

Development of linear profiling in the Holsteiner horse

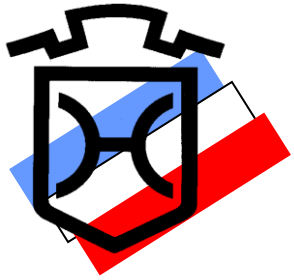


Dr. Astrid Weber

EIP-Project Manager,

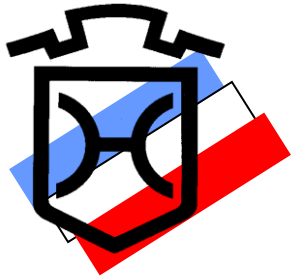
Verband der Züchter des Holsteiner Pferdes e.V.

**2nd International workshop on linear profiling in the Warmblood Horse
on 11th February 2016 in Warendorf / Germany**



Holstein linear system DEVELOPMENT

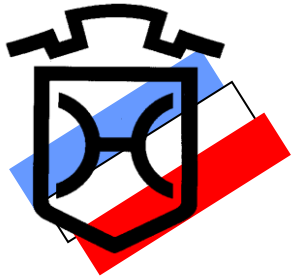
- **Since 2010:** linear description of foals using an assessment sheet
- **2014: Pilot study:** linear description of mares at the studbook registration and mare performance test in Schleswig-Holstein
- **2015:** Start of the project “Implementation of new sustainable strategies to promote equine health” within the EU-funding program “European innovation partnership” (EIP)
 - One part of the project is the extension of linear profiling
- **2015: Pilot study:** linear description of young stallions at the preselection for licensing



Linear description of foals



- Only offspring of young or outcross stallions (2015: 508 offspring)
- Until 2015: constant further development of the trait scheme in consultation with the judges (adding of new traits etc.)
- Since 2014: Scale -3 to +3
- Using of an assessment sheet for the linear description at the foal shows is established
 - The application of the mobile system for data collection is still difficult
 - The group of judges is often different from place to place
 - An assistance for the documentation with a tablet PC is essential!
- Regular training of the judges (once a year)



ASSESSMENT SHEET FOR FOALS

Breeding district: _____ Cat.No.: _____ Sex: _____

Sire: _____ Dam: _____ birth date: _____

<u>HEAD</u>	coarse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	dish face	<input type="checkbox"/>
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<u>NECK</u>	short/low	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	long	<input type="checkbox"/>
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<u>TOPLINE</u>	short	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	correct	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	long	<input type="checkbox"/>
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<u>BACK</u>	dipped (weak)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	roached	<input type="checkbox"/>
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<u>GROWTH/ SIZE</u>	short	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	tall	<input type="checkbox"/>
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<u>FORELIMB</u>	short pastern/upright	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	long pastern	<input type="checkbox"/>
Toe stance	toe-in	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	correct	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	toe-out	<input type="checkbox"/>

<u>HINDLIMB</u>	short pastern	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	long pastern	<input type="checkbox"/>
Hock	straight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	correct	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	angulated	<input type="checkbox"/>

Special features: _____

<u>GAIT</u>	stiff/tied	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	elastic/rhythm	<input type="checkbox"/>
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Anomalies

Eyes painted eye artificial eye fish eye Missing eye/s

Bit underbite overbite

Rupture umbilical hernia scrotal hernia

Hoof club foot

Other: _____

NOTES:

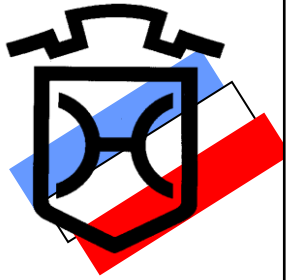
TYPE: _____

GAIT: _____

Assessment sheet for foals (2010)

→ 7-point scale: +1 to +7

→ 10 traits + anomalies

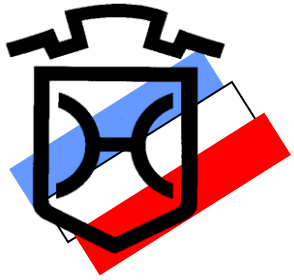


BREED TYPE	plain <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	true to type <input type="checkbox"/>
CALIBER	light <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	heavy <input type="checkbox"/>
GROWTH/ SIZE	short <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	tall <input type="checkbox"/>
SIZE of the MARE	short <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	tall <input type="checkbox"/>
HEAD	big, coarse <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	small, fine <input type="checkbox"/>
NECK	short <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	long <input type="checkbox"/>
	low <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	high <input type="checkbox"/>
SHOULDER	straight/short <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	sloping/long <input type="checkbox"/>
BACK	short <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	long <input type="checkbox"/>
	dipped (weak) <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	roached <input type="checkbox"/>
Withers	flat <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	high <input type="checkbox"/>
	Short <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	long <input type="checkbox"/>
Croup	flat/level <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	sloping (weak) <input type="checkbox"/>
	short <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	long <input type="checkbox"/>
FORELIMB	short pastern <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	long pastern <input type="checkbox"/>
	upright pastern <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	weak pastern <input type="checkbox"/>
Toe stance	toe-in <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	toe-out <input type="checkbox"/>
	<input type="checkbox"/>	unilateral <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	bilateral <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HINDLIMB	short pastern <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	long pastern <input type="checkbox"/>
Hock	straight <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	angulated <input type="checkbox"/>
Tarsus- Cannon art.	flat <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	tied-in <input type="checkbox"/>
HOOF	flat hoof, low heels <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	club foot, high heels <input type="checkbox"/>
GAIT	stiff/tied <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	normal <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	elastic/rhythm <input type="checkbox"/>
Anomalies							
Eyes	<input type="checkbox"/> painted eye	<input type="checkbox"/> artificial eye	<input type="checkbox"/> fish eye	<input type="checkbox"/> Missing eye/s (left or right)			
Bit	<input type="checkbox"/> underbite	<input type="checkbox"/> overbite					
Rupture	<input type="checkbox"/> umbilical hernia	<input type="checkbox"/> scrotal hernia					
Hoof	<input type="checkbox"/> club foot						
Other:	_____						

Assessment sheet for foals (2015)

→ 7-point scale: -3 to +3
→ 17 traits + anomalies

NOTES:
TYPE: _____
GAIT: _____



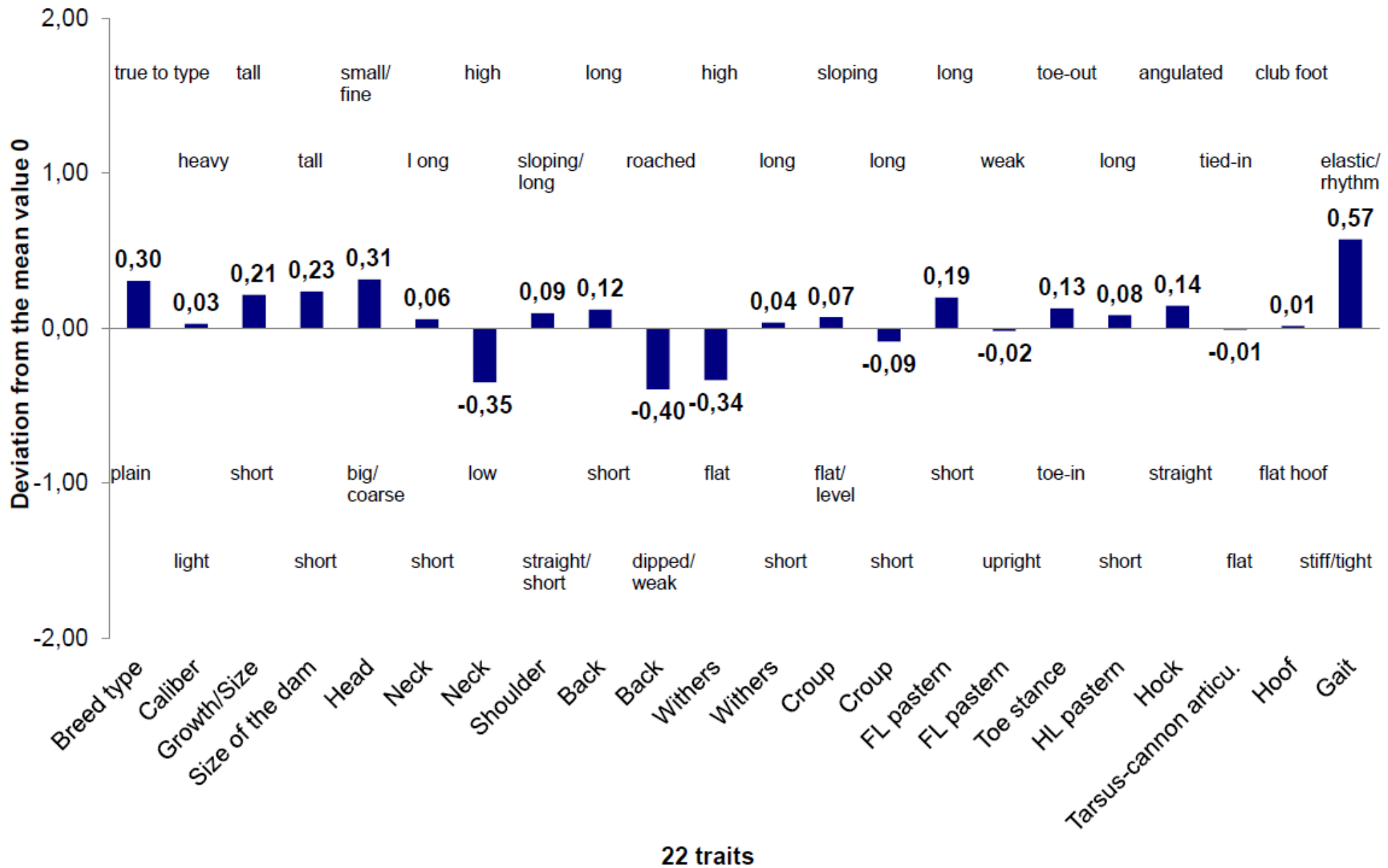
Linear description of foals



- **Provision of the linear data to the breeder:**
 - Average linear profile (diagram) of all described foals in that year (published on the website and in the association journal)
 - Average linear profile (diagram) of all described foals of a stallion (progeny groups) (published on the website and in the association journal)
 - The breeders can receive a copy of the assessment sheet of all their described foals (on demand)
 - **Future:** The breeders receive the linear profile of all their presented foals in the form of a diagram with the passport

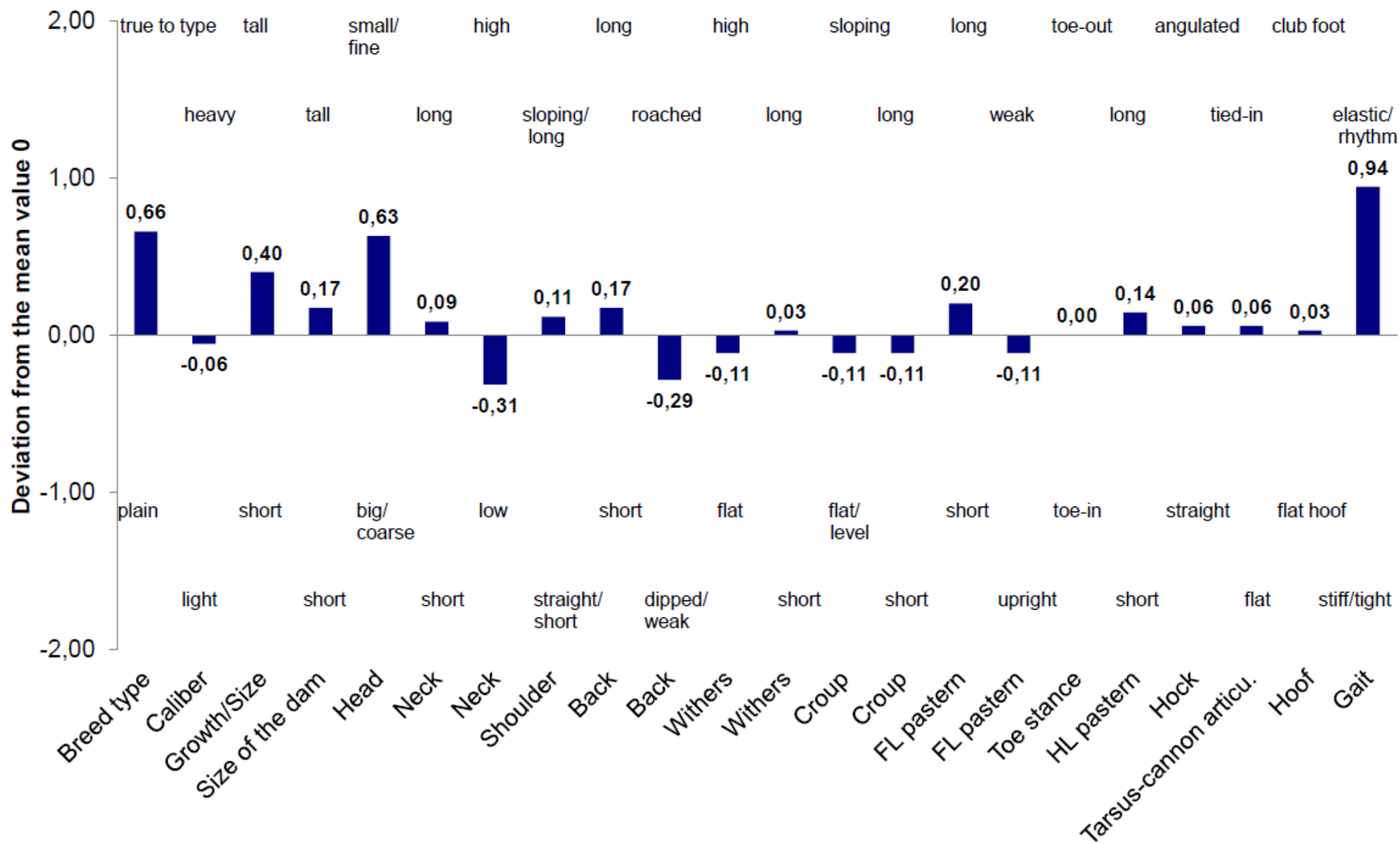
Average linear profile of all described foals in 2015

(508 offsprings of 53 young and outcross stallions)

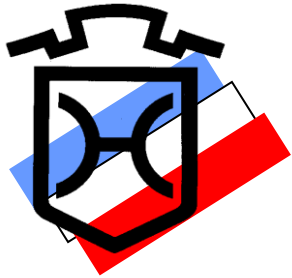


Casaltino by Casall - Carthago

35 offsprings in 2015



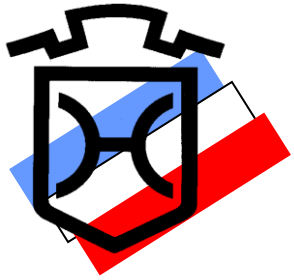
22 traits



Linear description of mares



- **2014: Pilot study:** linear description of mares at the studbook registration and mare performance test in Schleswig-Holstein
 - using the mobile system of the Oldenburger Verband with an adapted trait scheme or an assessment sheet
 - lower number of traits (25 conformation traits, 35 performance traits and 32 performance traits for movement under rider)
 - different approach of assessment (every trait in the scheme will be judged , “trait by trait”; future aim: only striking traits will be recorded)
- Adjustment of the trait scheme in consultation with the judges (adding and exclusion of traits) at the beginning of 2015 and 2016



Linear description of mares



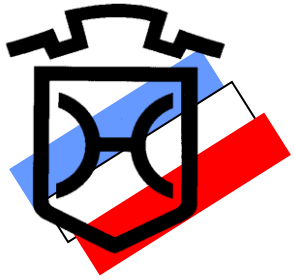
Trait spectrum in 2016

<u>CONFORMATION</u>	Number of traits
Type	10 (12)
Topline	7 (13)
Forelimb	4 (10)
Hindlimb	4 (11)
	25 (46)

<u>MOVEMENT</u>	Number of traits
Walk in Hand	5
Trot in hand / free movement	7
Canter in hand / free movement	6
Correctness (movement)	6 (7)
Behaviour	2
Free jumping	9
	35 (36)

<u>MOVEMENT UNDER RIDER</u>	Number of traits
Walk	5
Trot	7
Canter	7
Rideability	5
Correctness (movement)	6 (7)
Behaviour	2
	32 (33)

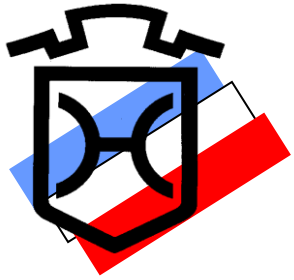
→ The original linear scheme was extended by further conformation and performance traits



Linear description of young stallions



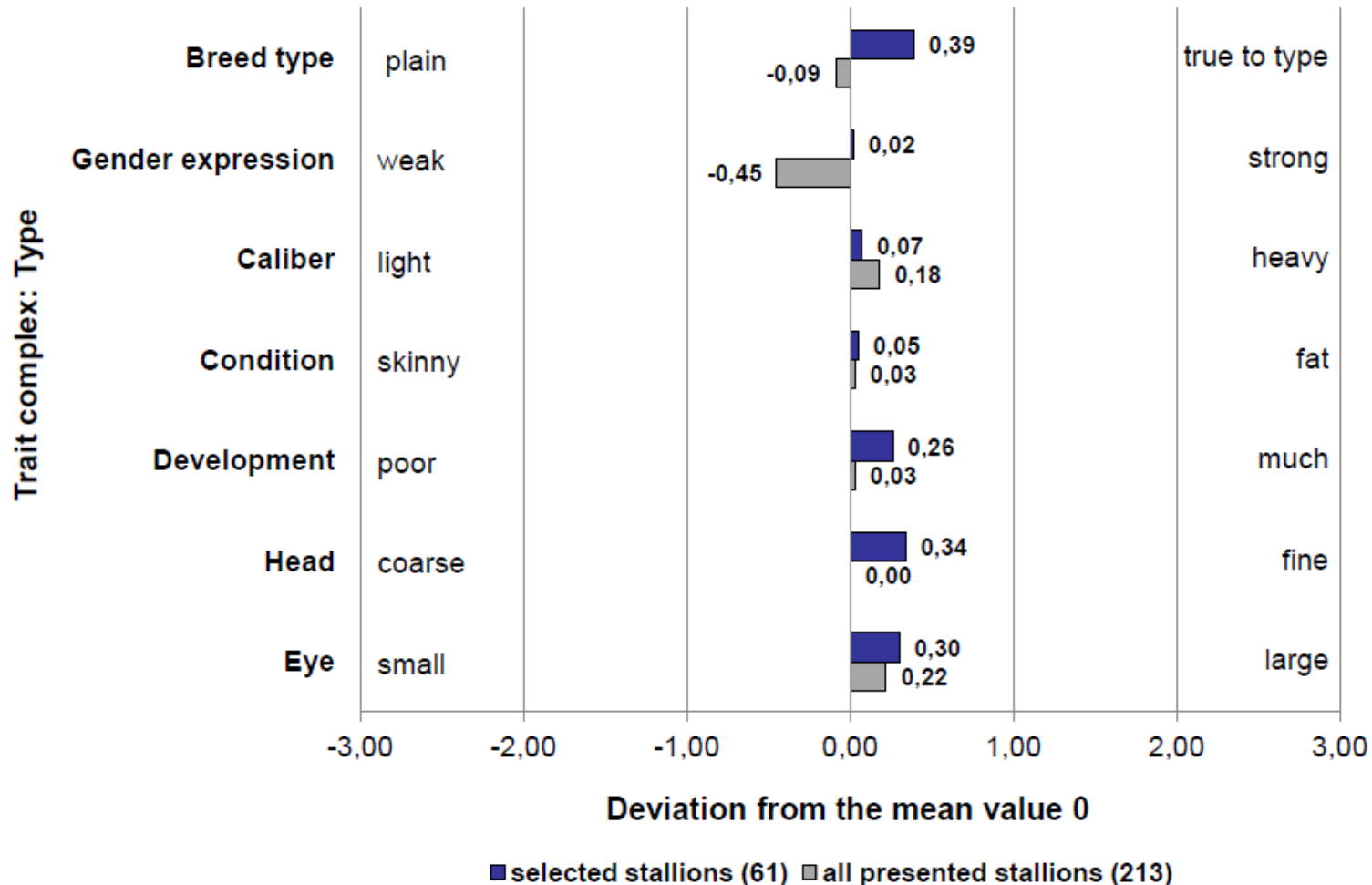
- **2015: Pilot study:** linear description of young stallions at the preselection for licensing
- Linear description of 213 young stallions
- Different approach of assessment: division of the trait complexes among the four judges (aim: to relieve the judges and to increase the precision of linear description)
 - 1. judge: free jumping
 - 2. judge: type, topline, trot
 - 3. judge: forelimbs, walk
 - 4. judge: hindlimbs, canter, correctness (movement), behaviour

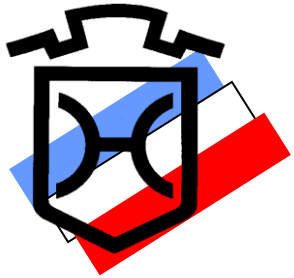


Linear description of young stallions



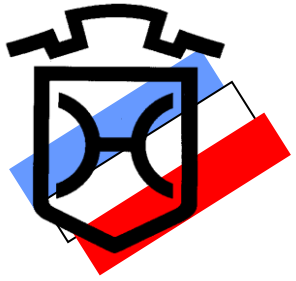
Stallion preselection 2015





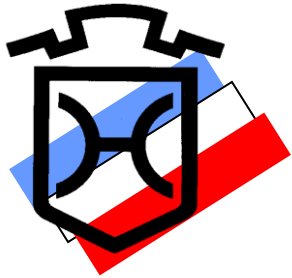
Future aims / work steps

- Establishment of the mobile data collection with the tablet PC
- Development of a procedure for the provision of the linear profiles to the breeder/owner of the horse
- Changing of the assessment procedure (“trait-by-trait documentation” to recording of striking traits)
 - training of the judges!
- Population genetic analyses



Thank you!

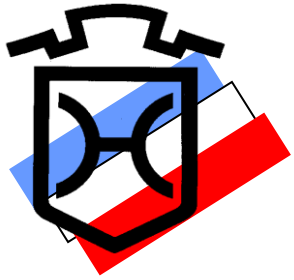




European Innovation Partnership (EIP)

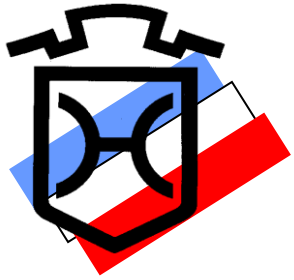


- Funding program by the EU and the federal states in Germany (country program for Rural Areas of Schleswig-Holstein, LPLR)
- Aim of EIP: encouraging and promoting of innovations in order to increase the sustainability and efficiency in agriculture
- The implementation of EIP is based on the “bottom up” approach
 - The need for innovation comes from the practice and the practice has a leading role in the development of solutions
- Funding of formation and operation of Operational groups (working groups) which perform the innovation project
 - Persons of the agricultural sector (Farmers, scientists, consultants etc.)



OG „Equine health“

- Stakeholders of the equine sector in Schleswig-Holstein
 - Farmers, breeders, consultants, service companies, scientists, veterinarians
 - The Holsteiner Verband is responsible for the management and coordination
- Aim: development of strategies to strengthen equine health and the sustainability of the husbandry, use and breeding of horses
- The following areas are processed in the project:
 - Promotion of data flow in the central equine health database
 - Extension of linear profiling in the Holsteiner horse
 - Collection of parameters for equine husbandry and management
 - Development of a web-based information system for horse breeders/owners



OG „Equine Health“

Farmers und aktive breeders of the Holsteiner horse:

Hans Joachim Ahsbahs, Hanno Köhncke, Johann Peter Laß,

Timm Peters, Ulrich Steuber, Christian Thoroë, Holger Wesselmann

AND

PFERDEKLINIK BARGTEHEIDE

Dr. med. vet. W. Jahn / Dr. med. vet. V. Sill
Dr. med. vet. I. Lorenz / Dr. med. vet. J. Brunk



Landwirtschaftliche
Kontroll- und Dienst-
leistungsgesellschaft mbH



Landwirtschafts-
kammer
Schleswig-Holstein



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