Repeatability of free jumping parameters on young stallions performance tests of different duration

Dorota Lewczuk
Institute of Genetics and Animal Breeding PAS Jastrzębiec; 05-552 Wólka Kossowska; POLAND
D.Lewczuk@ighz.pl

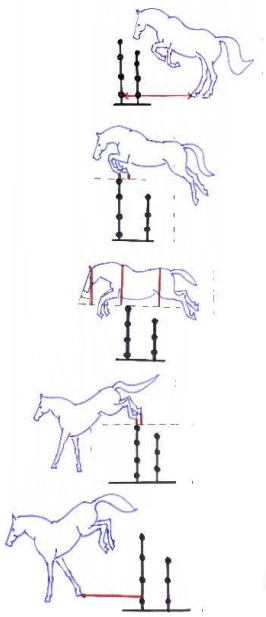
Aim

The estimation of the repeatability of jumping parameters on different duration of the training was the aim of presented study. The parameters with higher repeatability on every tests duration should be considered as the most important by judges free jumping evaluation.

Material and methods

The material consisted of 1771 jumps from 141 stallions filmed during 11-month tests (1995-1997), 301 jumps of 50 stallions filmed in 8-month test (2000) and 221 jumps of 43 stallions filmed in 100 days test (2001). All horses were Polish breed warmbloods of Małopolski, Wielkopolski and SP breed. The 8-month test was constructed for 20% of the best horses that passed 100-days test. So the tests 8-month and 11 month were in consequence of the same training duration for horses. The measurements of jumping parameters were obtained by using a camera operating at 25 fr/sec and a manual program for video image analysis. The free jumping obstacles were constructed in compared manner. It consisted from: the pole on the ground with one or two cavaletti, then the vertical obstacle with the height 60-70cm and in the distance 6.8-7.2 the spread obstacle (doublebarre). The height of the filmed doublebarre obstacle was 0.9-1.2m and the width 0.7-0.9m. Jumps were described by linear parameters of length of the jump as well as height of selected body points of the horse silhouette above the obstacle (figure 1 and table 1). The repeatability was calculated using Proc Mixed of SAS Program. The statistical model was similar for all tests using fixed effects of investigation/year/test, height of the obstacle, successive number of the jump and random effects of the horse and residual effect.

Figure 1. Linear parameters of the jump



Results

Table 1. Statistical data from the SAS/Mixed procedure

Parameter	TEST 11 months Repeatability	8 months Repeatability	100-days Repeatability
Taking of	0,59	0,64	0,52
Landing	0,44	0,82	0,79
Height of FL	0,30	0,46	0,20
Height of FR	0,27	0,44	0,32
Height of HL	0,27	0,30	0,17
Height of HR	0,28	0,34	0,17
Bascule - head	0,50	0,69	0,61
Bascule - withers	0,59	0,74	0,61
Bascule - croup	0,58	0,77	0,55
Position of head	0,57	0,41	0,29

The repeatabilities in the 11-month test were high for taking off, landing and bascule parameters and reached values from 0.50 to 0.59. The repeatabilities of the heights of limbs lifting in 11-month test were lower, but of the same value about 0.3 for front and hind limbs. In the test of the same duration but for horses selected as the best ones – the repeatabilities of the limbs lifting were higher for front limbs and almost the same for the hind limbs. The repeatabilities of the parameters that characterised the length of jump and the bascule of horse were higher in the test for best horses and reached 0.82 for landing and 0.69-0.77 for bascule points. The repeatabilities calculated for shorter 100-day test were lower for all parameters except landing distance.

On the basis of received results it could be concluded that horses judged as better jumpers were more repeatable in front limbs lifting than in hind limbs lifting. The landing distance is more repeatable parameter in better horses and short trained horses. The repeatability of almost all jumping parameters reached highest values in the group of best horses with longer training.