

## **Implications of across-studbook genetic correlations between linear traits for sport horse breeding**

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Linear systems have been introduced for routine assessment of conformation and performance in several studbooks for riding horses, with the aim to strengthen the breeding programs by refined phenotype recording. Genetic parameters for linear traits have indicated the potential of targeted improvement of certain characteristics of conformation, gaits and jumping, so systematic linear profiling of young horses and routine breeding applications based on linear data are expected to gain in importance. Knowledge about genetic correlations between different linear traits assessed within and across studbooks helps to correctly interpret and make best use of the new breeding tool. For this study, results of genetic evaluations (GE) for linear traits from the Oldenburg Horse Breeding Association (linear data from 2012-2015; 6018 foals, 3622 mares and stallions) and the Swedish Warmblood Association (linear data from 2013-2014; 1889 3-year-olds) were available. Estimated breeding values (EBV) of stallions with linearly described progeny provided the basis of genetic correlation analyses. Of the 130 stallions with progeny records in both GE, only 17 had 5 or more offspring in each of the GE. Pearson correlation coefficients and Spearman rank correlations between analogous linear traits were significant ( $P < 0.01$ ), ranging between 0.4 and 0.7. With the highest values found for trot and jumping traits, the pattern of correlations plausibly reflected both the different heritability levels and the similarity of definitions of the linear traits. Transparency of linear profiling practices with reference to agreed trait definitions facilitates the interpretation and use of EBV while similarity of breeding goals for sporthorses may warrant sufficient overlap of linear systems.