

SCORING SYSTEM MODIFICATION OF CHOSEN ELEMENTS IN SADDLE VARIANT OF POLISH KONIK HORSE PERFORMANCE TEST

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ABSTRACT

The aim of the study was to elaborate a new scoring system of chosen elements in performance test of Polish Konik horse. In the analysis, 42 horses were included. Test scores of two approaches were statistically elaborated: of the system in force and obtained on the basis of new intervals divided according to their mean values and SD. Multifactorial analysis of variance and T-Tukey test were performed. Low variation of individual performance test scores suggests a necessity for modification of the score system in force. The necessity also results from the change of score level in effect of using the new scoring system. The method of estimating the following traits is particularly controversial: behaviour, step length in walk, return of breath frequency to standard and effort test which belong to elements usually maximally scored. In consequence, they do not function as selection criteria.

Key words: Polish Konik horses, riding attempt, scoring

INTRODUCTION

Performance tests are the first and, as some people believe, the most important stage in equine breeding work [Kownacki 1984, Koenen et al. 2004]. However, the studies on the performance testing methods focus on noble horses most frequently [Wallin et al. 2003, Hellsten et al. 2006]. They concentrate on the improvement of e.g. a jumping technique, correction of equine biomechanics [Lewczuk 2004] as well as determination of the organism capacity traits [Aguirre 2000, Szarska 2000]. Actually, evaluation of primitive horse utility value does not arouse such a wide public interest [Jaworski and Jezierski 2001, Górecka et al. 2003, Pasicka 2013] and the existing studies pertain mainly to the performance analysis [Kędzierski and Pluta 2013] together with results of the existing performance tests. Despite the guidelines recommended in the currently conducted conservation program of Polish Konik (PK) horse breeding [Jezierski et al. 2012] and the program of genetic resource conservation of this horse breed [Jaworski and Tomczyk-Wrona 2010] that indicate potential improvement of the Pk horse motor traits, there is limited research on modification of the scoring system for performance test. Jaworski et al. [2013]

pointed out some possible alternatives to the field performance test and its substitution with the sport competitions included into so called Three-Day-Event of Polish Konik horse. Still, the authors did not propose any qualitative changes in the evaluation of the field performance test itself. Such studies, though, need to be carried out as the results of the existing performance test imply too low requirements for the PK horses. Consequently, it seems essential to modify the test and develop separate guidelines for stallions and mares.

It may be assumed that the norms assigned to each performance test component which is scored during the testing are not appropriate to the performance parameters characterizing the current population of PK horses. It is noteworthy that the existing rules for conducting and assessment of performance testing were elaborated in 1999, that is 17 years ago [Jaworski and Jezierski 2001]. Even though the Polish Konik breeding has a conservation character, 17 years' time seems to be too long without any modifications introduced. Establishing new norms in performance testing will probably contribute to higher objectivization and specifying of the final evaluation of the PK horse and thus, practicing effective selection of the best individuals for breeding purposes. Notably, that co-

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uld also prevent the loss of performance parameters in the Konik horse population. The functional importance of the aforementioned issues helped define the main objective of the present research, that is modification of the scoring system for chosen segments of under saddle performance test for the Polish Konik horse. Whereas the intermediate objective was the statistical analysis of the overall results of the current performance testing and those obtained after the modification.

MATERIAL AND METHODS

The research material comprised the overall results of the under saddle component of the performance test of 42 Polish Konik horses conducted in the Conservative Breeding Centre for Animals “Florianka” in the Roztocze National Park over the years 2001–2015. The Konik horses came from three breeding centres. A total of eight segments making up the under saddle test conducted during the performance test were analyzed: evaluation of behavior patterns, velocity at walk and trot, stride length at walk and trot, riding over distances or 1-hour ride, recovery of heart rate and respiratory recovery (a difference between the post-exercise value and the resting rate) [Jeziński et al. 2012, Jaworski et al. 2013]. The changes in the current segments of the performance test pertained to seven out of eight performed and only in the case of behavior patterns evaluation, the existing scoring remained unchanged.

The other segments were modified as follows: 1) average value and standard deviation (SD) were calculated for PK horses for each segment tested; 2) on the basis of the results thus obtained, a following scoring method for other segments (traits) was proposed: 1 point – trait value lower than the average value reduced by 2SD value; 2 points – trait value within the interval from the average value reduced by 2SD value up to the average value lower than reduced by 1SD value; 3 points – trait value within the interval from the average reduced by 1SD value up to the average increased by 1SD value; 4 points – trait value within the interval from the average value higher than the average increased by 1SD up to the average increased by 2SD value; 5 points – trait value higher than the average increased by 2SD value. The traits value intervals were calculated with consideration of a horse gender. In order to adapt the proposed scoring method to that existing for the trait called an endurance test, a 10-point scale was applied (2; 4; 6; 8; 10 pts), whereas for the traits heart rate recovery and respiratory recovery – a 5-point scale was used (0.5; 1.0; 1.5; 2.0; 2.5). The points were given subject to a desired high or low value of the trait. The modifications did not change the course of performance test. There was also introduced a symbol denoting the number of the test segments in which a

horse had the maximum scores (e.g. 2M – maximum scores for behavior patterns and 1-hour ride, etc). There was proposed a following method for the end result calculation, namely, the end result of the PK horse performance testing is the cumulative score (at the appropriate scale) earned for each of eight test segments. The points were given on the basis of trait values found within the value intervals calculated separately for the stallions and mares. The calculations were made in PQStat software program. A multi-factor analysis of variance (ANOVA GLM) was performed considering PK horse gender and a breeding location. Significance of differences between the means was determined using t-Tukey’s test. The percentage analyses were also made.

Table 1. Ranges of compartments performance test elements and assigned them score on scale of 1–5

Tabela 1. Zakresy przedziałów wartości elementów próby dzielności oraz przydzielona im punktacja w skali 1–5

Points Punktacja	Speed in walk, min. Szybkość w stępie, min.	Speed in trot, min. Szybkość w kłusie, min.	Step length in walk, cm Długość kroku w stępie, cm	Step length in trot, cm Długość kroku w kłusie, cm
Ogiery – Stallions				
5	<3.99	<1.31	>172.23	>274.30
4	3.99–4.41	1.31–1.59	161.57–172.23	257.77–274.30
3	4.42–5.28	1.60–2.19	140.22–161.56	224.69–257.76
2	5.29–5.71	2.20–2.50	129.55–140.21	208.15–224.68
1	>5.71	>2.50	<129.55	<208.14
Mares – Kłaczce				
5	<4.09	<1.10	>170.92	>286.93
4	4.09–4.52	1.10–1.48	160.51–170.92	266.81–286.93
3	4.53–5.41	1.49–2.27	139.67–160.50	226.54–266.80
2	5.42–5.84	2.28–2.66	129.24–139.66	206.41–226.53
1	>5.84	>2.66	<129.24	<206.411

RESULTS

Tables 1 and 2 present the intervals of values of each performance test segment together with the assigned scores calculated on the basis of the proposed methodological assumptions.

The average score for horse behavior patterns was less than 5 points, irrespective of horse gender (Table 3). No significant differences between the means were reported.

The average time of 500-m ride in walk was similar, regardless the horse gender (Table 4). There were not observed any differences between the stallions and mares as regards the mean results and average scoring in both, the applicable and proposed scoring system. Whereas signi-

Table 2. Interval ranges of performance test elements and the score assigned on a scale of 2–10 and 0.5–2.5

Tabela 2. Zakresy przedziałów wartości elementów próby dzielności koników oraz przydzielona im punktacja w skali 2–10 i 0,5–2,5

Points Punktacja	Effort test, m Próba wysiłkowa, m	Points Punktacja	Return of pulse to standard Powrót tętna do normy	Return of breath frequency to standard Powrót oddechów do normy
Ogiery – Stallions				
10	>13136.40	2.5	<1.08	<0.33
8	10976.07–13136.40	2	1.08–1.08	0.33–0.96
6	6655.38–10976.06	1.5	1.09–2.88	0.97–3.54
4	4495.05–6655.37	1	2.89–3.48	3.55–4.83
2	<4495.05	0.5	>3.48	>4.83
Mares – Klacze				
10	>13045.37	2.5	<0.86	<0.59
8	11073.86–13045.37	2	0.86–0.57	0.59–0.86
6	7130.81–11073.85	1.5	0.58–3.43	0.87–3.76
4	5159.29–7130.80	1	3.44–4.86	3.77–5.21
2	<5159.29	0.5	>4.86	>5.21

Table 3. Score for behavior

Tabela 3. Punktacja za zachowanie się

Mean score, pts Średnia ocena w pkt.	SD	Min	Max
Stallions – Ogiery			
4.67	0.57	3	5
Mares – Klacze			
4.83	0.38	4	5

Table 4. Time of crossing 500 m in walk and valid and proposed scoring

Tabela 4. Czas przebycia 500 m w stępie oraz punktacja obowiązująca i proponowana

Time, min Czas, min				Valid scoring Punktacja obowiązująca				Proposed scoring Punktacja proponowana			
Mean Średnia	SD	Min	Max	Mean Średnia	SD	Min	Max	Mean Średnia	SD	Min	Max
Stallions – Ogiery											
4.85a	0.43	4.02	5.32	3.94x	0.56	2	5	3.17y	0.62	2	4
Mares – Klacze											
4.97a	0.44	4.27	6.01	3.79x	0.62	1	5	3.08y	0.65	1	4

Means marked with different letters differ significantly at $P \leq 0.05$ (x, y – refers to the comparison of valid and proposed scoring).
Średnie oznaczone różnymi literami różnią się istotnie przy $P \leq 0,05$ (x, y – dotyczy porównania punktacji obowiązującej z proponowaną).

Table 5. Time of crossing 500 m in trot and valid and proposed scoring

Tabela 5. Czas przebycia 500 m w kłusie oraz punktacja obowiązująca i proponowana

Time, min Czas, min				Valid scoring Punktacja obowiązująca				Proposed scoring Punktacja proponowana			
Mean Średnia	SD	Min	Max	Mean Średnia	SD	Min	Max	Mean Średnia	SD	Min	Max
Stallions – Ogiery											
1.90	0.30	1.48	2.28	3.94	1.06	2	5	3.22	0.73	2	4
Mares – Klacze											
1.88	0.39	1.4	3.06	4.08x	1.14	1	5	3.04y	0.62	1	4

Means marked with different letters differ significantly at $P \leq 0.05$ (x, y – refers to the comparison of valid and proposed scoring).
Średnie oznaczone różnymi literami różnią się istotnie przy $P \leq 0,05$ (x, y – dotyczy porównania punktacji obowiązującej z proponowaną).

Table 6. Step length in walk and valid and proposed scoring

Tabela 6. Długość kroku w stępie oraz punktacja obowiązująca i proponowana

Step length, cm Długość kroku, cm				Valid scoring Punktacja obowiązująca				Proposed scoring Punktacja proponowana			
Mean Średnia	SD	Min	Max	Mean Średnia	SD	Min	Max	Mean Średnia	SD	Min	Max
Stallions – Ogiery											
150.89	10.67	135	175	4.39x	0.85	3	5	2.89y	0.76	2	5
Mares – Klacze											
150.08	10.42	125	163	4.38x	0.82	2	5	3.04y	0.69	1	4

Means marked with different letters differ significantly at $P \leq 0.05$ (x, y – refers to the comparison of valid and proposed scoring).
Średnie oznaczone różnymi literami różnią się istotnie przy $P \leq 0,05$ (x, y – dotyczy porównania punktacji obowiązującej z proponowaną).

Table 7. Step length in trot and valid and proposed scoring

Tabela 7. Długość kroku w kłusie oraz punktacja obowiązująca i proponowana

Step length, cm Długość kroku, cm				Valid scoring Punktacja obowiązująca				Proposed scoring Punktacja proponowana			
Mean Średnia	SD	Min	Max	Mean Średnia	SD	Min	Max	Mean Średnia	SD	Min	Max
Stallions – Ogiery											
241.22	16.54	217	277	3.83	0.92	2	5	3.11	0.68	2	5
Mares – Klacze											
246.67	20.13	212	285	4.04x	0.91	2	5	3.08y	0.58	2	4

Means marked with different letters differ significantly at $P \leq 0.05$ (x, y – refers to the comparison of valid and proposed scoring).
Średnie oznaczone różnymi literami różnią się istotnie przy $P \leq 0,05$ (x, y – dotyczy porównania punktacji obowiązującej z proponowaną).

Table 8. Distance covered during effort test and valid and proposed scoring

Tabela 8. Dystans przebyty podczas próby wysiłkowej oraz punktacja obowiązująca i proponowana

Distance, m Dystans, m				Valid scoring Punktacja obowiązująca				Proposed scoring Punktacja proponowana			
Mean Średnia	SD	Min	Max	Mean Średnia	SD	Min	Max	Mean Średnia	SD	Min	Max
Stallions – Ogiery											
8816	2160	990	11665	9.00x	1.57	6	10	6.11y	0.47	6	8
Mares – Klacze											
9102	1972	904	11460	9.50x	1.35	4	10	6.00y	1.02	2	6

Means marked with different letters differ significantly at $P \leq 0.05$ (x, y – refers to the comparison of valid and proposed scoring).
Średnie oznaczone różnymi literami różnią się istotnie przy $P \leq 0,05$ (x, y – dotyczy porównania punktacji obowiązującej z proponowaną).

Table 9. Difference between resting and post exercise pulse and valid and proposed scoring

Tabela 9. Różnica między tętnem spoczynkowym a powysiłkowym oraz punktacja obowiązująca i proponowana

Time, min Czas, min				Valid scoring Punktacja obowiązująca				Proposed scoring Punktacja proponowana			
Mean Średnia	SD	Min	Max	Mean Średnia	SD	Min	Max	Mean Średnia	SD	Min	Max
Stallions – Ogiery											
4.17a	3.33	0	12	2.28x	0.86	1	2.5	1.08y	0.84	0.5	2.5
Mares – Klacze											
5.54b	6.32	0	26	1.96x	0.63	0.5	2.5	0.94y	0.68	0.5	2.5

Means marked with different letters differ significantly at $P \leq 0.05$ (a, b – refers to comparison of stallions with mares, x, y – refers to the comparison of valid and proposed scoring).
Średnie oznaczone różnymi literami różnią się istotnie przy $P \leq 0,05$ (a, b – dotyczy porównania ogierów z klaczami, x, y – dotyczy porównania punktacji obowiązującej z proponowaną).

Table 10. Difference between resting and post exercise breath frequency and valid and proposed scoring

Tabela 10. Różnica między liczbą oddechów w spoczynku i po wysiłku oraz punktacja obowiązująca i proponowana

Time, min Czas, min				Valid scoring Punktacja obowiązująca				Proposed scoring Punktacja proponowana			
Mean Średnia	SD	Min	Max	Mean Średnia	SD	Min	Max	Mean Średnia	SD	Min	Max
Stallions – Ogiery											
3.39	6.34	0	23	2.25x	1.29	0.5	2.5	1.78y	0.86	0.5	2.5
Mares – Klacze											
3.58	4.63	0	16	2.31x	1.45	1	2.5	1.60y	0.79	0.5	2.5

Means marked with different letters differ significantly at $P \leq 0.05$ (x, y – refers to the comparison of valid and proposed scoring).
Średnie oznaczone różnymi literami różnią się istotnie przy $P \leq 0,05$ (x, y – dotyczy porównania punktacji obowiązującej z proponowaną).

Table 11. Results of performance test – total score

Tabela 11. Wyniki zasadniczej próby dzielności – łączna punktacja

Valid scoring Punktacja obowiązująca				Proposed scoring Punktacja proponowana			
Mean Średnia	SD	Min	Max	Mean Średnia	SD	Min	Max
Stallions – Ogiery							
34.31	4.335	25	39.5	26.03	2.74	21.0	31.50
Mares – Klacze							
34.94	3.9	24	40	25.63	2.43	22.0	31.00

ficant differences occurred when comparing the existing and proposed scoring system.

Significant differences were not reported relating to horse gender with respect to the time it travelled 500 m at trot as well as in the current and proposed scoring for this performance test segment (Table 5). Significant differences between the applicable and proposed scoring considered only mares.

There were not observed any significant differences between the stallions and mares as for the stride length at walk and generally, the current and proposed scoring for this performance test segment (Table 6). However in both cases, i.e. stallions and mares, the existing scoring has been significantly higher than the proposed one.

No significant differences were established between the stallions and mares relating to the stride length at trot and the applicable and proposed scoring for this test segment (Table 7). Concerning the mares, the applicable scoring has been significantly higher as against the proposed one.

Significant differences were not determined between the stallions and mares as for the endurance test distance and the applicable and proposed scoring for this performance test segment (Table 8). For both, stallions and mares the applicable scoring has been significantly higher than the proposed one.

The heart rate recovery time of the mares was found to be significantly longer than in the stallions (Table 9).

The gender-related differences in both, the current and proposed scoring did not occur. The proposed scoring was significantly lower than the current one.

There were not reported significant differences between the stallions and mares as regards a difference between the resting respiratory rates and post-exercise ones as well as the existing and proposed scoring for this performance test segment (Table 10). In the case of both, stallions and mares, the existing scoring has been significantly higher than the proposed one.

The total end result of the under saddle performance test did not show differences between the mean values obtained by the mares and stallions in the existing scoring (Table 11). The outliers appeared within the 24–40 point range for the mares. The end results calculated according to the proposed scoring system for each segment of the under saddle component did not differentiate statistically significantly stallions and mares. The outliers were found within the 21–31.5 point interval and characterized the stallion group this time.

Table 12 presents a percentage of stallions and mares that earned the highest scores for each segment of the under saddle component of the performance test. According to the current scoring system, the highest number of stallions were given the maximum scores for the respiratory recovery trait. As for the mare group, such traits were behavior patterns and endurance test. Whereas the the lowest number of maximum scores pertained to the stride

length at trot (stallions and mares) and velocity at walk (mares). The maximum scoring, based on the proposed scoring system, was obtained by the horses for the heart rate recovery and respiratory recovery time (Table 12) with the highest percentage of horses for the latter trait. Besides, the stallions were awarded the maximum scores for the stride length at walk and trot.

Table 12. Percentage share of horses which reached maximum score for chosen elements of performance test

Tabela 12. Procentowy udział koni, które osiągnęły maksymalną punktację za poszczególne elementy próby dzielności

Performance test elements, pts Element próby, pkt	Valid scoring Punktacja obowiązu- jąca		Proposed scoring Punktacja propono- wana	
	stallions ogiere	mares klacze	stallions ogiere	mares klacze
			not coun- ted nieliczo- na	not coun- ted nieliczo- na
Behaviour Zachowanie się	66.7	83.3		
Speed in walk Szybkość w stępie	38.9	37.5	0.0	0.0
Speed in trot Szybkość w kłusie	33.3	41.6	0.0	0.0
Step length in walk Długość krok w stępie	61.1	54.2	5.55	0.0
Step length in trot Długość kroku w kłusie	27.8	37.5	5.55	0.0
Effort test Próba wysiłkowa	66.7	83.3	0.0	0.0
Pulse return Powrót tętna	72.2	41.6	22.2	12.5
Breath frequency return Powrót oddechów	83.3	79.2	50	37.5
Final rating Ocena końcowa	0.0	4.2	0.0	0.0

In the under saddle performance test, the highest number of stallions (6 units) were given five maximum scores out of eight available (Table 13). The mares obtained four maximum scores most frequently (6 units), notably, one of them achieved all the maximum scores. Considering the proposed scoring system, the largest number of stallions (4 units) received two maximum scores out of eight available (Table 13). Most commonly, the mares obtained one maximum score (13 units).

DISCUSSION

Generally, the obtained results of the current performance test indicate a high level of the PK horses utility value. First and foremost, the scores awarded for horse behavior patterns are worth noting as, irrespective of horse gender, they exceeded 4.5 points and thus, approached the maximum score (Table 3). The results are not surprising but

truly satisfying, being the outcome of the preliminary performance test of Konik horses aiming at the elimination of individuals exhibiting undesirable behavior qualities [Jaworski and Jezierski 2001, Jezierski et al. 2006]. Therefore, it may be stated that the preliminary testing has completely fulfilled its functions.

Table 13. Numbers of horses that have reached next number M (number of elements of performance test with maximum rating)

Tabela 13. Liczebność koni, które osiągnęły kolejną liczbę M (liczba elementów próby z oceną maksymalną)

M number Liczba M	1	2	3	4	5	6	7	8
Valid scoring – Punktacja obowiązu- jąca								
Stallions – Ogiery	1	2	3	0	6	4	2	0
Mares – Klacze	0	2	4	6	5	4	2	1
Proposed scoring – Punktacja propono- wana								
Stallions – Ogiery	3	4	2	0	0	0	0	0
Mares – Klacze	13	6	1	0	0	0	0	0

However the results, and consequently the scoring system for the performance test components associated with horse work, are thought-provoking. The mean scores for the time of 500 m -ride in walk and trot approach 4.0 or exceed it slightly (Tables 4–7). That provides ground for assuming that the existing performance tests are too liberal to allow the actual and objective check of PK horse utility value. The problem is even more clear if you take into account a fact of low standard deviation accompanying the means and a lack of significant differences between the analyzed factors. According to Sasimowski [1983] and Koenen et al. [2004], the evaluation of utility value is of key importance in the breeding work provided the traits are chosen appropriately and evaluated. Besides, the appropriateness of choice of traits assessed by the utility tests relies on their high variability [Strzelec 2001, Santamaria et al. 2004]. Therefore, the obtained results encourage a debate on the modification of the performance testing for Polish Konik horses, especially that the program of genetic resource conservation for this breed horses [Jaworski and Tomczyk-Wrona 2010] pointed out the essential improvement of motor quality of the monitored population.

The performance test evaluated the elements of the horse organism aerobic capacity [Jezierski et al. 2006]. The result of the exercise test is affected by equine locomotion predispositions, among others, stride length as well as aerobic capacity predisposition, e.g. recovery of heart and respiratory rate [Aguirre 2000, Komosa and Frackowiak 2007, Janczarek et al. 2014]. Both, the scores for the locomotion predispositions and physiological parameters did not differentiate the horses in terms of gen-

der. The only statistically significant differences occurred between two sexes as regards the trait pertaining to the mean recovery time of heart rate (Table 9). The studies in this field need to be continued.

Besides, the lack of sufficiently high differentiation between the scores given during the testing is also indicated by a percentage of horses that obtained the maximum scores for each segment of the performance test (Table 12). It turned out that in the under saddle component of the performance test, about 60–70% of stallions and mares achieved the maximum scores for over a half of the assessed segments. They include behavior patterns, which was mentioned earlier, as well as the stride length at walk, respiratory recovery and endurance test results. Subsequently, it seems that the modification of the scoring system of PK horse performance test should start from these traits.

The modification proposed in the present paper consisted in a change of the interval of values serving as the basis for the scores given for each test segment. In most cases, the changes did not have the intended effect as regards differentiation of the sex-related results.

In the proposed scoring system, a percentage of horses that obtained the maximum partial scores declined or completely disappeared within the basic interval. In five segments out of eight, not one single case like that occurred (Table 13). In view of the fact that the new value intervals were worked out based on the assumed principles of statistical calculations [Janczarek et al. 2014], the obtained results were considered satisfying. However, it is not encouraging that they have changed the picture of the PK horse utility values under study. It obviously was not the intention of the present authors whose only aim was to highlight the necessity for the problem undertaking, namely to objectify the scoring system of the performance tests that constitute a vital part of Polish Konik horse breeding strategy and utility. The studies expanded by the carriage tests of this breed horse conducted under the performance testing should be carried on. However, on account of relatively low number of individuals whose performance test results were analyzed, the obtained results can be presently recognized as only the pilot study results.

CONCLUSIONS

1. A lack of differentiation between the individual results of Polish Konik horses performance test and the results considering a factor of breed and performance test component indicates the necessity for modification of the existing scoring system.
2. Behavior of PK horse, stride length at walk, respiratory recovery and the endurance test results in the under saddle component belong to the segments assessed

in most individuals under study by means of maximum scores. Notably, this situation prevents the selective function of these segments and for that reason their scoring method needs to be modified to a great extent.

3. The proposed scoring system for the performance test presented in this paper based on the mean value and standard deviation of a trait has clearly changed the score distribution in the Polish Konik horse group under study. However, before the ultimate recommendation for the modification of the current scoring system, the research results require confirmation on higher number of individuals.

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MODYFIKACJA SPOSOBU PUNKTACJI WYBRANYCH ELEMENTÓW WIERZCHOWEGO WARIANTU PRÓBY DZIELNOŚCI KONIKÓW POLSKICH

STRESZCZENIE

Celem pracy było opracowanie nowego sposobu naliczania punktów za wybrane elementy próby dzielności konika polskiego. Analizie poddano wyniki wierzchowej próby 42 koników. Wykonano statystyczną charakterystykę obowiązujących wyników próby oraz wyników uzyskanych po wykorzystaniu nowych przedziałów wartości elementów próby określonych na podstawie ich średniego poziomu i SD. Wykonano wieloczynnikową analizę wariancji i test T-Tukeya. Stwierdzono, że nieznaczne zróżnicowanie indywidualnych wyników próby dzielności koników wskazuje na konieczność modyfikacji obowiązującego systemu oceny. Konieczność tę podkreśla też fakt zmiany poziomu ocen badanych koników jako następstwa zastosowania nowego sposobu punktacji. Dyskusyjny jest przede wszystkim sposób oceny cech o nazwie zachowanie się, długość kroku w stępie, powrót oddechów do normy i próba wysiłkowa, które należą do elementów najczęściej maksymalnie punktowanych. W konsekwencji nie mogą one pełnić faktycznej funkcji selekcyjnej.

Słowa kluczowe: konik polski, próba wierzchowa, punktacja