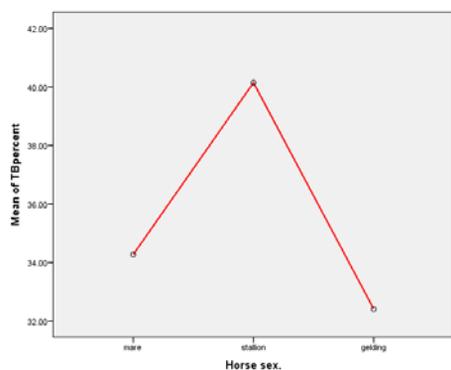


Fig. 3 Means Plots of the percent of TBs blood in the last five generations for sex variable

Higher percentage of Thoroughbred blood observed in stallions is caused, probably, to the desire of preserving in the future generations some attributes like performance willingness, quick reactions, and the often affirmed spirit.

All these attributes are more obvious in case of Thoroughbred, even if it is nearly impossible for a Thoroughbred stallion to produce direct successor in today's very specialized competitive sport world.

2. Sex

For the sex variable the results from the statistical analysis shows that the percentage of Thoroughbred blood in the last five generations presents a statistically significant differences for the 0.05 significance level ($F = 5.011, p = 0.008$).

Therefore, we can say that the percentage of Thoroughbred blood in the last five generations is significantly higher ($p = 0.007$) for stallions ($\bar{X}_2=40.14$) compared to geldings ($\bar{X}_3=32.41$), but no statistically significant differences exist between stallions and mares, nor between mares and geldings.

3. Breed

For the breed variable the results from the statistical analysis shows that the percentage of Thoroughbred blood in the last five generations present a statistically significant differences for the 0.05 significance level ($F=5.656, p<0.001$).

Therefore, we can say that, the percentage of Thoroughbred blood in the last five generations is significantly higher ($p<0.001$) in case of horses that belong to warmblood breeds from France ($\bar{X}_4=47.94$) compared to horses that belong to warmblood breeds from Belgium ($\bar{X}_3=31.92$) and horses that belong to warmblood breeds from Great Britain ($\bar{X}_6=35.41$).

Also, the percentage of Thoroughbred blood in the last five generations is significantly higher ($p = 0.048$) in the case of horses that belong to warmblood breeds from France ($\bar{X}_4=47.94$) compared to horses that belong to warmblood breeds from Germany ($\bar{X}_1=31.64$), but there is no statistically significant differences between horses that belong to warmblood breeds from France and horses that belong to warmblood breeds from The Netherlands and Sweden.

Table 4 Descriptive statistics for the breed variable

Breed variable	N	\bar{X}	s	$\pm s_{\bar{x}}$	Minim	Maxim
German Breeds	38	31.6381	11.57828	1.87825	8.59	49.61
The Netherlands breeds	19	37.5203	7.94214	1.82205	23.44	53.91
Belgian breeds	24	31.9162	6.07578	1.24021	19.34	42.19
France breeds	9	47.9382	9.03293	3.01098	32.81	58.59
Sweden breeds	3	37.5644	2.08937	1.20630	35.74	39.84
UK Breeds	10	35.4108	5.61101	1.77436	29.30	45.70
Total	103	34.7512	9.99479	0.98482	8.59	58.59

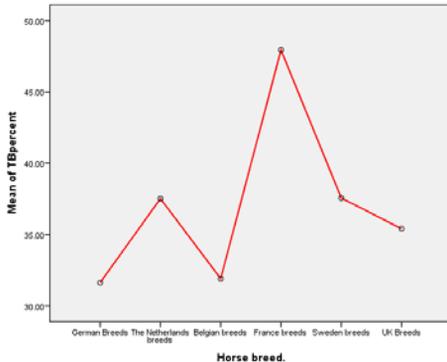


Fig. 4 Means Plots of the percentage of TBs blood in the last five generations for breed variable

The high percentage of Thoroughbred blood currently present for horses that belong to warmblood breeds from France compared to other warmblood breeds in Europe stems from the fact that Selle Français breed is a breed that originates from crossing the Thoroughbred stallions with local mares. The percentage of Thoroughbred genes from the present is greater than 50%, with the specification that there is a 33% Thoroughbred genes from the „Demi-Sang” ancestors which themselves possess Thoroughbred gene, but at a difficult rate to quantify [1].

CONCLUSIONS

In conclusion we can say that for the modern sport horse breeds the Thoroughbred influence will persist in the future. For breeders, half-bred mares of quality remain a valuable resource, but will not benefit from a privileged status anymore.

In the future both Thoroughbred stallions and mares that will be used as breeders in the warmblood breeds will have to pass the same rigorous selection which applies to any sire or

broodmares: athleticism, jumping technique, movement, rideability, conformation, trainability, etc. [2].

Essentially we can conclude that the influence of Thoroughbred stallions will always be considered, but the special role it had in the past no longer exists.

ACKNOWLEDGEMENTS

This paper was published under the frame of European Social Fund, Human Resources Development Operational Programme 2007-2013, project no. POSDRU/159/1.5/S/132765.

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