

The comparison of Polish Halfbred mares utility based on the results of field performance tests conducted in 2002–2015

MAŁGORZATA MAŚKO, ANNA KRAJEWSKA, WANDA OLECH
Faculty of Animal Science, Warsaw University of Life Sciences – SGGW

Abstract: *The comparison of Polish Halfbred mares utility based on the results of field performance tests conducted in 2002–2015.* The aim of the study was to analyze Polish Halfbred mares utility, basing on field performance test results. 913 evaluated mares belonged to Małopolska (mlp), Wielkopolska (włkp), Polish Halfbred (PKSP) and imported breeds (imp). Comparing results obtained in 2002–2015 of mlp, włkp and PKSP mares, significantly higher average final result and significantly higher results for canter for mlp and sp mares than for włkp mares were observed. Significantly higher result for free jumps was observed for PKSP mares than for other breeds. Imported mares got significantly higher results compared to national breeds. In conducted research PKSP mares are not significantly more useful to saddle utility than mlp and włkp horses. Existing gap in utility level between Polish and imported horses should be filled by a scrupulous realization of breeding programs and particular selection conducted in order to achieve population that may fulfill requirements of performance equestrian sport.

Key words: half-bred mares, field performance tests, utility value

INTRODUCTION

The change in direction of usage of halfbred horses from versatile to saddle model caused, that majority of horses, referred to as noble, are used for horse

riding on more or less professional level. Horses selected for sport are subject of clearly defined expectations of their sports predispositions (Górecka et al. 2008). Cleverness, willingness to cooperate, obedience, trust and quick response to commands are appreciated in dressage. In show jumping, power with a proper perception of bascule is preferred. Horses selected to Three-Day Eventing are expected to have innate strength, utility performance, and versatile skills, obedience and trust to the rider (Próchniak 2017). Requirements for recreational riding horses are lower, in the context of adapting to the skills and physical traits of novice riders and also specific horse biomechanics ensuring comfort during riding (especially in walk and trot) (Janczarek and Wilk 2017).

The main goal of current breeding and maintenance of Małopolska (mlp) breed is obtaining horses for various sports disciplines, in particular, Three-Day Eventing (Małopolska Breeding Program 2005). Wielkopolska (włkp) horse breeding is focused on competitive horse sports and also leisure horse riding (Wielkopolska Breeding Program 2005). However, the superior goal for Polish Halfbred (PKSP) horse breeding

program is to get professional jumping or dressage horse (Polish Halfbred Breeding Program 2005).

According to Polish Halfbred Horse breeding program, the selection of Małopolska (Małopolska Breeding Program 2005), Wielkopolska (Wielkopolska Breeding Program 2005) and PKSP horses (Polish Halfbred Breeding Program 2005) should be based not only on biometrics and type indicators but also on results of performance tests. It is stated that mares should be subjected to utility value assessment as carefully as stallions in the field of performance test or stationary test in training stations (Jończyk 2001, Byszewski 2009).

One day field performance test (PPW) is perceived as fast and easy to conduct for mare utility value evaluation. In PPW the following exercises are assessed from 0 to 10 points: walk, trot, canter and free jumping (without rider). Also, an independent rider is assessing aptitude to saddle use (rideability). Energy, stride length and regularity are evaluated in walk and trot. In canter (pace 350 m/min), lightness of forelimbs and engagement of hindquarters are also evaluated. In free jumping, a jump style, facility, jumping potential, and courage are assessed. The last part of PPW, rideability, includes a willingness to work with rider and reaction on basic riding aids in walk, trot, and canter. Among PPW advantages should be mentioned: low costs, ease of conducting a test and possibility of early evaluation of mares' predisposition, based on highly inherited traits, therefore a high accuracy of utility value evaluation (Chrzanowski et al. 2012). PPW is considered the most approachable performance test for

breeders due to self-contained mares' preparation to test (conducted by owner) and fast, objective assessment, without significant costs. Those advantages, including the necessity of developing the most objective method of utility value evaluation are indicated by many authors (Szarska and Cywińska 2009, Kaproń 2001, 2006, Lewczuk 2004).

According to the breeding program of a Polish Halfbred Horse, national Polish breeds (Wielkopolska and Małopolska) are versatile breeds, with a limited predisposition to professional sports performance. Moreover, authors of cited programs regard that many individuals of mlp and wlkp breeds, or possibly most individuals, constantly represent versatile utility type (Polish Halfbred Breeding Program 2005). As mlp and wlkp breeds are considered a priceless value for Polish culture, that hypothesis requires detailed verification.

The aim of the study was to evaluate Polish Halfbred mares in the aspect of utility and comparison of results of field performance tests in Małopolska, Wielkopolska and Polish Halfbred mares against imported mares' results. Obtained results allow evaluating usage predispositions of mares in accordance with particular Polish Halfbred Horses breeding programs.

MATERIALS AND METHODS

Material for research were results of field performance test (PPW) of 913 mares, obtained in 2002–2015. Evaluated horses belong to following breeds: Małopolska ($N = 60$), Wielkopolska ($N = 345$), Polish Halfbred ($N = 428$) and other (imported: KWPN – the Koninklijk Warmbloed

Paardenstamboek Nederland, Holsteiner, Hanoverian, BWB – Belgian Warm-blood, SF – Selle Français) ($N = 80$). Detailed results were received from the main database of Polish Horse Breeders Association (PZHK). Values of evaluated traits were imported to a Microsoft SQL Server database.

Using SAS procedure MEANS, average values of tested traits were calculated. Univariate marginal distributions were tested independently for each factor using a univariate Kolmogorov-Smirnov test (GraphPad Prism 6; GraphPad Software Inc., San Diego, CA, USA). PPW results of Malopolska mares in 2002–2015 demonstrated a significantly different distribution from a normal one ($P < 0.05$), whereas PPW results of PKSP and Wielkopolska mares in 2002–2015 demonstrated a normal distribution ($P > 0.05$). The comparison of data showing normal distribution was assessed by a one-way analysis of variance ANOVA followed by Tukey’s multiple comparisons test, if the differences between tested data series occurred, whereas the non-Gaussian data by the Kruskal-Wallis test, followed

by Dunn’s multiple comparisons test (GraphPad Prism 6; GraphPad Software Inc., San Diego, CA, USA). Differences at $P < 0.05$ were considered statistically significant and are marked on Figures with consecutive letters.

RESULTS AND DISCUSSION

Malopolska mares results were collected from 2003, 2005–2010, 2012 and 2014–2015. The observed differences in results probably partly depends on the number of evaluated horses, participating in PPW each year (Fig. 1), nevertheless it is not possible to determine causes of such variety in obtained results. Significantly higher PPW result ($P = 0.0036$) (Fig. 2) was found in 2003, 2008–2009 when compared to 2006–2007. There were no differences ($P < 0.001$) between PPW results of PKSP (Fig. 3) and wlkp (Fig. 4) in evaluated years. According to significant differences in a number of mares of each breed, participating in PPW each year, detailed analysis of differences was conducted for all mares from each breed participating in PPW in 2002–2015. In the further consideration

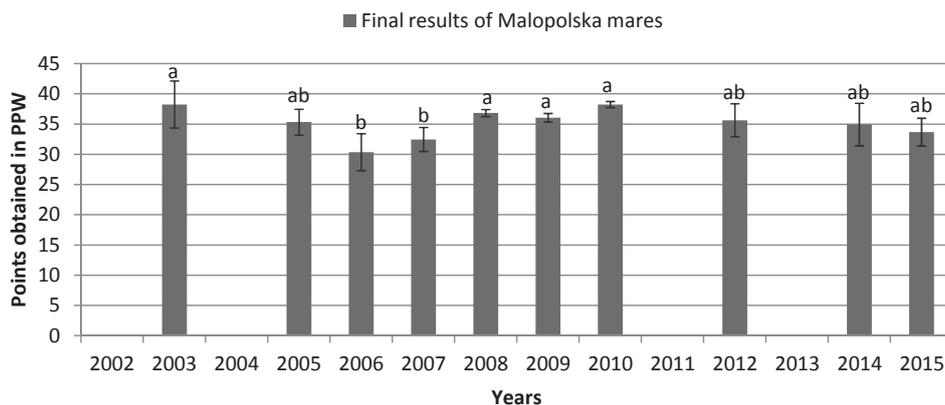


FIGURE 1. A number of mlp, PKSP, wlkp mares, which participated in PPW in 2002–2015

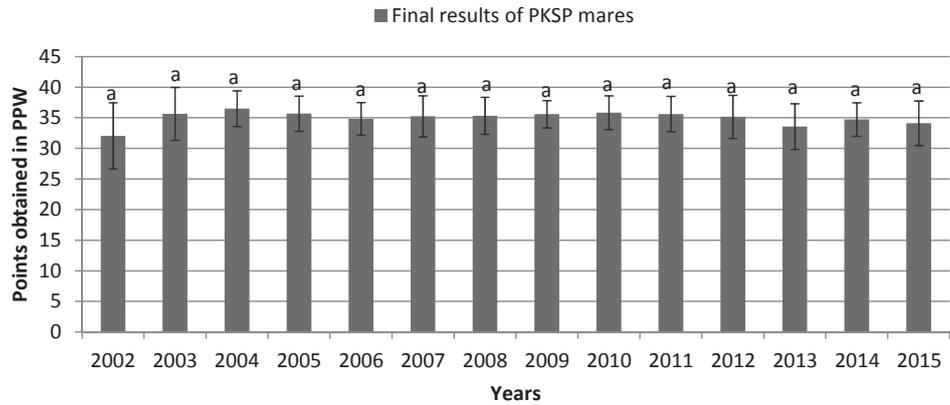


FIGURE 2. PPW results (mean ±SD) of Malopolska mares in 2002–2015. Values which are not differing significantly are marked with the same letters. Significant differences for $P < 0.05$

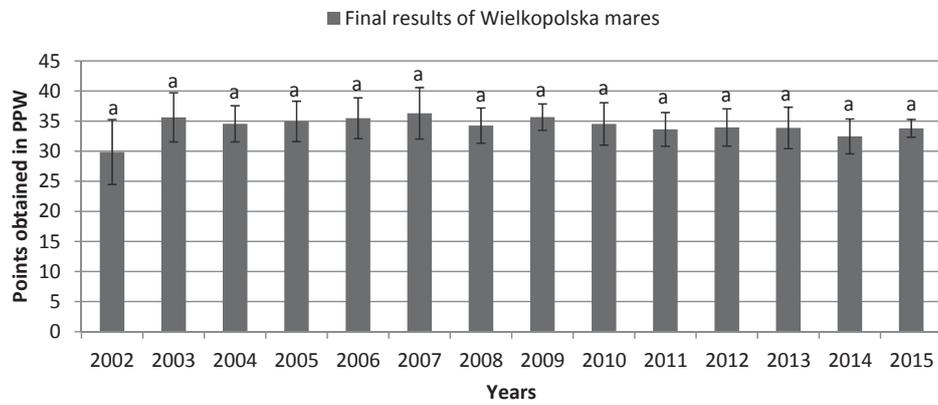


FIGURE 3. PPW results (mean ±SD) of PKSP mares in 2002–2015. No statistically significant differences were observed. Significant differences for $P < 0.05$

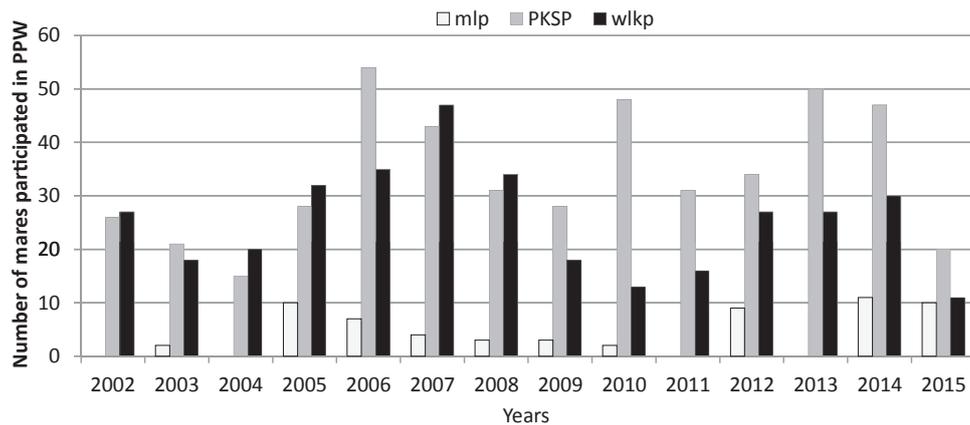


FIGURE 4. PPW results (mean ±SD) of Wielkopolska mares in 2002–2015. No statistically significant differences were observed. Significant differences for $P < 0.05$

the influence of the year of data collection has been disregarded in order to the most reliable validation of breed as the only factor.

Horse breeding in versatile type, with low feed requirements and usefulness at work in field and in a horse cart, has been performed in Poland after Second World War. Utility type of national mlp and wlkp horses was adapted to saddle horse, and assessed as useful for professional sport and leisure riding (Kosiniak-Kamysz et al. 1997, Piķuła 2006). It can be assumed that the transformation process of mlp and wlkp utility type was active until 2001 (Nowicka-Posłuszna and Włodarczyk 2012). In presented research, no differences in PPW results were detected over time, which may indicate the end of the transformation process and utility traits stabilization. However, as long as mares of imported breeds obtain significantly higher results in each element of PPW, further application of breeding programs in order to improve the utility of polish breeds should be sustained. It can be stated, that all tested mares represent the same utility type – for saddle. Therefore, it cannot be agreed with PZHK statement, that in national breeds (mlp and wlkp), most individuals represent versatile utility type (Polish Halfbred Breeding Program 2005). PPW results indicated that the saddle utility type of mlp and wlkp breeds do not deviate when compared to results obtained by PKSP mares, which is suggested by detailed differences evaluation between tested breeds (Maśko 2015).

In a comparison of mlp, wlkp and PKSP results obtained in PPW, significantly higher final results ($P = 0.0019$) for mlp and PKSP than wlkp mares

were found (Fig. 5A). Between evaluated breeds, there were no differences ($P > 0.05$) in results of a walk (Fig. 5B), trot (Fig. 5C) and rideability (evaluation of independent rider) (Fig. 5F). At the same time, significantly higher results for a gallop ($P = 0.0133$) were detected for mlp and PKSP mares, in comparison to wlkp mares (Fig. 5D) and significantly higher result for free jumping ($P < 0.001$) for PKSP mares, comparing to mlp and wlkp mares (Fig. 5E).

Evaluated mlp mares benefit into a breeding plan, described in a breeding program for mlp breed and show predispositions to all of the sports disciplines, especially the Tree-Day-Event (Małopolska Breeding Program 2005). The level reached by evaluated mlp mares (except for free jumping), does not differ from PKSP mares achievements, which are bred to a professional sport (jumping and dressage) (Polish Halfbred Breeding Program 2005). Geringer de Oedenberg and Kielbasiewicz (2003) and Janczarek and Próchniak (2010), attribute the highest utility value to PKSP mares, what indicates the necessity of paying attention to mlp breed utility advantages. Also, wlkp mares implement the goals of a breeding program, especially in leisure horse riding, showing very good walk and trot and also desired willingness to work with rider (Wielkopolska Breeding Program 2005). It is worth to notice that PPW results obtained by PKSP mares are convergent with aims of breeding programs, which states about the effectiveness of utility value evaluation and its cohesion with those aims.

Authors of PKSP breeding program assumed that national mlp and wlkp breeds cannot compete with dominant

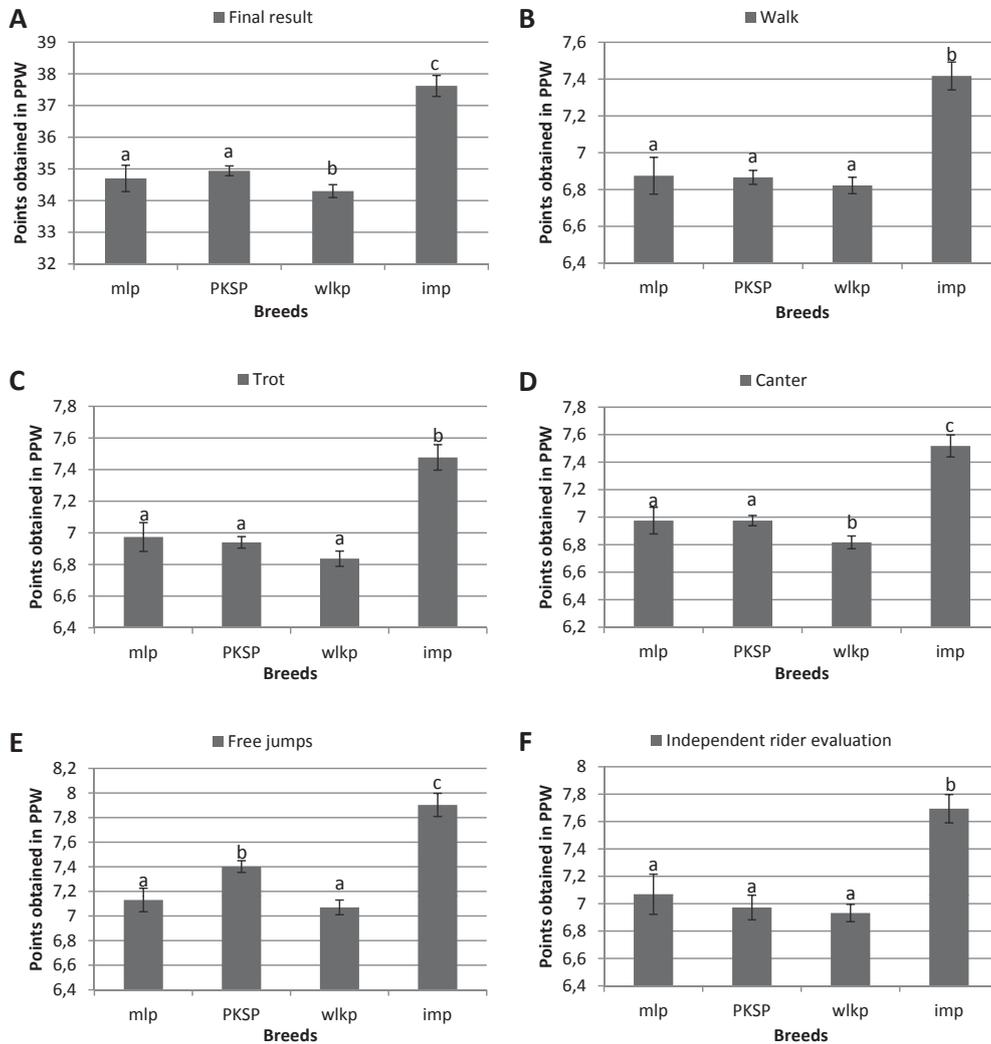


FIGURE 5. The comparison of mlp, PKSP, wlkp, and imported mares, based on PPW results (mean \pm SD) in 2002–2015, including elements: A. Final result. B. Walk, C. Trot, D. Canter, E. Free jumps, F. Independent rider evaluation. Significant differences between years are marked with different letters. Significant differences for $P < 0.05$

breeds of world equestrian ranking in professional sport and the aim of PKSP breeding is to fill that need (Polish Halfbred Breeding Program 2005). To verify this hypothesis polish half-bred mares results were compared to results of imported mares from the same PPW.

Significantly higher ($P < 0.0001$) final results for imported mares than for PKSP mares were observed (Fig. 5A). This tendency was observed for every PPW element: walk (Fig. 5B), trot (Fig. 5C), canter (Fig. 5D), free jumps (Fig. 5E) and independent rider evaluation (Fig. 5F).

Imported mares' results are close to international level of field tests, described in the literature. Huzinga et al. (1990) obtained in KWPN mares lower average result for free jumps (7.29), higher for walk (7.27), canter (7.32), free jumps (7.12) and ride-ability (6.90). Albertsdottir et al. (2008) described higher average results for walk (7.61), trot (7.60) and canter (7.80) for Island horses.

National mlp, wlkp and PKSP horses present comparable utility value level. In conducted research, PKSP mares do not exhibit higher usefulness to the saddle than wlkp and mlp horses. The prevalent gap in utility level can be filled by a realization of the breeding program and strict selection, leading to elimination from breeding horses for minor usage: small sport, amateur sport and leisure riding (Polish Halfbred Breeding Program 2005).

CONCLUSIONS

PKSP mares represent saddle utility type with stable functional traits. Mares from evaluated breeds show different predispositions to usage according to breeding programs. Among national breeds involved into PPW test, mlp and PKSP mares show high suitability for sport utility. The wlkp mares tested in PPW show limited sports predispositions, but compensate it by traits preferred in leisure riding. According to observed differences between imported and national mares, selection should be maintained at a high level, described in breeding programs.

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Streszczenie: Porównanie wartości użytkowej klaczy polskich ras półkrwi na podstawie wyników polowych prób dzielności przeprowadzonych w latach 2002–2015. Celem pracy była analiza wartości użytkowych klaczy ras półkrwi w Polsce na podstawie ich wyników uzyskanych podczas jednodniowych polowych prób dzielności. Analizie poddano wyniki 913 klaczy należących do ras małopolskiej (mlp), wielkopolskiej (włkp), polski koń szlachetny półkrwi (PKSP) oraz ras importowanych (imp). Porównując wyniki klaczy ras mlp, włkp i PKSP uzyskane w próbach polowych w latach 2002–2015, stwierdzono istotnie wyższy średni wynik końcowy oraz istotnie wyższe oceny za galop dla klaczy mlp i PKSP niż dla klaczy włkp. Istotnie wyższe oceny za skoki luzem uzyskały klacze PKSP w porównaniu do pozostałych polskich ras. Klacze ras importowanych uzyskały istotnie wyższe wyniki w porównaniu do ras polskich. W przeprowadzonych badaniach klacze rasy PKSP nie górują wyraźnie przydatnością do użytkowania wierzchowego nad końmi wielkopolskimi oraz małopolskimi. Istniejące luki w poziomie użytkowym koni polskich i importowanych, powinny być wypełniane poprzez sumienną realizację programów hodowlanych i szczególnie ostrą selekcją prowadzącą do uzyskania pogłowia, mogącego sprostać wymogom stawianym aktualnie przez dyscypliny czynowego sportu jeździeckiego.

Słowa kluczowe: klacze ras półkrwi, polowa próba dzielności, wartość użytkowa

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Authors' address:

Małgorzata Maško
Zakład Hodowli Zwierząt Futerkowych,
Towarzyszących i Koni
Katedra Szczegółowej Hodowli Zwierząt
Wydział Nauk o Zwierzętach
Szkoła Główna Gospodarstwa Wiejskiego
w Warszawie
Ciszewskiego 8, 02-786 Warszawa
Poland
e-mail: małgorzata_masko@sggw.pl