

## **Validation of breeding applications for sport horses based on linear profiling across age groups**

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Linear profiling has been introduced by studbooks for sport horses to increase objectivity and refine phenotypic information available through their routine assessments. With increasing amounts of linear data and of breeding applications for linear traits becoming available, guidance is needed by the breeders regarding how to use the new tools. In a system where not only mares and stallions, but also foals are linearly described and contributing to genetic evaluation, validation of the multiple-trait approach with joint analyses of corresponding linear traits in young and adult horses is of particular interest. For this study, we used linear data of the Oldenburg studbooks collected in 2012-2018 for analyses focusing on the predictive value of linear data of foals. Breeding values (BV) were estimated for in total 46 linear traits relating to conformation and performance and defined within age group, using either the full dataset (20,655 linear profiles; GE2018) or truncated data (9,656 linear profiles; GE2015). In each case, foals contributed about 62% of the data, and pedigree information including four ancestral generations was considered. BV were estimated in uni- and bivariate linear trait animal models using PEST software. Of the 2,396 sires in GE2018, 1,493 sires had also BV from GE2015. Comparisons between evaluation results revealed BV correlations of mostly  $\geq 0.85$  in all stallions and sub-groups (at least 10 progeny in GE2015; young stallions with only foals in GE2015). Correlation patterns reflected genetic parameters with highest correlations for linear gait traits, indicating high predictive value of foal data especially for trot aspects. According to the validation results, genetic linear profiles of stallions provide targeted support of decision making and benefit from integrated use of linear data of young and adult horses.