THE PERFORMANCE OFGERMAN SHEPHERD AND BELGIAN SHEPHERD MALINOIS DOGS IN OBEDIENCE, OBSTACLE COURSE, DEFENSE AND TRACKING TESTS

Marlena Lipka, Janusz Strychalski, Agata Jastrzębska, Andrzej Gugołek

Department of Fur-bearing Animal Breeding and Game Menagement
University of Warmia and Mazury in Olsztyn, Poland

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A b s t r a c t

In Poland and other countries, the two breeds that are most commonly trained for police operations are the German Shepherd (GS) and the Belgian Shepherd Malinois (BSM). The purchase, training and maintenance of police dogs are very expensive. Appropriate preselection can lower those costs. Therefore, the aim of the study was to compare GS and BSM dogs based on their performance in obedience, obstacle, defense and tracking tests. The study was performed on 222 dogs which participated in patrol-tracking training, patrol training and tracking training at the Kennel of the Police Training Center in Sułkowice. In many exercises: stay in obedience, stair climbing, balance beam, wooden wall and an obstacle course in obstacle completion, pursuit with a muzzle, pursuit without a muzzle and guarding detainees in defense, as well as field search, indoor search and vocalization in tracking, BSM were scored significantly better than GS.

PORÓWNANIE OWCZARKÓW NIEMIECKICH I OWCZARKóW BELGIJSKICH MALINOIS W ZAKRESIE POSŁUSZEŃSTWA, POKONYWANIA PRZESZKÓD, OBRONY I TROPIENIA

Marlena Lipka, Janusz Strychalski, Agata Jastrzębska, Andrzej Gugołek

Katedra Hodowli Zwierzat Futerkowych i Łowiectwa
Uniwersytet Warmińsko-Mazurski w Olsztynie, Polska

S ł o w a   k l u c z o w e: psy policyjne, owczarek niemiecki, owczarek belgijski malinois, psy patrol-owo-tropiące, psy patrolowe, psy tropiące.

Address: Janusz Strychalski, University of Warmia and Mazury, ul. Oczapowskiego 5, 10-718 Olsztyn, Poland, tel. +48 (89) 523 44 42, e-mail: janusz.strychalski@uwm.edu.pl

A b s t r a k t

W Polsce i na świecie dwiema najczęściej szkolonymi rasami na psy patrolowo-tropiące, patrolowe i tropiące są owczarki niemieckie (GS) oraz owczarki belgijskie malinois (BSM). Zakup, szkolenie oraz utrzymanie psów policyjnych jest bardzo drogie. Odpowiednia preselekcja zwierząt może obniżyć te koszty. Celem pracy było porównanie GS i BSM oparte na wynikach zwierząt w testach posłuszeństwa, pokonywaniu toru przeszkód, obronie i tropieniu. Badaniami objęto 222 psy, które uczestniczyły w kursach na psa patrolowo-tropiącego, patrolowego lub tropiącego odbywających się w Zakładzie Kynologii Policyjnej Centrum Szkolenia Policji w Sułkowicach. W wielu ćwiczeniach: zostawanie w posłuszeństwie, schody, kładka, drewniana ściana i grupa przeszkód w pokonywaniu przeszkód, pościg w kagańcu, pościg bez kagańca i konwojowanie osób w obronie, a także przeszukiwanie terenu, przeszukiwanie pomieszczeń i wokalizacja w tropieniu, BSM osiągnęły statystycznie istotnie wyższe wyniki niż GS.

Introduction

In the past, shepherd dogs assisted shepherds in managing a flock or a herd of animals. Today, shepherd dogs are more often used as defense dogs and military working dogs (COURREAU and LANGLOIS 2004). In Poland and other countries, the two breeds that are most commonly trained as operational-patrol dogs, patrol dogs and tracking dogs for police operations are the German Shepherd (GS) and the Belgian Shepherd Malinois (BSM). This reflects, in part, the overal trends in dog breeding in Poland (STRYCHALSKI and GUGOŁEK 2010).Dogs that are crosses between the two breeds or Dutch Shepherds are far less frequently used in police work (SINN et al. 2010, WALASEK 2012). GS and the BSM are easy to train, and they are widely available from breeders and vendors. These breeds are also scent-trained to detect substances such as narcotics and explosives. However, Labradors, Springer Spaniels, German Shorthaired Pointers and other hunting breeds are increasingly used in scent training (WARREN 2013, BRADSHAW 2015).

Dogs have to be properly and regularly trained for top performance. Patrol-tracking dogs should be trained for both defense and scent detection (tracking). Patrol dogs and tracking dogs are trained for the same skills: patrol dogs are trained for defense, and tracking dogs – for scent detection. They are also trained for obedience and obstacle completion. The selection of dogs that are best suited for training, the choice of handlers with the desired qualities and proper training are essential for the effective performance of police dogs (BRADSHAW 2015). The purchase, training and maintenance of police dogs are very expensive. Appropriate preselection can lower those costs.Due to lack of standardization in tests designed to evaluate dog behavior, scientific knowledge about the behavioral differences between breeds and their predispositions for specific tasks remains modest (GOODLOE and BORCHELT 1998, MURPHY 1998, DIEDERICH and GIFFROY 2006).

In view of the above, the aim of the current study was to compare German Shepherd and Belgian Shepherd Malinoisdogs based on their performance in obedience, obstacle course, defense and tracking tests.

Materials and Methods

The study was performed on 222 dogs, aged 1 to 2 years,which participated in patrol-tracking training, patrol training and tracking training (Table 1). The animals were qualified for training based on the results of tests carried out by certified evaluators. Training courses were held at the Kennel of the Police Training Center in Sułkowice in 2014 and 2015. All dogs were obtained from breeders certified by the Polish Kennel Club (ZKwP), a member of Federation Cynologique Internationale (FCI), the international federation of kennel clubs.

Table 1

Dogs which participated in patrol-tracking training, patrol training and tracking training

Specification	Number of dogs	Breeds	
		GS	BSM
Patrol-tracking training	156	126	30
Patrol training	27	20	7
Tracking-training	39	33	6
Total	222	179	43

GS – German Shepherd; BSM – Belgian Shepherd Malinois

Dogs participating in all three courses were evaluated for obedience and obstacle completion. Obedience tests involved the following exercises: heel-work (the dog walks close to the handler's leg), turns (the dog maintains its position throughout the turn), stand (the dog maintains a standing position), sit, down, stay (while the handler walks away), recall (the dog is recalled from a stay position and sits by the handler's left leg) and stop (while moving). The obstacle completion test included the following exercises: stair climbing (open-work stairs – Figure 1), balance beam (trapezoid), tunnel, wooden wall and an obstacle course (various obstacles arranged in line). Dogs participating in patrol-tracking training were also evaluated in defense and tracking categories. The defense test included the following exercises: pursuit with a muzzle, pursuit without a muzzle, protecting the handler, guarding detainees, assisting in identifying a suspect, assisting in frisking a suspect. The tracking test included the following exercises: tracking human scent, field search (to locate a person), indoor search (to locate a person) and vocalization (to indicate that

the searched person has been found). Dogs participating in patrol training did not perform tracking exercises, whereas dogs participating in tracking training did not perform defense exercises.

Fig. 1. Openwork stairs in the Police Training Center in Sułkowice

The animals were trained by the same persons. Tests were conducted under standard conditions by certified examiners from the Kennel of the Police Training Center in Sułkowice. Examination grades obtained by each dog were entered into Training Progress Reports. Dogs were evaluated during each of the 4 training stages. Mean scores were computed for each exercise, and the results were used to determine mean scores for every training category. Dogs were evaluated subjectively by examiners, on a scale of 2 to 5 points (2 points – fail, 5 points – highest grade).

Data were expressed as means ± standard deviation (SD). The results were processed statistically using the least squares method in the GLM procedure. The results were compared with the use of the $Y_{ijk} = \mu + \alpha_i + \beta_j + \alpha_i\beta_j + \varepsilon_{ijk}$ model, where μ is the overall average, α_i is the effect of breed, β_j is the effect of sex, $\alpha_i\beta_j$ is the interaction effect between breed and sex, and εijk is random error. Analyses did not reveal significant effects of sex or significant interactions between fixed effects, therefore,the relevant data were not presented. Calculations were performedin the Statistica (StatSoft, Inc. 2010) program.

Results

The results scored in obedience tests are presented in Table 2. It should be noted that BSM received higher grades in all exercises, but significant differences between the two breeds were determined only in the "stay" exercise (4.16 ± 0.45 BSM vs. 3.96 ± 0.50 GS, $p = 0.019$). BSM also scored higher in the overall obedience rating, but significant differences were observed only at the trend level ($p = 0.053$).

Table 2

Scores (pts) obtained by dogs from the discipline of obedience (mean ± SD)

Exercises	Breeds		*P*-value
	GS	BSM	
Heelwork	3.82 ± 0.51	3.91 ± 0.52	0.298
Turns	3.70 ± 0.52	3.82 ± 0.52	0.174
Stand	3.73 ± 0.57	3.91 ± 0.53	0.054
Sit	4.07 ± 0.51	4.22 ± 0.49	0.091
Down	3.98 ± 0.47	4.05 ± 0.55	0.386
Stay	3.96 ± 0.50	4.16 ± 0.45	**0.019**
Recall	3.52 ± 0.61	3.60 ± 0.60	0.403
Stop	3.75 ± 0.55	3.92 ± 0.53	0.060
Total	3.82 ± 0.41	3.95 ± 0.39	0.053

SD – standard deviation; GS – German Shepherd; BSM – Belgian Shepherd Malinois

Significant differences between the evaluated breeds were noted in obstacle completion (Table 3). Overall, GS scored 3.77 ± 0.41 points, and BSM – 4.00 ± 0.36 points ($p < 0.001$). The breeds differed significantly in the number of points scored in stair climbing, balance beam, wall and obstacle course tests. Similarities were noted only in the tunnel test, although BSM also scored somewhat higher in this category.

Table 3

Scores (pts) obtained by dogs from the discipline of obstacle completion (mean ± SD)

Exercises	Breeds		*P*-value
	GS	BSM	
Stair climbing	3.84 ± 0.46	3.99 ± 0.38	**0.047**
Balance beam	3.66 ± 0.49	3.82 ± 0.40	**0.044**
Tunnel	3.89 ± 0.51	4.02 ± 0.41	0.105
Wooden wall	3.60 ± 0.57	4.00 ± 0.47	**<0.001**
Obstacle course	3.88 ± 0.53	4.20 ± 0.51	**<0.001**
Total	3.77 ± 0.41	4.00 ± 0.36	**<0.001**

SD – standard deviation; GS – German Shepherd; BSM – Belgian Shepherd Malinois

The results of defense tests are presented in Table 4. Overall, BSM scored 4.01 ± 0.37 points and GS 3.86 ± 0.35 points, and the differences between the breeds were statistically significant. BSM scored significantly higher in the following trials: pursuit in a muzzle, pursuit without a muzzle, and guarding detainees. At the trend level, BSM also scored somewhat higher in protecting the handler (4.20 ± 0.57 BSM vs. 4.01 ± 0.61 GS, p = 0.096, statistical trend). No significant differences between the analyzed breeds werenoted in the suspect identification test (p = 0.614) or the frisking test (p = 0.209).

Table 4

Scores (pts) obtained by dogs from the discipline of defense (mean ± SD)

Exercises	Breeds		P-value
	GS	BSM	
Pursuit with a muzzle	3.78 ± 0.46	4.00 ± 0.42	**0.009**
Pursuit without a muzzle	3.98 ± 0.41	4.18 ± 0.38	**0.006**
Protecting the handler	4.01 ± 0.61	4.20 ± 0.57	0.096
Guarding detainees	3.83 ± 0.38	4.05 ± 0.45	**0.003**
Assisting in identifying a suspect	3.81 ± 0.47	3.86 ± 0.52	0.614
Assisting in frisking a suspect	3.70 ± 0.50	3.82 ± 0.52	0.209
Total	3.86 ± 0.35	4.01 ± 0.37	**0.021**

SD – standard deviation; GS – German Shepherd; BSM – Belgian Shepherd Malinois

In the tracking category, BSM scored a total of 3.99 ± 0.44 points, and GS – only 3.76 ± 0.47 points (p = 0.003). Both breeds obtained similar scores in human scent tracking, whereas BSM scored significantly more points in field search (4.15 ± 0.49), indoor search (4.22 ± 0.47) and vocalization (4.75 ± 0.39) than GS (3.89 ± 0.51, 3.90 ± 0.55 and 4.06 ± 0.52, respectively).

Overall, GS did not outperform BSM in any of the evaluated categories (obedience, obstacle completion, defense and tracking) or individual tests/exercises.

Table 5

Scores (pts) obtained by dogs from the discipline of tracking (mean ± SD)

Exercises	Breeds		P-value
	GS	BSM	
Tracking human scent	3.40 ± 0.70	3.44 ± 0.69	0.726
Field search	3.89 ± 0.51	4.15 ± 0.49	**0.002**
Indoor search	3.90 ± 0.55	4.22 ± 0.47	**0.002**
Vocalization	4.06 ± 0.52	4.75 ± 0.39	**0.006**
Total	3.76 ± 0.47	3.99 ± 0.44	**0.003**

SD – standard deviation; GS – German Shepherd; BSM – Belgian Shepherd Malinois

Discussion and Conclusions

Empirical research targeting the behavioral characteristics of dog breeds is generally scarce because comprehensive statistical data are difficult and costly to collect (WEISS and GREENBERG 1997, MEHRKAM and WYNNE 2014, STRYCHAL-SKI et al. 2015). For this reason, most studies comparing the trainability of various dog breeds rely on surveys and other indirect assessment methods (COREN 1994, HELTON 2010, GARDIÁNOVÁ et al. 2013). The results of our study clearly indicate that BSM are more suited for police work as patrol-tracking dogs, patrol dogs and tracking dogs than GS. BSM scored higher in all evaluated categories.

In a study by GARDIÁNOVÁ et al. (2013) who analyzed the results of FCI-IPO world championships, BSM also outperformed GS. BSM scored a higher number of points in each evaluated category (obedience, defense and scent tracking). BSM were more gifted than GS, and the greatest differences between the two breeds were reported in obedience and defense categories. In the evaluated years, BSM significantly outperformed GS in the tracking category only in 2003. The IPO disciplines are similar to police training categories, but police dogs are additionally required to complete an obstacle course. Our study revealed that BSM scored highly significantly more points than GS in obstacle and tracking tests, and significantly more points than GS in defense tests. Significant differences in obedience scores were not noted between the analyzed breeds.

According to GARDIÁNOVÁ et al. (2013), GS respond better to change of handler and are more focused on the performed tasks. GS are widely trained for outdoor activities, services and home tasks. However, BSM are more enthusiastic workers. They are more active in training, they work harder and learn faster than GS, which is why they are the preferred breed for sports training. Therefore, it can be assumed that test scores are largely determined by BSM's willingness to work. This trait cannot be measured directly, but our experience with dogs suggests that BSM are much more willing to work than GS. However, for a new handler, GS is usually a better choice than BSM because it has better habits and a more balanced character (GARDIÁNOVÁ et al. 2013).

Dog breeds differ not only in appearance, but also in working intelligence and trainability (ROONEY and BRADSHAW 2004). COREN (1994) has developed the most comprehensive scale for ranking breeds by trainability. In Coren's scale, GS rank third, whereas BSM occupy a distant 22nd position. GS score top grades in the first category, and BSM score lowgrades in the second category. These results indicate that GS are able to comprehend a new command already after several repetitions (1 to 4), and that they perform a task at first command

in more than 95% of cases. According to Coren, BSM understand the meaning of the command after 5 to 15 repetitions, and correctly perform the task at first command in 85% of cases. Coren's methodologyhas been debated (COPPINGER and COPPINGER 2001), but most researchers agree with the ranking positions occupied by individual breeds (DAVIS and CHEEKE 1998, MIKLÓSI 2009, STRYCHALSKI et al. 2015). However, Coren's ranking was first published 20 years ago, and the positions occupied by GS and BSM should be revised due to evolutionary changes in different breeds and modern training techniques. This observation is confirmed by the results of the present study. It should also be noted that the number of GS used by border guards and customs officers in Germany, the breed's country of origin, decreased by 70% in just one decade (GERRITSEN and HAAK 2007).

The results of this study and published data do not indicate that GS is no longer suitable for police work. According to many authors, GS is a highly desirable breed for less experienced dog handlers (GERRITSEN and HAAK 2007, SINN et al. 2010, ALLSOPP 2012, GARDIÁNOVÁ et al. 2013). Beginners quickly achieve the desired results, even when they make more training mistakes than their more experience colleagues. BSM can score higher in tests if they are handled by more experienced police officers. BSM are more eager to work and are more impulsive than GS, therefore, more experienced handlers and longer training are needed to control them. BSM seem to be better suited for police work if placed under the care of appropriate handlers.

Summarizing results obtained in our study, BSM outperformed GS in obedience, obstacle, defense and tracking tests.

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