

**3rd International Workshop on Linear Profiling in the Warmblood Horse
on February 24-25, 2017, in Marbach / Germany
– SUMMARY OF RESULTS FROM GROUP WORK AND DISCUSSION –**

According to the focus topic of the workshop, data quality and measures to monitor and improve it, the following questions were addressed in the group work on the second day of the workshop:

- ❖ monitoring of linear data collection
 - **How to establish efficient data screening and identify need for action?**
 - suggestions and experiences (early and long-term approaches)
 - theory and practice: consolidation through motivation?!
- ❖ critical points of linear data collection that require special attention
 - **How to meet the challenges in practice?**
 - 'easy' and 'not so easy' traits or trait groups
 - preselection of events / horse samples or specific handling of collected data
- ❖ education and regular training
 - **How to address and improve comparability and reliability of linear profiling in the individual studbooks?**
 - options of mutual support across studbooks
 - roles of 'super-ordinate' initiatives and organizations (EAAP HC, WBFSH, ...)

Group work revealed the following aspects to be carefully considered in routine collection of linear data by the studbooks:

- clearness of linear trait definitions (uniform understanding of the meaning of the linear traits to be assured by regular joint training sessions of assessors; clear descriptions and indications of linear traits also important for the breeders to understand the linear profiles);
- use of the linear scale (maximum differentiation between individuals if descriptions are relative to the respective population and not to a theoretical extreme; improved comparability and increased reliability through working with few experienced assessors and with team rather than single-person assessments);
- averages of linear values and their interpretation (controversial discussion about marking of optima in the assessment forms due to the possible loss of objectivity; careful addressing of possible 'side effects' of publication of individual horses' linear profiles; monitoring of linear

trait means and variation over time, also by individual assessors or assessment teams, as highly important approach to systematic data quality management);

- coverage of the population (representative sample of linearly described horses; explanation of the value of linear profiles to the breeders to motivate them to show their horses)

According to this listing, it was obvious for the delegates that regular and detailed analyses of the linear data and expert discussions about the results are crucial and that close collaboration between practice and science facilitates such intense monitoring of linear data quality.

Concerning continued development of linear profiling, managing the larger number of traits is playing an important role. Electronic documentation was seen as method of choice from the efficiency and data quality point of view, and it may be a question of time to dispose of skepticism towards the mobile systems and logistic issues. New concepts for the routine data collection may help overcoming the remaining challenges (win-win situation through e.g. bridging the generation gap by support of linear assessment teams by young breeders who are more technology oriented and benefit from direct knowledge transfer).

The group agreed that some flexibility may be needed to achieve maximum acceptance among both judges supposed to make the linear descriptions in the field and the breeders supposed to use the linear profiles as support of their mating decisions. Studbooks should be open for adjustments like breaking down or re-grouping of traits or addition of new traits or alternative measures in the linear schemes (e.g. behavior / temperament aspects; morphometry), keeping their breeding goals in mind. The initiative of compiling a comprehensive inventory of linear traits used in different studbooks, carried by the international working group on linear profiling, was very supported as it allows cross referencing and increases transparency. In this context, engagement of superordinate organizations can be very valuable through motivating their members to share information on routine procedures and contribute to the established exchange.

Lacking uniformity of presentation of horses can compromise linear data quality and may become even more relevant when further extending the horses samples for linear profiling. Studbooks may overcome this issue by increased involvement of young breeders in the regular assessment, so having trained people rather than individual owner in charge for presenting. Further standardization of environmental conditions would be beneficial, but may be feasible only in

exceptional cases (e.g. rubber mats in indoor arena for improved assessment of limb conformation).

For education, positive experience has been made with pairing of experienced linear assessors with less experienced judges, supposed to strengthen the assessment team in the future. Apart from such exchange of judges across teams within studbooks, exchange of linear assessors across studbooks may be an option (limitations regarding types of events, critical points of description references and differences between linear systems). Establishment of some certification system for linear assessors may provide the backbone for organizing linear data collection within and possibly across studbooks (e.g. at least one certified linear assessor per team, list of judges available for exchange). However, appropriateness and need of such formalization may strongly depend on the specific organization structures and recording routine of the studbooks.

For widening the view on the daily business that now includes linear profiling and for allowing direct exchange concerning practical aspects, the international meetings with theoretical and practical part were considered very valuable - by both representatives from the studbooks and the scientists. A certain topic also for the practical part was suggested to avoid lack of structure and improve efficiency. Concerning the intervals between the international meetings, some compromise may be needed between keeping track on important matters regarding linear profiling (PRO annual meetings) and constraints of time and money (PRO biannual meetings). A short survey should clear options for the next event(s): focus topic, meeting place and date.

Figure 1: Original notes from the group work (results from all groups combined)

