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The influence of certain factors on the results obtained by horses classified in dressage ranks of International Federation for Equestrian Sports

Wpływ niektórych czynników na wyniki koni sklasyfikowanych w rankingu
Międzynarodowej Federacji Jeździeckiej w dyscyplinie ujeżdżenia

Summary. The aim of the present work was to analyse the origin of dressage horses classified in the ranking of International Federation for Equestrian Sports (FEI) and to define the factors, such as breed, age and sex on the results achieved by the horses. The authors analysed 610 horses competing in international dressage competitions which achieved the results that guaranteed the position in the ranking. It was concluded that in terms of the number, the first position was taken by Dutch Warmblood horses, which proves their high sports predispositions, in the light of the best results achieved by this group. Among the classified horses the highest number of offspring was obtained by stallions Jazz (kwpn) and Donerhall (han). The best results were obtained by the offspring of Trakehner stallion Gribaldi. It was noticed that the best dressage horses' fathers were the reproducers whose own use value was high. The largest number of horses were geldings (66%), yet the best results were obtained by mares (647.2 pts). It was noticed that horses aged 10–15 had the best results.

Key words: horses, dressage, use value

INTRODUCTION

Dressage is an equestrian discipline that emphasises the harmony and cooperation between the horse and rider. On an appropriately prepared square the pair – horse and rider – perform the movements (paces, transitions, figures) defined for a given class. Apart from the perfect training and many years of practice, successes in this discipline depend significantly on horse's genetic predispositions, manifested in its conformation, movements and temperament [Rosie 2006]. Alike in other disciplines, inheritability of

sports predispositions is not high [Koenen 1995], and the results obtained in the international level competitions allow verifying the information about the competing horses' use values [Thorén Hellsten *et al.* 2006]. International Federation for Equestrian Sports (FEI) runs a ranking in this discipline, based on the recognised results in this discipline. Horse's position in the ranking proves its high use value and is an important guidance for breeders and riders. Numerous research on horses' dressage predispositions have been conducted [Koenen 2005, Wallin *et al.* 2003, Ducro *et al.* 2007, Stewart *et. al* 2010], what is justified due to horses' improving results achieved internationally. Presently, a number of horse breeds is predisposed to achieve good results in dressage competitions. The main ones are Dutch and German breeds [Szewczyk 2009]. Some breeding associations selected special lines of horse breeds which are included in a separate breeding programme and selected to consolidate the features which are desired in dressage [Koenen *et al.* 2004]. The situation influenced fast breeding advancements, what contributed to obtaining the results which had seemed physiologically impossible a few years ago [Diaz *et al.* 2010]. One good example is a Dutch stallion Totilas, which exceeded the results' barrier of 90% under Edward Gallem [Tobey 2011].

The aim of the present work is to analyse the origin of horses competing in dressage, classified by International Federation for Equestrian Sports and to define the influence of such factors as breed, age and sex on the results achieved by horses.

MATERIALS AND METHODS

610 sports horses competing between 1.10.2008 and 30.09.2009 in international competitions in dressage and achieved the results that guaranteed locations in the International Federation for Equestrian Sports ranking (FEI) were analysed – Table 1.

Table 1. List of the examined horses
Tabela 1. Zestawienie liczebności badanych koni z uwzględnieniem rasy

Breed Rasa	No of specimens Liczba sztuk	
	n	%
Dutch (kwpn)/Holenderska gorącokrwista	103	16.89
Hanoverian (han)/Hanowerska	92	15.08
Oldenburger (old)/Oldenburska	63	10.33
Danish (dwp)/Duńska gorącokrwista	55	9.02
Swedish (swb)/Szwedzka gorącokrwista	30	4.75
Westphalian (westf)/Westfalska	27	4.43
Holsteiner (hol)/Holsztyńska	25	4.10
Trakehner (trk)/Trakeńska	23	3.93
Belgian (bwp)/Belgijska gorącokrwista	9	1.48
Anglo-arabian (xxoo)/Angloarabska	9	1.48
Other/Pozostałe	124	20.32
Without breed/Bez rasy	50	8.19
Total/Razem	610	100

Horses' origin and their positions in rankings were analysed on the basis of the data published by FEI and The World Breeding Federation for Sport Horses (WBFSH). The influence of such factors as breed, age, sex and sports results, presented as average points in the rankings, was analysed. Using single-factor variance analysis – ANOVA GLM [Statistica 7.0] statistical characteristics were calculated for the groups of horses made up according to breed, age and sex. The authors also attempted to define the statistically significant differences between mean numbers of ranking points – t-Tukey's test.

The breeds with at least 9 representatives were taken into consideration. A few representatives of breeds were included in "other" category. Few specimens of other breeds were marked as "other". The group of specimens which were not labelled with information about the breed was marked as "no breed".

Additionally, a list of examined horses' fathers and mothers was made and average number of ranking points was calculated.

RESULTS AND DISCUSSION

As the data presented in Table 2 shows, out of 610 classified horses, as many as 103 were in kwpn books (Dutch Warmblood), what makes c.a. 17% of all the classified horses. High share of this breed is also supported by the best results of Dutch horses, which obtained the highest average number of ranking points (703 pts). For a number of years it was German horses that were triumphant in dressage competitions. In the light of this, the results prove significant advancement of Dutch breeders in terms of horses' breeding quality. One outstanding representative of this breed is stallion Moorlands Totilas (Gribaldi trk. – Lominka kwpn by Glendale kwpn) that was the first to exceed the result barrier of 90% under E. Gall and obtained the title of Europe Champion in Dressage in 2008. Dutch Parzival (Jazz – Fidora by Ulft) mounted by A. Cornelissen achieved very good results in 2009 [Szewczyk 2009]. The second location in the highest average number of ranking points was occupied by Danish Warmblood horses (697 pts), what proves good predispositions of this breed to dressage. Slightly worse were Hanoverian horses (637.6 pts), which were almost twice as numerous as the Danish horses, yet some specimens were only slightly behind the best ones. The leading representative of this breed were Salinero (Salieri – Luna by Lungau), which triumphed a number of times under Anky van Grunsven in the most prestigious dressage competitions, Satchmo 78 (Sao Paulo – Legata by Legat) and Warum Nicht FRH (Weltmeyer – Winja by Wenzel I), mounted by Isabell Werth [Szewczyk 2009].

It is relevant that in 12 breed groups, as many as 5 were German: Westphalian, Oldenburger, Hanoverian and Trakehner, what is evident in the development of dressage horses farms in Germany [Koenen 2004]. It is also worth emphasising that Dutch, Danish, Belgian and Swedish breeders associations use German sires to improve their horses' population. Close origin of the examined specimens may explain the lack of statistically significant differences between average numbers of ranking points per each breed group.

It was noticed that over 66% of the examined horses were geldings (Tab. 3), what coincides with the observations of other researchers who investigate analogical problems [Chachuła and Kędzierski 2008]. Even though geldings are not useful for reproduction, they are easier to train and their behaviour during competitions is more predictable, in

Table 2. Statistical characteristics of different breeds' performance in ranking points (R)
Tabela 2. Statystyczna charakterystyka dzielności (w punktach rankingowych – R) badanych koni
w zależności od rasy

Breed Rasa	R sum Suma R	$\overline{x}$	SD	Min	Max
Dutch (kwpn)/Holenderska gorącokrwista	72 414	703.0	559.04	50	2253
Danish (dwp)/Duńska gorącokrwista	38 335	697,0	521,79	50	2104
Westphalian (westf)/Westfalska	18 285	677,2	381,68	175	1478
Belgian (bwp)/Belgijska gorącokrwista	6030	670.0	635.50	58	1458
Oldenburger (old)/Oldenburska	41 050	651.6	514.87	53	1875
Hanoverian (han)/Hanowerska	58 663	637.6	564.84	50	2249
Swedish (swb)/Szwedzka gorącokrwista	18 284	609.5	521.79	50	1804
Other/Pozostałe	71 858	584.2	453.34	49	1851
Holsteiner (hol)/Holsztyńska	13 628	545.1	431.66	65	1550
Without breed/Bez rasy	22 075	441.5	358.83	50	1640
Trakehner (trk)/Trakeńska	9940	432.2	352.25	50	1385
Anglo-arabian (xxoo)/Angloarabska	4091	409.1		100	1274
Average/Średnia	31 221.08	614.2	498.07	66.67	1743.42

comparison to stallions and mares. The presence of stallions in the competitions is most frequently determined by the need to evaluate their use value. Moreover, their results are a perfect form of advertising for their owners. The intensity of breeding stallion use is highly dependent on its own use value, and in later stages of life, on the results obtained by the offspring [Wallin et al. 2003]. In the present research mares obtained the highest number of ranking points (647.2 pts). This proves their high predispositions to dressage and their probable high use value.

Table 3. Statistical characteristics of performance in ranking points (R) with regards to sex
Tabela 3. Statystyczna charakterystyka dzielności (w punktach rankingowych – R) badanych koni
z uwzględnieniem płci

Sex Płeć	No of specimens Liczba sztuk		R sum Suma R	$\overline{x}$	SD	Min	Max
	n	%					
Mare/Klacz	58	9.51	37 537	647.2	487.18	50	1855
Stallion/Ogier	149	24.43	91 142	611.7	522.55	50	2204
Gelding/Wałach	403	66.07	245 974	610.4	491.39	49	2253
Total/Razem	610	100	374 653				
Average/Średnia				614.2	498.07	49.67	2104

According to the authors dealing with examining dressage horses [Chachuła and Kędzierski 1988], older horses (9–19 years old) are most successful. It is due to their proficiency in specific skills, experience and stability. The research showed that the highest average number of ranking points was obtained by 10-year olds, one exception being 23-year-old Hanoverian stallion Fantomas Farouche (Fernando – Undra), which

was the only representative of this age group to score more points than the average for 10-year-old horses (Tab. 4). The most numerous group of specimens were 13-year-old horses (16.39%), which scored the highest number of ranking points (59 928 pts.). The best specimen in this group was Hanoverian gelding Warum Nicht FRH, which scored 2024 ranking points with German rider I. Werth. The largest dispersion of results (sd = 572.70) concerned 19-year-old horses, what can be explained by worsening impulse and general decrease of motor skills at this age. Although no statistically significant differences between the numbers of points in different age groups were recorded, it can be noticed that the best results were achieved by the horses aged 10–15.

Table 4. Statistical characteristics of performance in ranking points (R) with regards to age
Tab. 4. Statystyczna charakterystyka dzielności w punktach rankingowych (R) badanych koni z uwzględnieniem wieku

Age Wiek	No of specimens Liczba sztuk		R sum Suma R	$\overline{x}$	SD	Min	Max
	n	%					
8	6	0.98	3087	514.50	352.93	147	991
9	36	5.90	23 429	650.81	538.47	50	2204
10	62	10.16	45 970	741.45	490.63	60	1698
11	74	12.13	34 885	471.42	458.73	50	2145
12	87	14.26	56 423	648.54	535.93	49	2253
13	100	16.39	59 928	599.28	460.38	50	2024
14	78	12.79	52 133	668.37	508.02	50	2104
15	67	10.98	43 748	652.96	542.13	50	2249
16	38	6.23	23 385	615.39	515.40	50	1771
17	24	3.93	13 827	576.13	467.19	50	1345
18	24	3.93	11 647	485.29	382.21	55	1610
19	9	1.48	4547	505.22	572.70	70	1640
21	2	0.33	427	213.50	3.54	211	216
22	1	0.16	205	205.00	0	205	205
23	1	0.16	925	925.00	0	925	925
24	1	0.16	87	87.00	0	87	87
Total Razem	610	100	374 653				
Average Średnia				614.2	364.27	134.9	1466.69

Analysing the list of examined horses, it was noticed that the most popular sire was stallion Jazz kwpn (Cocktail – Charmante by Ulster) – a father to 18 horses classified in FEI ranking. The most outstanding of his sons that achieved international successes were Parzival and Nartan. The second most numerous offspring (14 specimens) were begotten by a renowned Hanoverian stallion Donnerhall, a father to a well-known Oldenburger sire De Niro, whose offspring was also classified in FEI ranking. The third sire with over 10 ranked offspring was Westphalian Florestan I (Fidelio – Raute by Reingold) born in Germany in 1986. His best sons are: Fidermark, Fit for Fun, Florencio I and Floresco.

Considering average number of ranking points per fathers, the leader was Trakehner Gribaldi (1735.7 pts), a father to the above-mentioned kwpn stallion Moorlands Totilas, stallion Painted Black and a mare Sister de Jeu. High positions were also occupied by the offspring of such stallions as: Jet Set D – kwpn, Wolkenstein II – han., Ferro – kwpn. The analysis of the sires' ranking suggests that the fathers of best dressage horses were the stallions with high use value. In longer perspective, this allows selecting the stallion lines with high predispositions for dressage, what is significant from breeders' point of view [Philipsson 1990].

Fathers to the mothers of the examined horses were 599 sires with Holsteiner Landadel, son of stallion Landgraf by Ladykiller (xx) being the best of them. He originates from a well-known Holsteiner "L" line [Fedorski 2008], whose representatives are also successful in other disciplines. The second position was taken by Classiker (1070.30 pts) and the third one by Hanoverian Wenzel I (794.3 pts). Also Oldenburger stallion Rubinstein I, which is father to 9 horses and 5 mothers to the highly-ranked specimens, is worth mentioning. High position in the discussed classification is also occupied by the only representative of Anglo-Arabian stallion Matcho, which is father to four mothers of the classified horses, and whose average number of ranking points is 773.5.

CONCLUSIONS

1. In the present research, high turnout of Dutch Warmblood horses (kwpn) (17%) has been stated. In the light of the best results obtained by these horses, it can be concluded that they have high sports predispositions and the breeding methods within this group have advanced recently.

2. Although the most numerous group was geldings (66%), the best results were achieved by mares (647.2 pts), what proves their high use value and, together with their pedigree analysis, high breeding value.

3. The best results were achieved by horses aged 10-15, what coincides with the observations made by other authors dealing with the analogical task.

4. In the group of classified horses the highest number of sons and daughters were begotten by stallions Jazz – kwpn (18 specimens) and Donerhall – han (14 specimens), and the best results were obtained by the offspring of Trakehner stallion Gribaldi (1735.7 pts).

5. It was noticed that the fathers to the best dressage horses were the sires whose own use value was also very high. This supports the use of sports results for estimating horses' breeding value.

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Streszczenie. Celem pracy była analiza pochodzenia koni ujeżdżeniowych sklasyfikowanych w rankingu Międzynarodowej Federacji Jeździeckiej (FEI) oraz określenie wpływu takich czynników, jak rasa, wiek i płeć na wyniki uzyskiwane przez te konie. Zbadano 610 koni, które startowały w międzynarodowych zawodach w dyscyplinie ujeżdżenia i osiągnęły wyniki pozwalające na znalezienie się w wymienionym rankingu. Stwierdzono, że pod względem liczebności pierwsze miejsce zajęły holenderskie konie gorącokrwiste, co w świetle najlepszych wyników osiągniętych przez tę grupę świadczy o wysokich predyspozycjach sportowych osobników tej rasy. Wśród sklasyfikowanych koni ujeżdżeniowych największą liczbę synów i córek pozostawiły ogiery Jazz – kwpn i Donerhall – han, natomiast najlepsze wyniki uzyskało potomstwo trakeńskiego ogiera Gribaldi. Zauważono, że ojcami najlepszych koni ujeżdżeniowych były reproduktory, których użytkowość własna stała na bardzo wysokim poziomie. Najliczniejszą grupę pod względem płci stanowiły wałachy (66%), jednak najlepsze wyniki uzyskały klacze (647,2 pkt). Ustalono, że w wieku 10–15 lat badane konie uzyskiwały najlepsze wyniki.

Słowa kluczowe: konie, ujeżdżenie, wartość użytkowa