Linear profiling in the Belgian Warmblood

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22nd - 23rd January 2019, Flyinge, Sweden

Conformation & linear profiling

- Included in the breeding goal of BWP
  - Performance (jumping or dressage)
  - Health
  - Functional conformation
- Assessment @
  - Mare conformation and gaits contests
  - Free jumping and jumping under the saddle contests
  - Foal contests
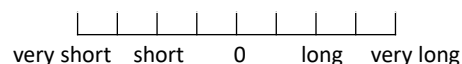 - Stallion selection (no linear profiling)

Linear profiling @ mare contests

- Introduced in 2003

- Linear profiling on 9-point structured scale + measurement of height at withers

  - Type: 18 traits

  - Legs: 9 traits

  - Gaits: 8 traits (walk and trot)

  - Extreme phenotypes

- Mares of 3 and 4 years old

- Only scored once

E.g. Neck length

very short   short   0   long   very long

TYPE

	very square	square	0	rectangle	v.rectangle		l.poor	poor	v.poor
BODY SHAPE :	v.square	square	0	rectangle	v.rectangle	Condition :	l.poor	poor	v.poor
BODY DIRECTION :	v.downhill	downhill	0	uphill	v.uphill		l.heavy	heavy	v.heavy
LENGTH OF LEGS :	v.short	short	0	long	v.long				
HEAD SIZE :	v.small	small	0	big	v.big	Head convex :	little	much	v.much
HEAD-NECK :	v.light	light	0	heavy	v.heavy	Jaws :	l.heavy	heavy	v.heavy
NECK : Length :	v.short	short	0	long	v.long				
Muscling :	v.poor	poor	0	heavy	v.heavy	Set of neck :	l.deep	deep	v.deep
Direction :	v.vertical	vertical	0	horizontal	v.horizontal				
WITHERS: Height :	v.flat	flat	0	high	v.high				
Length :	v.short	short	0	long	v.long				
SHOULDER : Direction :	v.straight	straight	0	sloping	v.sloping				
Length :	v.short	short	0	long	v.long				
BACK : Length :	v.short	short	0	long	v.long				
Line :	v.deep	deep	0	straight	v.straight				
LOINS :	v.weak	weak	0	strong	v.strong				
CROUP : Slope :	v.straight	straight	0	sloping	v.sloping				
Length :	v.short	short	0	long	v.long				
MUSCULARITY HIND :	v.short	short	0	long	v/long				

LIMBS

POSITION FORELEGS :	|⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|	Forelegs standing under : |⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|
	v. over at knee over at knee 0 back at knee v.back at knee	little much v.much
	|⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|	Canon bone front : |⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|
	v.inward inward 0 outward v.outward	l.tied in tied in v. tied in
POSITION HINDLEGS:	|⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|	Hindlegs standing behind: |⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|
	v.curved curved 0 straight v.straight	little much v.much
POSITION HOCKS:	|⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|	Canon bone hind : |⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|
	v.inward inward 0 outward outward	l.tied in tied in v. tied in
POSITION PASTERNS :	|⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|	
	v.weak weak 0 upright v.upright	
HOOF SHAPE :	|⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|	Uneven shape hoof : |⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|
	v.narrow narrow 0 wide v. wide	l.uneven uneven v.uneven
HEELS :	|⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|	
	v.low low 0 high v.high	
DEVELOPMENT LEGS :	|⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|	
	v.light light 0 heavy v.heavy	
QUALITY OF LEGS :	|⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|	
	v.blurred blurred 0 lean v.lean	

GAITS

WALK :	Length of stride : |⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|	Irregular Rhythm : |⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|
		v.short short 0 long v.long	little much v.much
	Impulsion Hind : |⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|	
		v.inactive inactive 0 active v.active	
	Suppleness : |⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|	
		v.elastic elastic 0 stiff v.stiff	
	Balance : |⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|	
		v.low low 0 much v.much	
TROT :	Length of stride : |⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|	
		v.short short 0 long v.long	
	Impulsion Hind : |⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|	
		v.inactive inactive 0 active v.active	
	Suppleness : |⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|	
		v.elastic elastic 0 stiff v.stiff	
	Balance : |⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯|	
		v.low low 0 much v.much	

Linear profiling @ jumping contests

- Introduced in 2003 for free jumping contests – 3 years old males and females
- Introduced in 2014 for jumping under the saddle – 5 years old males and females
- Linear profiling
  - (Free) jumping ability: 7 traits
  - Canter: 4 traits
- Only scored once

SCOPE : |____|____|____|____|____|
        v.little   little   0   much   v.much

TAKE-OFF : |____|____|____|____|____|
        v.little   little   0   much   v.much

TECHNIQUE: Forelegs : |____|____|____|____|____|
        v.little   little   0   much   v.much

        Back : |____|____|____|____|____|
        v.little   little   0   much   v.much

        Hindlegs : |____|____|____|____|____|
        v.little   little   0   much   v.much

WILLINGNESS : |____|____|____|____|____|
        v.little   little   0   much   v.much

PRUDENCE : |____|____|____|____|____|
        v.little   little   0   much   v.much

CANTER :   Length of stride : |____|____|____|____|____|
        v.short   short   0   long   v.long

        Impulsion: |____|____|____|____|____|
        v.little   little   0   much   v.much

        Suppleness : |____|____|____|____|____|
        v.little   little   0   much   v.much

        Balance : |____|____|____|____|____|
        v.little   little   0   much   v.much

Linear profiling : # horses scored / year
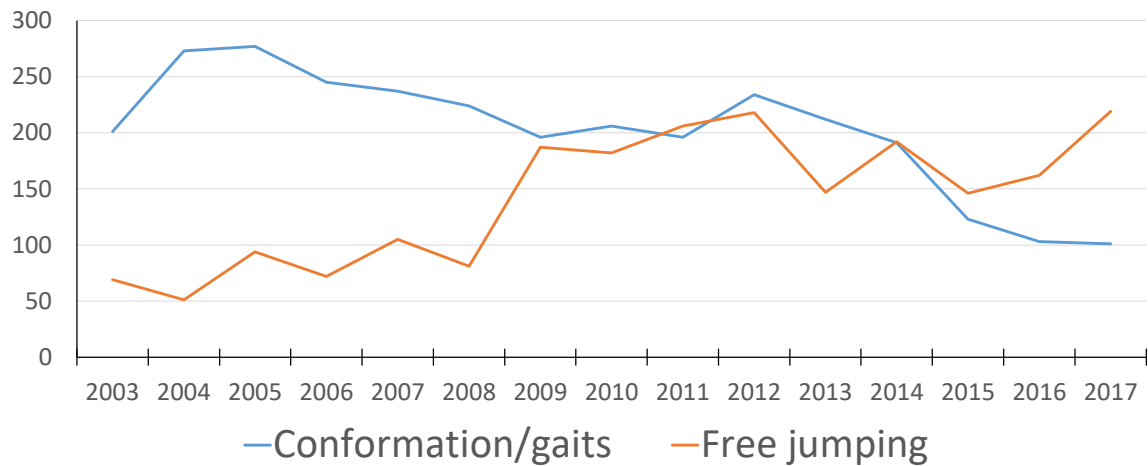
Linear profiling @ foal contests

- Introduced in 2016
- Linear profiling
  - Type: 9 traits
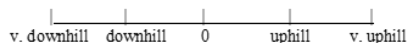 - Legs: 5 traits
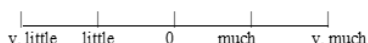 - Gaits: 5 traits (across 3 gaits)

TYPE

BODY SHAPE:
v. square   square   0   rectangular   v. rectangular
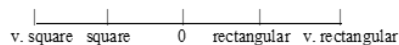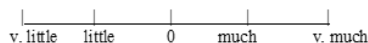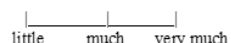
DEVELOPMENT :
v. little   little   0   much   v. much

BODY DIRECTION :
v. downhill   downhill   0   uphill   v. uphill

BREED TYPE & EXPRESSION :
v. little   little   0   much   v. much

Head convex:
little   much   very much

NECK: Length :
v. short   short   0   long   v. long

Position :
v. horizontal   horizontal   0   vertical   v. vertical

Neck set in :
l. deep   deep   v. deep

WITHERS : Development :
v. little   little   0   much   v. much

BACK+LOINS : Line :
v. deep   deep   0   straight   v. straight

CROUP : Slope :
v. straight   straight   0   sloping   v. sloping

LIMBS

LENGTH :
v. short   short   0   long   v. long
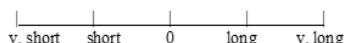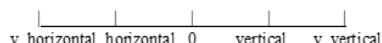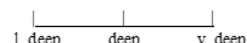
POSITION FORELEGS :
v. inward   inward   0   outward   v. outward
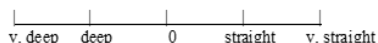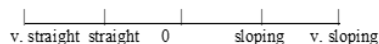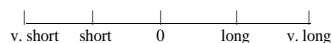
POSITION HINDLEGS :
v. curved   curved   0   straight   v. straight
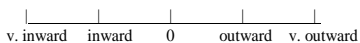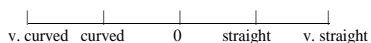
Stance of hindlegs behind mass:
little   much   v. much
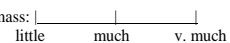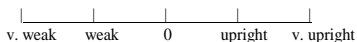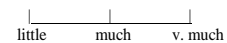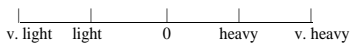
POSITION PASTERNS :
v. weak   weak   0   upright   v. upright

Uneven shape hoof:
little   much   v. much

DEVELOPMENT :
v. light   light   0   heavy   v. heavy

GAITS

LENGTH OF STRIDE :
v. little   little   0   much   v. much

SUPPLENESS :
v. little   little   0   much   v. much

IMPULSION:
v. little   little   0   much   v. much

CORRECTNESS :
v. little   little   0   much   v. much
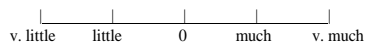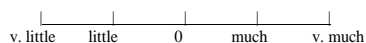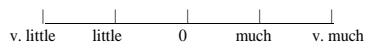
MOVEMENT TECHNIQUE :
v. little   little   0   much   v. much
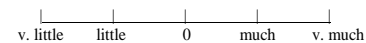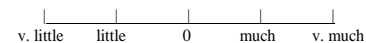
Linear profiling : participation

	Conformation and gaits	Free jumping	Jumping under saddle	Foals
2016	103	162	305	527
2017	101	219	407	557

Approximately 10 – 20% of the foals born

Data processing and use

- Input in BWP system as scores between -20 and 20 around mean value 0
- Use
  - Information for breeders (direct return)
  - Evaluation of mothers of candidate stallions
  - Calculation of breeding values (for foal data to be developed)
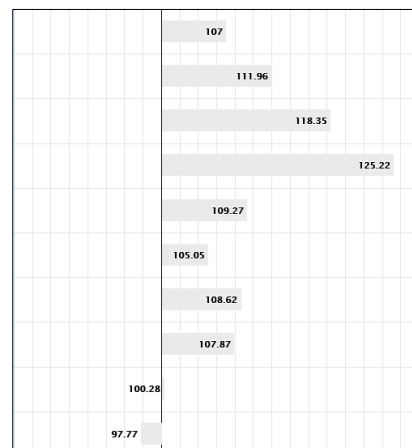
Challenges (1)

- Breeders' interest in and knowledge of linear profiling limited

- Participation at mare shows decreasing
  - Less linear profiling data available
  - Data become less representative for the population

- Large participation at (free) jumping and foal contests
  - Larger and more representative sample of population
  - On (free) jumping contests difficult or not possible to score type traits

Challenges (2)

- Quality of the linear profiling data
  - Performed by national judges (# 9 total) on an irregular and voluntary basis
  - Training and maintaining expertise of the judges limited: max. 1 training / year
  - Extreme phenotypes seldom indicated
  - Available time on free jumping and foals shows limited
  - Impression that there is a large effect of age on several traits in foals (to be evaluated)

Belgian Warmblood

BWP

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