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Comparison of horse scores obtained in show jumping in national and international competitions in Poland

Porównanie wyników koni startujących w konkursach skoków przez przeszkody
w zawodach krajowych i międzynarodowych w Polsce

Summary. The objective of the study was to indicate top breeds of horses attending show jumping in the national and international competitions held in Poland recently as well as the analysis of the scores obtained by horses in these competitions, considering the animals' age and sex. The studies involved 901 horses. A total of 5656 start in national competitions and 1047 in international ones. A high percentage of foreign bred horses (44%) was found which is the evidence that the Polish breeding, especially of the Wielkopolski and Małopolski breeds, does not meet the needs of sport horse users. Horses under 10 years of age were shown to fault statistically significantly less in the national competitions than the older animals. Supremacy of the Hanoverian, Holsteiner horse breeds and the horses registered in KWPN was established over the Polish breeds, taking into account the mean number of faults incurred in the international competitions. As foreign riders dominated the international competitions held in Poland, it is imperative that horse breeding in Poland should be improved just like the training of Polish competitors.

Key words: sport horse, jumping competition, competition scoring

INTRODUCTION

Among the usability traits of sport horses, aside from high physical fitness and motor coordination, the performance of the horse while jump the obstacles proves to be critical not only in show jumping but in eventing as well. This trait is developed and established to a great extent through adequate preparation and the best possible training at the highest competitive level [Dubois and Ricard 2007, Koenen *et al.* 2004, Pietrzak 2000, Pietrzak *et al.* 2013]. Notably, the study results of many authors highlight the importance of genetic background [Alridge *et al.* 2000, Ducro *et al.* 2007, Marsalek *et al.* 2010, Posta *et al.* 2009].

Hence, show jumping which is the most popular and recognizable equestrian discipline worldwide is pivotal because of technical-sport aspects and equine breeding efforts, too. International competition and huge financial commitments to developing the discipline of show jumping have challenged horse breeders. Riders and trainers search for horses predisposed to jump obstacl, i. e. of appropriate conformation, temperament, psychophysical characteristics as well as mobility and the correct jumping technique.

The objective of the present study was to establish top horse breeds or types best suited for show jumping based on the domestic and international competitions held in Poland recently together with analyses of the scores obtained during these competitions, considering horse age and sex.

MATERIAL AND METHODS

The studies involved 901 horses that competed in show jumping in the national competitions (600 units) and international ones held in Poland (301 units) in the years 2010–2011. A total of 5656 starts of these horses in the domestic competitions and 1047 starts in international were analyzed. The studies were based on the official data supplied by the Polish Equestrian Federation in Warsaw providing information about the horses attending the event (breed, pedigree line, sex, age) and the obtained competition results. Thus, the database was created. There were formed 4 data blocks; the first one contained the data related to the horse name, sex, breed or studbook, year of birth and country of origin. The second block entailed the data on competitors, the third on competitions (date, location, class), whereas the fourth block contained the results of the competitions (final placing, cash awards altogether, number of faults). Combination of the data allowed for determination of 34 breeds of horses attending the national competitions and 27 breeds in the international ones. The breeds, whose representatives appeared in the database less than 8 times were categorized as "other breeds". There was established the number and percentage of each horse breed in the analyzed competition. Total number of penalty points of horse and rider (knocking down an obstacle, disobedience, exceeding the time allowed) in the competition were counted over for a number of faults, for instance: 4 penalties = 1 fault, 8 penalties = 2 faults, 12 penalties = 3 faults etc. Taking into account were only classical competitions like "against the clock" and "not against the clock". Statistical characteristics of the number of faults incurred in the competitions were calculated in relation to the breed groups determined, whereas statistical comparison of these groups was performed using the Duncan`s multiple range test.

Taking into account the mean number of faults committed in each competition, the studied horses were compared in terms of the country of origin within two categories: Polish horses (Polish passport) and foreign horses (foreign passport).The faults given to competing horses were compared similarly considering the horse age (under 7 years of age, 8-10 years, 11 years and more) and sex (stallion, mare, gelding).

RESULTS AND DISCUSSION

It is interesting that among 600 horses attending the national competitions (Tab. 1), the animals bred in Poland accounted for 56%, while in other countries 44%. However,

nearly every third horse was of German origin, Dutch horses constituted ca. 5.5%, Belgian – 2.8%, Danish – 1.7% and under 1% from other countries. As compared to the studies reported 20 years ago which highlighted the domination of the Wielkopolska and Młopolska breed horses and only small minority of foreign breeds [Pietrzak 2000, Pietrzak *et al.* 2001], it is certainly a new phenomenon. It demonstrates that the Polish breeding does not fully satisfy the needs of sport horse users who search for individuals of specific predispositions ensuring top sport performance in show jumping.

The data summarized in Table 1 confirm the quantitative and percent supremacy of German horses in the international competitions taking place in Poland followed by the horses of the Polish origin or Polish Halfbred horses registered in the studbook in which many pedigrees display ancestors of German breeds. Then there are horses registered in the Royal Warmblood Studbook of the Netherlands KWPN, while a percentage of Wielkopolska horses (4.3%), especially Małopolska ones (0.3%) was markedly lower as against the national competition. That implies that the breeding horses of these breeds in Poland cannot withstand the international competition or it seems to be heading in different direction.

Table 1. Numerical proportion and percentage of horses in national and international competitions in relation to horse country of origin

Tabela 1. Liczbowy i procentowy udział koni w zawodach ogólnopolskich i międzynarodowych z uwzględnieniem kraju ich pochodenia

Country Państwo	National competition Zawody ogólnopolskie		International competition Zawody międzynarodowe	
	N (unit/szt.)	%	N (unit/szt.)	%
POL	336	56.00	61	20.27
GER	179	29.83	109	36.21
HOL	33	5.50	44	14.62
BEL	17	2.83	33	10.96
DEN	10	1.67	14	4.65
LTU	6	1.00	2	–
UKR	5	0.83	–	–
FRA	4	0.67	13	4.32
SWE	2	0.33	11	3.65
AUT	2	0.33	1	0.33
CZE	2	0.33	–	–
IRL	2	0.33	6	1.99
SLO	1	0.17	–	–
ITA	1	0.17	1	0.33
SUI	–	–	2	0.66
HUN	–	–	2	0.66
LAT	–	–	1	0.33
RUS	–	–	1	0.33
Total/Razem	600	100.00	301	100.00

In show jumping class CC (obstacle height ca. 140 cm) and CS (ca. 150 cm), there were observed statistically significant differences between the horse breeds under study in terms of the mean number of faults incurred in the Polish competitions (Tab. 2). The Hanoverian horses were given the lowest number of faults on average as compared to other breeds at the most challenging contests of the analyzed competitions (class CS). As regarding all the contest classes studied, the Holsteiner horses appeared to be the best in this respect (x = 1.29 pt). In the class CS international contests, highly significant statistical differences were stated between the Dutch horses (x = 1.17 pt) and the horses from the Polish breeding (Tab. 3). Then, significant statistically differences were established in the contests with obstacle height 130 and 140 cm between the German breed horses (Holsteiner and Hanoverian) and those from the Polish breeding.

Table 2. Comparison of horse breeds studied as regards to mean number of faults incurred in national competitions
Tabela 2. Porównanie badanych ras koni pod względem średniej liczby błędów w konkursach ogólnopolskich

Class of competition/ height of obstacles Klasy konkursów/ wysokość przeszkód (cm)		Breed/Rasa				
		wielko- polska	Polish horse halfbred polski koń szla- chetny półkrwi	Hanoverian hanowerska	Holstein holsztyńska	Dutch holenderska
N/120	n	56	348	63	88	50
	x	1.23	1.18	1.24	1.24	1.16
	SD	1.44	1.48	1.23	1.74	1.56
C/130	n	94	621	148	208	116
	x	1.44	1.25	1.20	1.12	1.22
	SD	1.27	1.58	1.39	1.34	1.29
CC/140	n	36	240	49	70	55
	x	1.75[b]	1.76[b]	2.14[a]	1.77[b]	1.78[b]
	SD	1.63	2.26	3.54	1.58	1.98
CS/150	n	3	31	12	12	15
	x	1.67[a]	2.23[b]	1.50[a]	2.00	2.60[b]
	SD	1.53	1.36	1.00	1.13	2.38
Total Razem	n	189	1240	272	378	236
	x	1.44	1.35	1.39	1.29	1.42
	SD	1.40	1.72	1.96	1.50	1.65

a, b – means denoted in lines by different small letters differ significantly at P ≤ 0.05
a, b – średnie oznaczone w wierszach różnymi małymi literami różnią się istotnie przy P ≤ 0,05

Statistically significant differences were not reported between the horse groups with Polish and foreign passports considering the mean number of faults in the national competitions. While in the international competitions in all the contest classes, this type of difference was shown in favor of the horses with foreign passports. Especially in the most competitive contests (CS), the horses with Polish passports made 2 times more mistakes on average (Tab. 4). It is likely to be associated not only with the potential of a given horse breed or type but with a professional level of a rider. The problems of the training of Polish riders and horses have been frequently addressed in the professional literature [Pietrzak 2000, Pietrzak *et al.* 2001, Pietrzak *et al.* 2013].

Table 3. Comparison of horse breeds analyzed in terms of mean number of faults in international
competitions
Tabela 3. Porównanie badanych ras koni pod względem średniej liczby błędów w konkursach
międzynarodowych

Class of competition/ height of obstacles Klasy konkursów/ wysokość przeszkód (cm)		Breed/Rasa				
		wielko-polska	Polish horse halfbred polski koń szlachetny półkrwi	Hanoverian hanowerska	Holstein holsztyńska	Dutch holenderska
C/130	n	18	64	25	40	41
	x	1.61 [a]	1.38	0.72 [b]	0.98	0.76
	SD	1.24	1.64	0.94	0.92	0.97
CC/140	n	2	34	30	38	38
	x	1.50 [a]	1.06	1.20	0.82 [b]	0.66 [b]
	SD	0.71	1.04	1.10	1.04	1.02
CS/150	n	5	22	25	43	41
	x	2.80 [Aa]	2.82 [Aa]	1.40 [b]	1.53 [b]	1.17 [B]
	SD	1.30	2.02	1.15	1.49	1.16
Razem	n	25	120	80	121	120
	x	1.84	1.55	1.11	1.12	0.87
	SD	1.28	1.68	1.09	1.21	1.07

A, B – means denoted in lines by different capital letters differ significantly at $P \leq 0.01$
a, b – means denoted in lines by different small letters differ significantly at $P \leq 0.05$
A, B – średnie oznaczone w wierszach różnymi dużymi literami różnią się istotnie przy $P \leq 0,01$
a, b – średnie oznaczone w wierszach różnymi małymi literami różnią się istotnie przy $P \leq 0,05$

Table 4. Comparison of horse groups under study concerning mean number of faults
in international competitions
Tabela 4. Porównanie badanych grup koni pod względem średniej liczby błędów w konkursach
międzynarodowych

Class of competition/ obstacle height Klasa konkursu/ Wysokość przeszkód (cm)		Horse passports	
		Polish polskie	foreign zagraniczne
C/130	n	88	148
	x	1.41 [a]	0,85 [b]
	SD	1.53	1.06
CC/140	n	40	161
	x	1,20	0,88
	SD	1,14	1,18
CS/150	n	30	175
	x	3.00 [A]	1.46 [B]
	SD	2.02	1.29
Total Razem	n	158	484
	x	1.66 [a]	1,08 [b]
	SD	1.67	1.22

A, B – means denoted in lines by different capital letters differ significantly at $P \leq 0.01$
a, b – means denoted in lines by different small letters differ significantly at $P \leq 0.05$
A, B – średnie oznaczone w wierszach różnymi dużymi literami różnią się istotnie przy $P \leq 0,01$
a, b – średnie oznaczone w wierszach różnymi małymi literami różnią się istotnie przy $P \leq 0,05$

The analysis of the mean number of faults incurred in the national competitions by horses of both sexes demonstrates that in most cases stallions outnumbered geldings and mares while in class CC and CS contests, the differences between sexes were statistically significant (Tab. 5).

This type of differences was not observed in the international competitions (Tab. 6) and altogether, in all the contest classes, mares and geldings were scored slightly higher than stallions. That is in line with the data mentioned by other authors [Pietrzak 2000, Thoren Hellsten *et al.* 2008]. In hippological literature, there are reports indicating the substantial effect of horse sex on sporting results achieved [Pietrzak 2000, Pietrzak *et al.* 2013, Thoren Hellsten *et al.* 2008]. The studies found a high percent of stallions in the national competitions and this fact implies the intention of stallion promotion as a sire or a chance for being submitted for stallion licensing breeding through the so called alternative performance test which includes show jumping. Generally, the studies of other authors highlight the highest percentage of geldings in competitions [Pietrzak 2000, Thoren Hellsten *et al.* 2008], alike, these studies confirmed it for international competitions.

Table 5. Comparison of horses tested regarding sex with respect to mean number of faults in national competitions

Tabela 5. Porównanie badanych koni z uwzględnieniem płci pod względem średniej liczby błędów w konkursach ogólnopolskich

Class of competition/ obstacle height Klasy konkursów/ wysokość przeszkód (cm)		Sex/Płeć		
		mares/ klacze	stallions ogiery	geldings/wałachy
N/120	n	273	309	252
	x	1.16	1.29	1.21
	SD	1.37	1.58	1.52
C/130	n	545	622	551
	x	1.26	1.13	1.31
	SD	1.43	1.49	1.42
CC/140	n	204	239	253
	x	2.35 [a]	1.53 [b]	1.74 [b]
	SD	3.55	1.75	2.56
CS/150	n	28	37	37
	x	2.18	1.76 [a]	2.38 [b]
	SD	1.25	1.52	1.74
Total Razem	n	1050	1207	1093
	x	1.47	1.27	1.42
	SD	2.06	1.57	1.80

a, b – means denoted in lines by different small letters differ significantly at P ≤ 0.05
a, b – średnie oznaczone w wierszach różnymi małymi literami różnią się istotnie przy P ≤ 0,05

Comparison of age groups of the horses under investigation in terms of the number of faults in the national competitions showed that the individuals under 8 years of age made significantly statistically fewer mistakes than the older horses (Tab. 7).

Table 6. Comparison of horses studied concerning sex with regard to mean number of faults in international competitions
Tabela 6. Porównanie badanych koni z uwzględnieniem płci pod względem średniej liczby błędów w konkursach międzynarodowych

Class of competition/ obstacle height Klasy konkursów/ wysokość przeszkód (cm)		Sex/Płeć		
		mares klacze	stallions ogiery	geldings wałachy
C/130	n	93	114	94
	x	1.00	1.09	0.84
	SD	1.18	1.32	1.16
CC/140	n	87	86	92
	x	0.72	0.93	0.99
	SD	1.05	1.04	1.25
CS/150	n	75	85	104
	x	1.64	1.61	1.48
	SD	1.59	1.41	1.43
Total Razem	n	255	285	290
	x	1.09	1.20	1.12
	SD	1.32	1.30	1.32

Table 7. Comparison of horse age groups relating to mean number of faults in national competitions
Tabela 7. Porównanie grup wiekowych badanych koni pod względem średniej liczby błędów w konkursach ogólnopolskich

Class of competition / obstacle height Klasy konkursów/ wysokość przeszkód (cm)		Horse age groups (years) Grupy wiekowe koni (lata)		
		11 ≤	8–10	≤ 7
N/120	n	112	345	388
	x	1.12	1.39	1.08
	SD	1.39	1.56	1.44
C/130	n	356	878	513
	x	1.26	1.25	1.19
	SD	1.35	1.34	1.74
CC/140	n	186	437	74
	x	1.87 [a]	1.94 [a]	1.32 [b]
	SD	2.54	2.91	1.18
CS/150	n	20	81	4
	x	1.80	2.15 [a]	1.50 [b]
	SD	1.15	1.64	1.29
Total Razem	n	674	1741	979
	x	1.42	1.49	1.15
	SD	1.78	1.93	1.59

a, b – means denoted in lines by different small letters differ significantly at $P \leq 0.05$
a, b – średnie oznaczone w wierszach różnymi małymi literami różnią się istotnie przy $P \leq 0{,}05$

As for international competitions, statistically significant differences were not re-ported between the age groups in this respect, however the 11-year old horses and older were scored higher as compared to other age groups (Tab. 8). The results obtained at the international competitions analyzed in this respect agree with other authors` studies on age of sport horses and their usability value [Pietrzak 2000, Thoren Hellsten *et al.* 2008].

Table 8. Comparison of horses under study regarding sex in terms of mean number of faults in international competitions

Tabela 8. Porównanie badanych koni z uwzględnieniem płci pod względem średniej liczby błędów w konkursach międzynarodowych

Class of competition/ obstacle height Klasy konkursów/ wysokość przeszkód (cm)		Horse age groups (years)/ Grupy wiekowe koni (lata)		
		11 ≤	8–10	≤ 7
C/130	n	39	168	90
	x	0.87	1.07	0.92
	SD	0.89	1.34	1.14
CC/140	n	43	167	54
	x	0.63	0.94	0.93
	SD	1.02	1.14	1.13
CS/150	n	80	178	2
	x	1.25	1.71	0.50
	SD	1.10	1.58	0.71
Total Razem	n	162	513	146
	x	0.99	1.25	0.92
	SD	1.06	1.41	1.13

RESUME AND CONCLUSION

The present studies have found that in the years 2010–2011 in the Polish competi-tions – show jumping discipline, 56% of competing horses came from the domestic breeding (mainly registered in the studbook "Polish Halfbred horse") and 44% from foreign breeding, chiefly the German one. Such a high percentage of horses from foreign breeding indicates that the horses from the Polish breeding (especially the Wielkopolska and Małopolska breed) do not meet the requirements of users of sport horses for show jumping. Stallions were found to make the most numerous group competing in the na-tional show jumping competitions under investigation which clearly indicates the in-tended promotion of stallions as sires or in the case of youngsters – submission to so called alternative performance test. Horses aged under 10 years constituted the highest percentage of competing individuals and were given significantly statistically fewer faults in the domestic competitions than older horses. Comparison of horse breeds in terms of the mean number of mistakes in the competitions has shown explicitly the supremacy of the Hanoverian, Holsteiner horses and those on the KWPN registry over the horses bred in Poland. In light of the calculations, it may be concluded that statistically significant

differences relevant to the mean number of faults in the contests given to the horses with Polish passports versus those with foreign ones in the international competitions arise not only from a different class of horses but riders` competence as well. The studies have highlighted the shortcomings of the Polish equestrian sport with regard to rider training.

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Streszczenie. Celem pracy była próba określenia, które rasy koni odgrywają wiodącą rolę w ostatnich latach w dyscyplinie skoków przez przeszkody w zawodach krajowych i międzynarodowych rozgrywanych w Polsce, a także analiza wyników tych zawodów z uwzględnieniem wieku i płci koni. Badaniami objęto 901 koni, łącznie przeanalizowano 5656 startów w zawodach krajowych oraz 1047 w międzynarodowych. Stwierdzono występowanie znacznego odsetka koni z hodowli zagranicznej (44 %), który świadczy o tym, że krajowa hodowla, szczególnie ras wielkopolskiej i małopolskiej, nie zaspokaja potrzeb użytkowników koni sportowych. Ustalono, że konie w wieku do 10 lat popełniały statystycznie istotnie mniej błędów w konkursach krajowych aniżeli osobniki starsze. Określono supremację ras hanowerskiej, holsztyńskiej i koni zapisanych do księgi KWPN nad krajowymi rasami w zakresie średniej liczby błędów popełnianych w konkursach międzynarodowych. Stwierdzono, że w zawodach międzynarodowych rozgrywanych w Polsce dominowali jeźdźcy zagraniczni, co może dowodzić konieczności poprawy nie tylko jakości hodowli koni w Polsce, ale także wyszkolenia rodzimych jeźdźców.

Słowa kluczowe: konie sportowe, konkursy skoków, wyniki zawodów