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

Oldenburger Horse Breeding Society



From phenotypic to genetic linear profiles



Inge Workel

23 January 2019

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Linear Profiling

Linear profiling of conformation and performance traits is done at:

- Foal shows
- Studbook registrations
- Mare performance tests
- (pre-)Licensings for stallions

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Linear Profiling

- Start in 2012, with a Tablet
- 186 traits in total, we only document the obvious traits




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Linear Profiling

Assessment:

1. Format and front
2. Top line
3. Conformation
4. Correctness of gaits and coordination
5. Moving in hand
6. Free movement
7. Movement while ridden/on a lunge

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Linear Profiling

data sheet **conformation** RING ASSESSED

UELN DE 433330139412 don't publish head number 199 studbook 33

format and front part: topline, limbs, correctness / coordination, movement in hand, free movement, movement under rider/on the lunge

group	area	- extreme	-3	-2	-1	0	1	2	3	+ extreme
FORMAT	Breed type	plain	○	○	○	●	○	○	○	true to type
	Gender expression	weak	○	○	○	●	○	○	○	strong
	Frame	small-framed	○	○	○	●	○	○	○	large-framed
	Caliber	light	○	○	○	●	○	○	○	heavy
	Chest width	narrow	○	○	○	●	○	○	○	wide
	Barrel	shallow (tucked-up)	○	○	○	●	○	○	○	deep
	Umbilical thickening					●	○	○	○	marked umbilical thickening
	Condition	skinny	○	○	○	●	○	○	○	fat
	Development	poor	○	○	○	●	○	○	○	much
	Length of legs	short-legged	○	○	○	●	○	○	○	long-legged
	Harmony of proportions	unharmonious	○	○	○	●	○	○	○	harmonious


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Linear Profile for breeders


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Linear Profile for breeders



Only obvious traits appear in the profile,
except „Type“

Foals: 10
Studbook entry: 13
Mare performance test: 30

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Linear Profile for breeders


LIFE NUMBER: xxx

Cat. no.: 3 mare born on 14.06.2018

S: xxx DS: xxx

D: xxx

shown on 10.08.2018 in xxx



Linear profile format and front

FORMAT Breed type	plain	3	2	1	0	1	2	3	2	true to type
FORMAT Gender expression	weak					1			1	strong
FORMAT Length of legs	short-legged					1			1	long-legged
FORMAT Harmony of proportions	unharmonious					1			1	harmonious
FRONT Head shape	coarse					2			2	fine
FRONT Eye size	small					1			1	large

3 2 1 0 1 2 3

Linear profile feet & legs

LIMBS Stance of forelimb pastern	upright	2				1			1	sloping (weak)
LIMBS Stance of hind limb pastern	upright					1			1	weak
LIMBS Hock angulation	straight	3				1			1	angulated


3 2 1 0 1 2 3

Movement profile free movement

WALK Freedom of shoulders	short					1			1	long
WALK Reach of hind limbs (overstepping)	inactive (short)					1			1	active (long)
TROT Thrust (hind limb activity)	inactive, sluggish	1				1			1	active, energetic
TROT Carrying power	pushing	1				1			1	carrying

3 2 1 0 1 2 3

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Linear profile format and front

FORMAT Breed type	plain									0	true to type
FORMAT Body shape	square	1									(long-)rectangular
FRONT Head shape	coarse									1	fine
FRONT Head length	short	1									long
FRONT Eye size	small									2	large
FRONT Shape of neck	straight	1									arched
FRONT Shoulder angle	straight	1									sloping

3 2 1 0 1 2 3

Linear profile topline

TOPLINE Length of back	short	1									long
TOPLINE Line (strength) of back	dipped	1									roached

3 2 1 0 1 2 3

Linear profile corr. o. gaits/ special remarks

CORRECTNESS/ Toe stance of forelegs	toe-in	2									toe-out
SPECIAL REMARKS Toe stance of forelegs	unilateral	<input checked="" type="checkbox"/>									bilateral
SPECIAL REMARKS Standing position of hind limbs	base-narrow									2	base-wide


3 2 1 0 1 2 3

Movement profile movement in hand

WALK Rhythm	irregular										1	regular
WALK Activity	lazy										1	diligently striding
WALK Freedom of shoulders	short										1	long
WALK Reach of hind limbs (overstepping)	inactive (short)										1	active (long)
TROT Mechanics of front limbs	straight forelimb	1										much knee action
TROT Impulsion	weak										1	powerful
TROT Carrying power	pushing	1										carrying


3 2 1 0 1 2 3

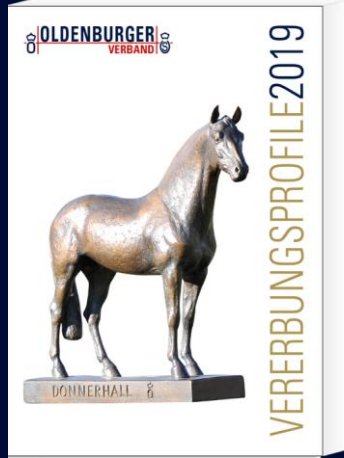
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Genetic profiles






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Genetic profiles: Background

- Breeders ask for more transparency
- Publication of Genetic Stallion Profiles allowed by our delegates
- Input generated and supplied by Kathrin F. Stock, Vit Verden
- Own transformation program for publication of the Genetic Stallion Profiles

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Genetic profiles: Background


Analyses based on 20,000 linear profiles
(13,000 foals, 7,000 older horses)


Traits:

- 46 linear traits
- Heritability of $h^2 > 10\%$


Influencing factors:

- Judge / assistance
- Society (jumping, dressage)
- Age
- Sex

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Genetic profiles



FÜRSTENBALL
 von Fürst Heinrich - Donnerhall - Classiker geb. 2006
 Beschriebene Nachkommen: 444, diese können sowohl als Fohlen, als auch 2-jährig und älter linear beschrieben worden sein.
 Linearprofile: Fohlen: 327 2-jährig und älter: 162

Exterieur	40	60	80	100	120	140	160
Rassetyp	wenig						147
Geschlechtsausdruck	wenig						147
Rahmen	wenig/kleinrahmig						103
Kaliber	leicht	74					
Proportionen	kurzbeinig						125
Kopf	grob, derb						139
Auge	klein						149
Hals	tief angesetzt						115
Hals	Unterhalsbetont						113
Hals	gerade						119
Widerrist	kurz						122
Widerrist	flach	95					
Rücken	kurz	86					
Oberlinie	weich						118
Niere	matt						104
Kruppe	flach/gerade						103
Schweifansatz	tief	76					

Fundament

Fessel vorne	kurz						104
Fessel vorne	steil						107
Fessel hinten	steil						127
Sprunggelenk	steil/gerade	70					
Gelenke	schwach/fein	42					
Stellung Vorhand	zehenonng						105
Schweiftonus	kein Tragen	87					


Conformation

Limb conformation and correctness

Gaits

Free jumping

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Genetic profiles




Schritt					
Raumgriff Vorhand	begrenzt			154	raumgreifend
Raumgriff Hinterhand	wenig untertretend			142	deutlich übertretend
Trab					
Raumgriff Vorhand	begrenzt			136	raumgreifend
Vorderhand-Mechanik	gerades Vorderbein			105	viel Knieaktion
Schwung und Elastizität	wenig			128	viel
Schub, Hinterhandaktivität	kraftlos, schleppend	97			energisch, aktiv
Tragkraft	wenig			100	getragen
Losgelassenheit	fest			148	locker
Galopp					
Raumgriff Vorhand	begrenzt			112	raumgreifend
Vorderhand-Mechanik	gerades Vorderbein			110	viel Knieaktion
Bewegungsrichtung	bergab			121	bergauf
Schub	kraftlos	88			energisch

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Genetic profiles



Genetic Profiles of:

- 59 young stallions
Age 4-6 years, ≥ 8 linear described foals
- 149 older stallions
 ≥ 30 offspring with linear profiles, or 20 offspring of which ≥ 10 from older offspring

The more linear profiles from stallion offspring are available, the more reliable are the genetic profiles!

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