



How to use veterinarian information from Swedish young horse quality tests to improve health and durability

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The Swedish Warmblood

55 000 riding horses

4000-5000 broodmares covered annually

Breeding objective

A noble and correct horse with good longevity that by its temperament, rideability and good movements and/or jumping ability is internationally competitive

75%



40%



8%





Background

Health has the highest priority on the horse market among buyers *Hennessy et al. 2006*

55-70 % of culled riding horses are culled due to musculoskeletal disorders

Egenvall et al. 2006; Wallin et al. 2000; Clausen et al. 1990; Stock and Distl 2005

General lack of routine health registrations

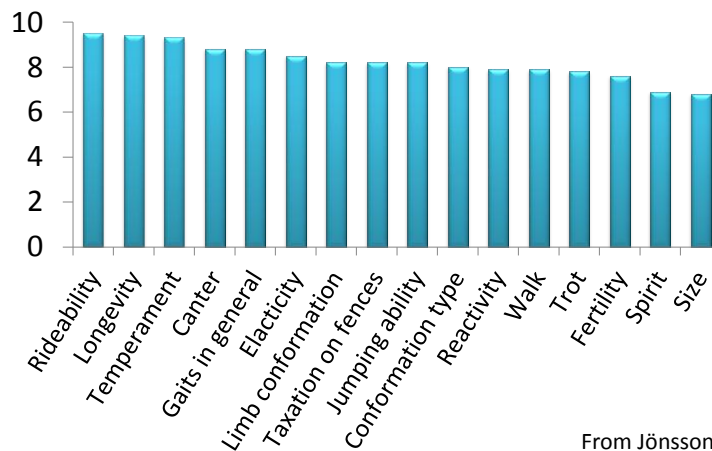
Limited knowledge of importance of young horse health & conformation for longevity in competition



Longevity in competition

The second most important trait to improve according to the horse industry

Most important trait according to riders



From Jönsson (2006)

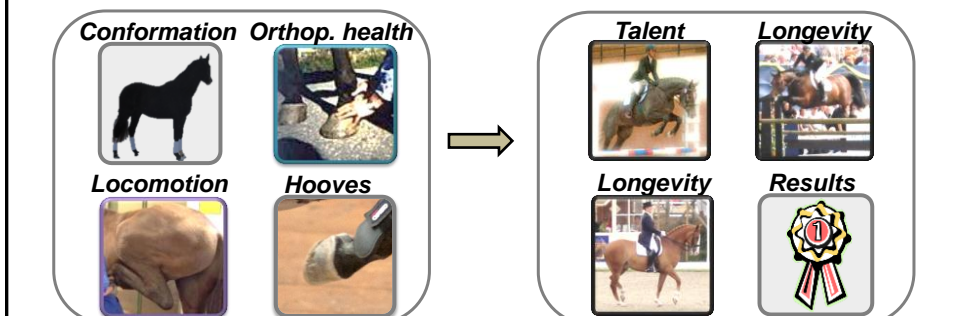
Aims

Study possibilities to improve orthopaedic health and longevity in SWBs through breeding

- Most important conformation traits
- Most important health traits

... for best future health, longevity and performance

Including heritabilities and relationships between:



Material

- Digitized protocols for 8238 horses participating in the Riding Horse Quality Test (RHQT) as 4-5 year olds (1 day field test)
- During 1983-2005 (20 locations/year)
- Lifetime competition results (LPERF) and number of years in competition (NYC) during 1983-2012

RHQT areas of examination (separate judges)

- Medical health and hooves
- Orthopaedic health
- Conformation
- Gaits under rider
- Free jumping/ jumping under rider



Hoof shape & hoof wall quality (HOOF)

Hoof wall cracks

Poor hoof wall quality

Asymmetrical hooves

Small hooves

Flat hooves

Underrun or contracted heels

Thrush in frog or atrophied frog



Palpatory orthopaedic health (PALP)

Effusion

Heat

Swelling

Soreness

Stiffness/atrophy

In:

Muscles

Joints

Tendons & suspensory ligaments

Skeleton & hoof cartilage



Locomotions (LOCO)

Initial movements in:

Walk

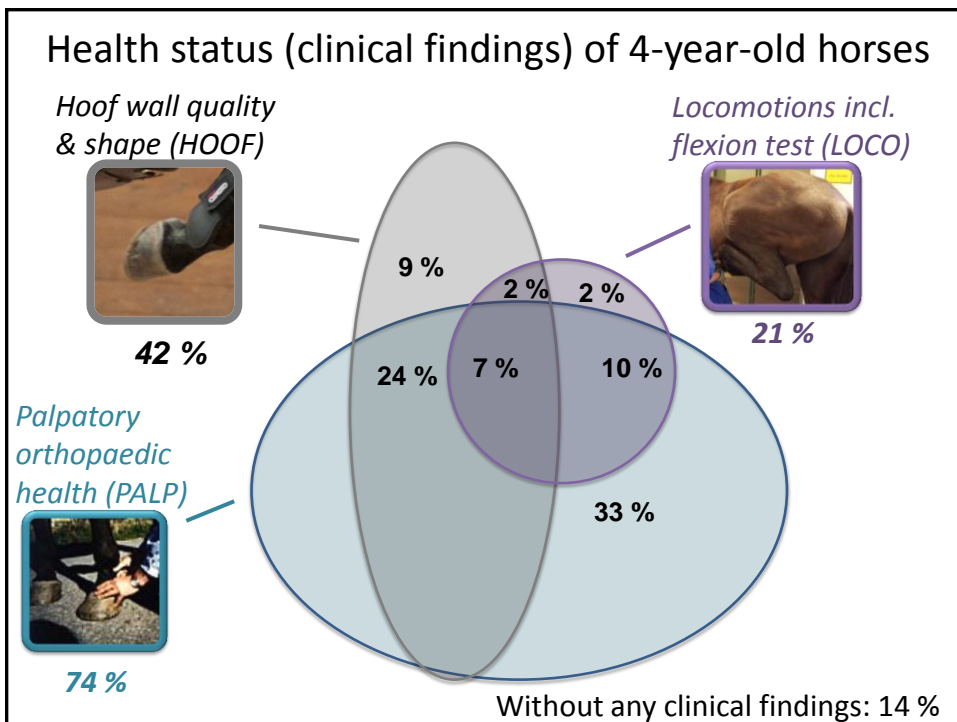
Trot

Movements after flexion test (each limb)





Results





What does this tell us?

Most horses have some deviation from the 'perfect' horse regarding health

Essential to record all deviations in an whole animal manner, regardless of its thought potential effect on overall health or longevity

A separate assesment score is recommended

Important conformation traits for a good health

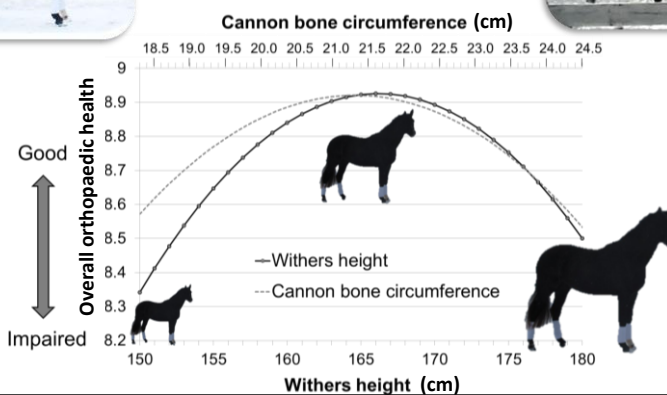
Head-neck-body conformation

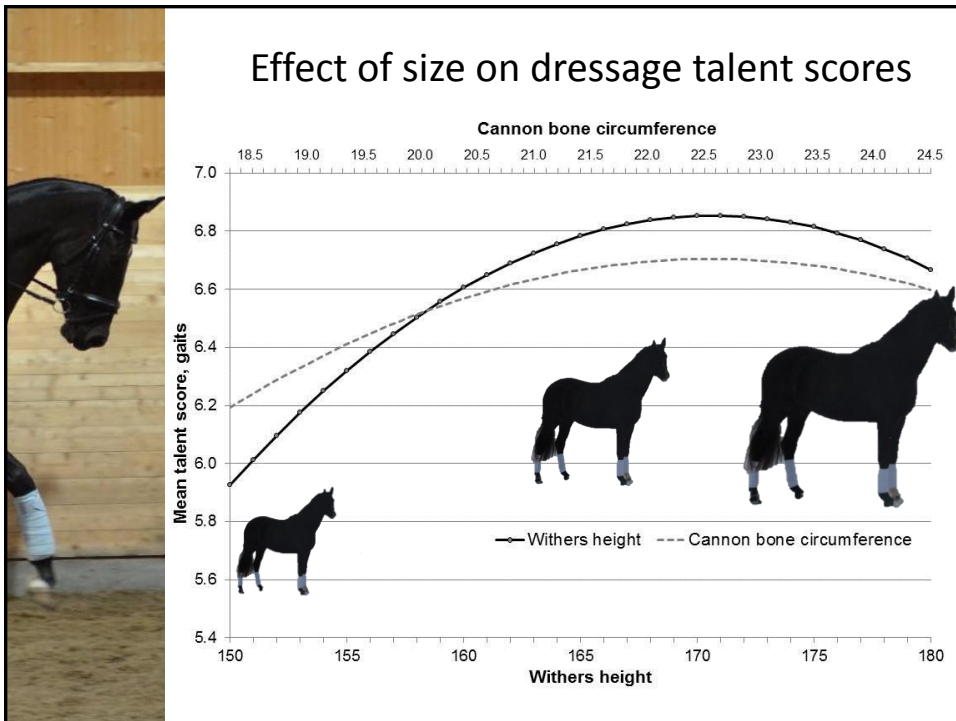
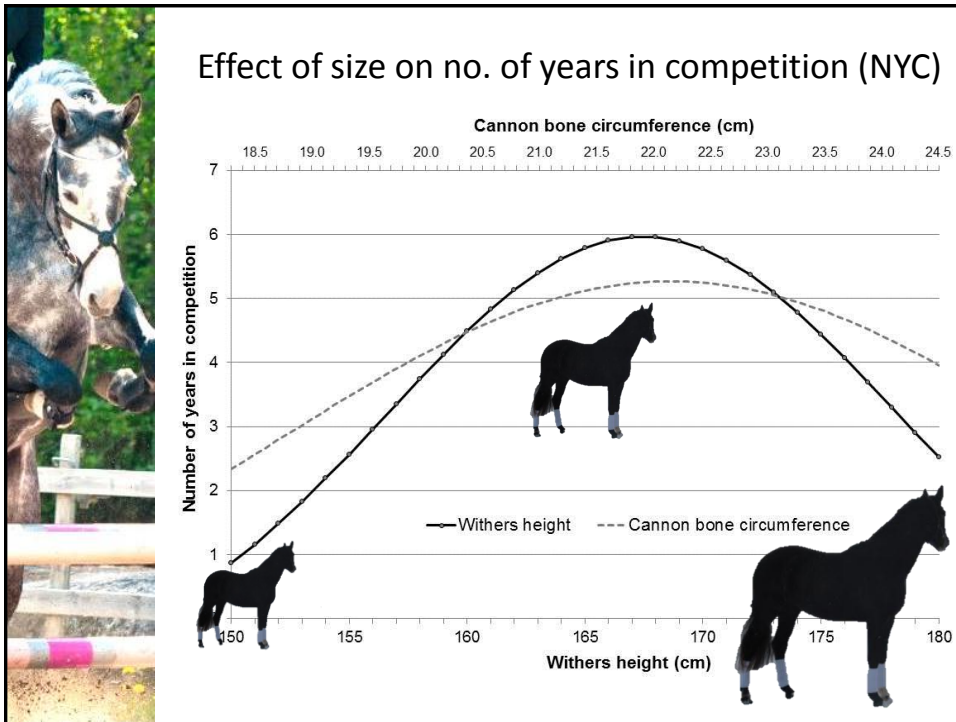


Trot movements



Size





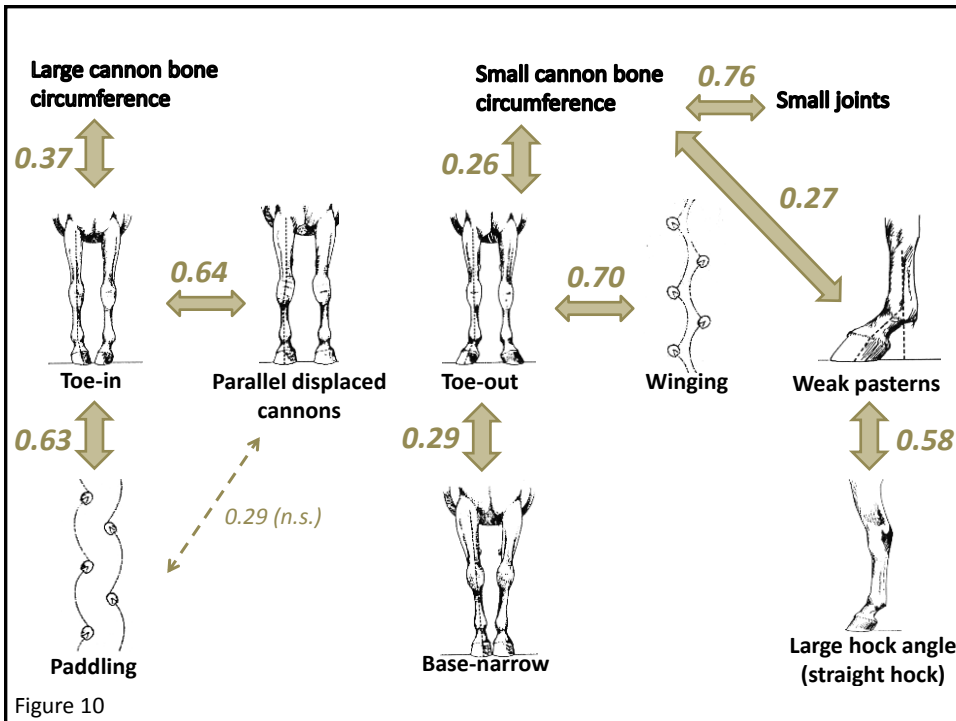
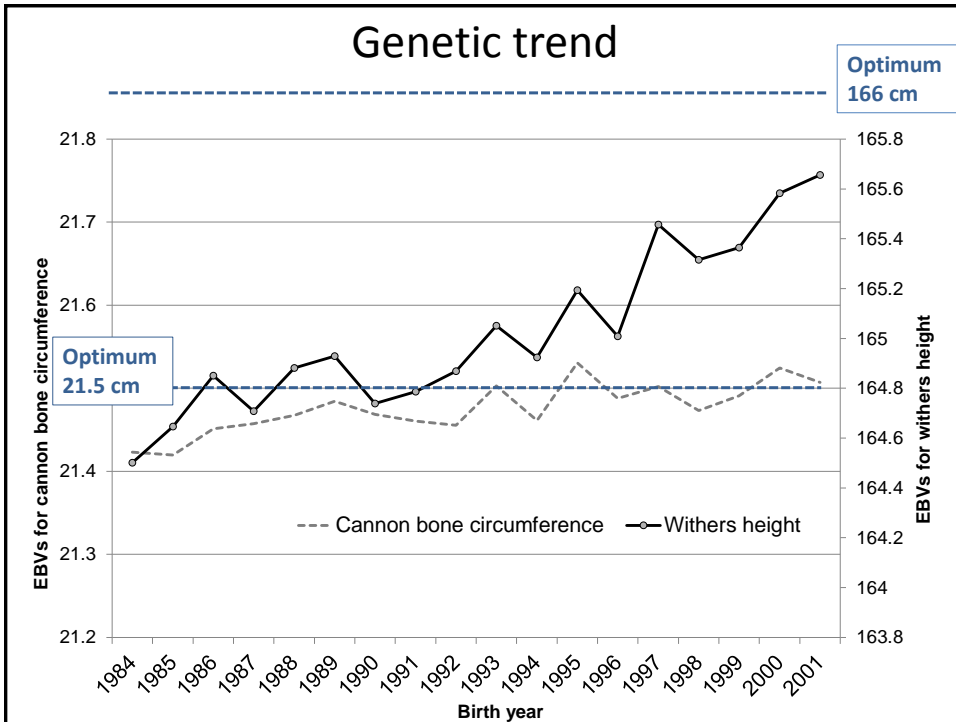
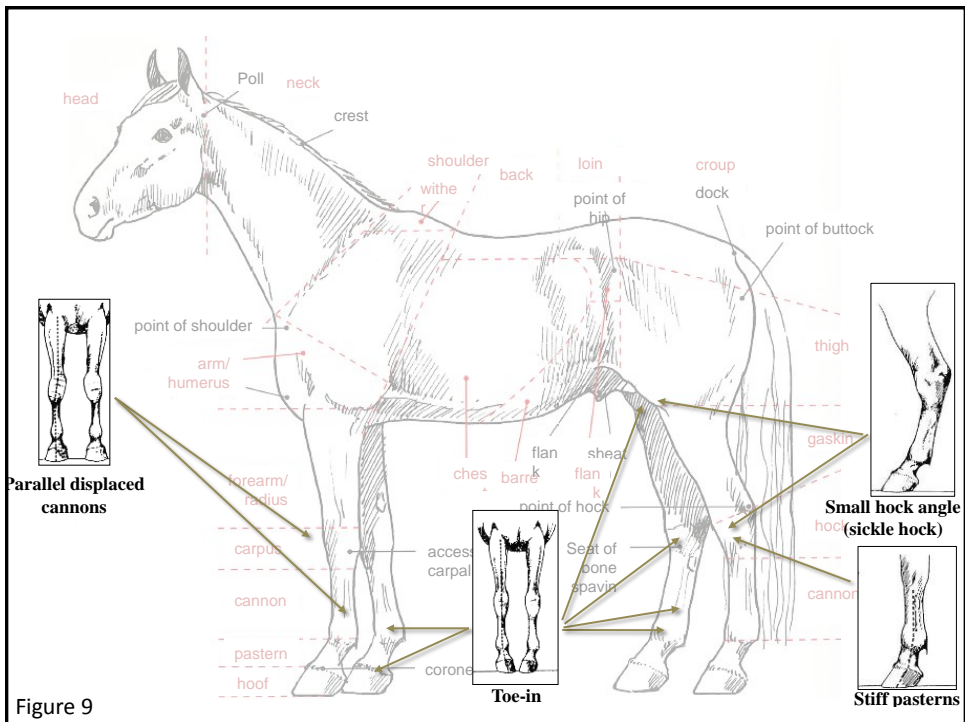


Figure 10



Placing in competition

Horses with no competition placings had:

- Lower overall orthopaedic health score (H2)
- More signs of lameness/ flexion test reactions (LOCO)
- Lower type and trot scores
- Smaller cannon bone circumference
- Lower talent scores for gaits and jumping

Health, conformation and talent affects future opportunities for placings in competition



Dressage and jumping talent

Health and conformation affects both dressage and jumping talent at day of testing

Most important:

Overall orthopaedic health (H2)

Type

Head-neck-body

Walk & trot at hand (mostly dressage horses)



Health and conformation effects on No. of years in competition (NYC)

Significant individual effects on longevity:

Health

Overall orthop. health (H2)

Locomotion, incl. flexion (LOCO)

Significant effects if considered simultaneously:

Palpatory orthop. health (PALP)

Hoof shape & quality (HOOF)

Conformation

Type

Head-neck-body

Limbs

Walk at hand

Trot at hand

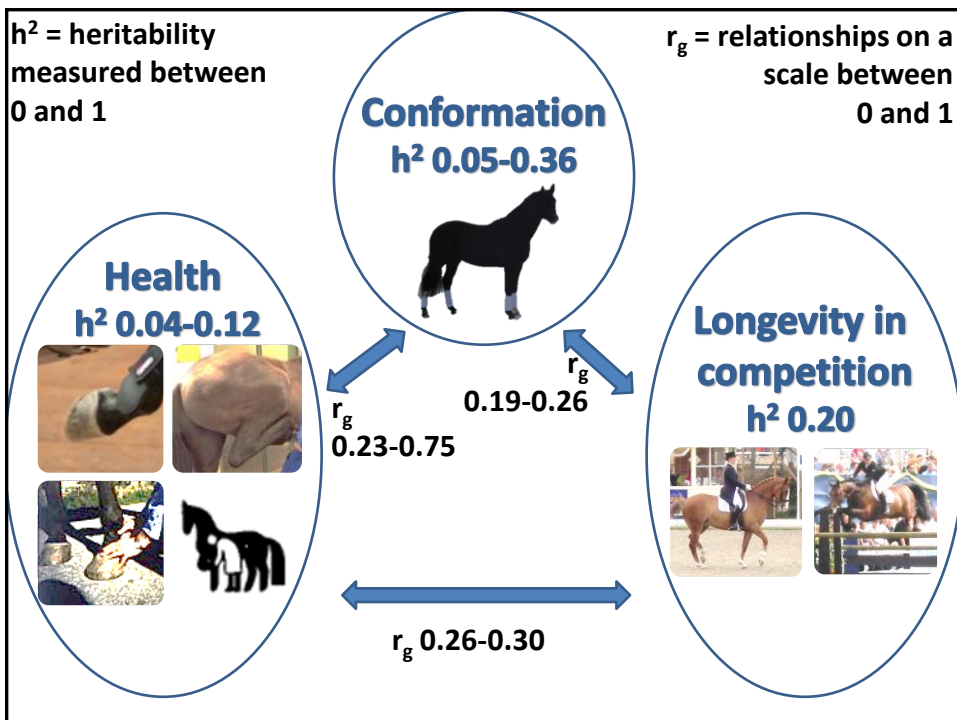
Health examinations contribute with unique information of longevity, in addition to the conformation examination

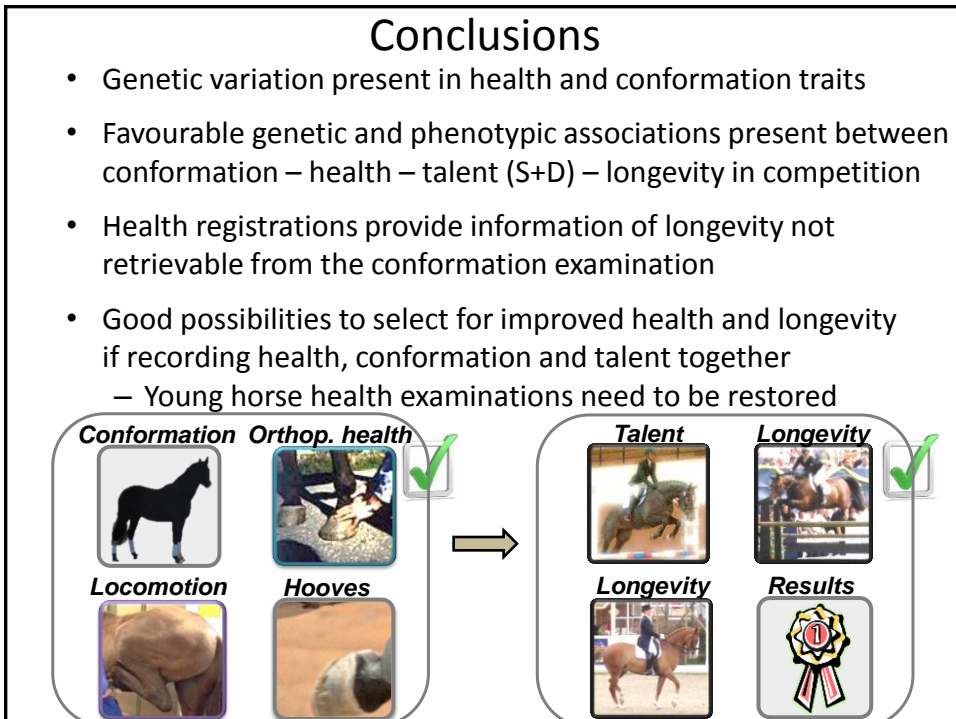
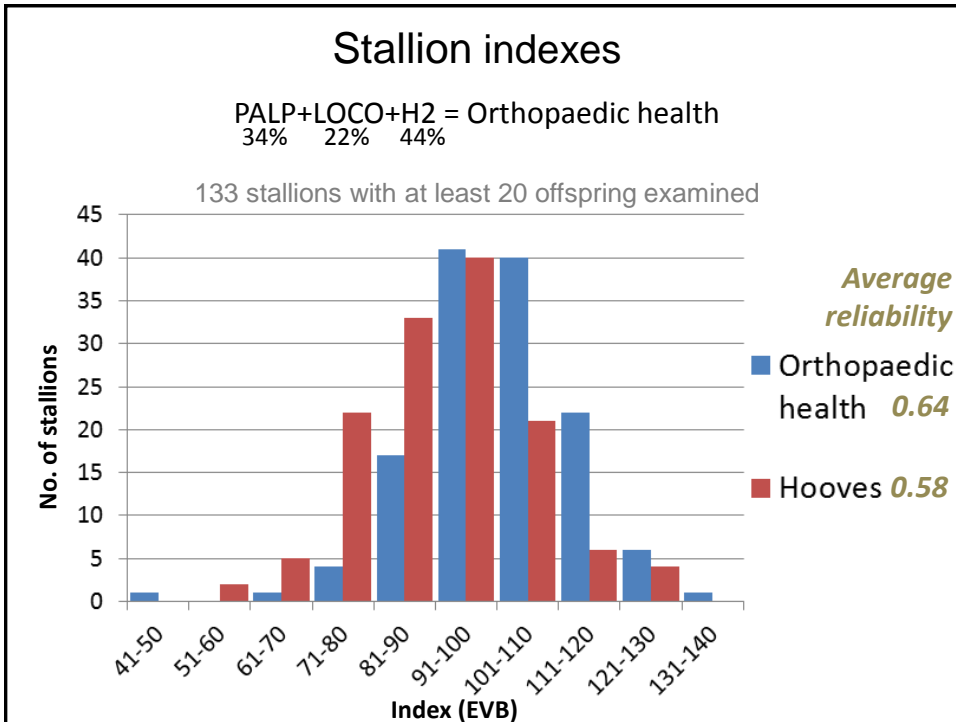
Flexion test reactions



- Lower chances of competing later in life: odds ratio

0.59	moderate/severe reactions
0.76	minor reactions
1.00	no reactions
- An average decrease in competition career of 0.4 years
- Large effect on the overall orthopaedic health score (H2)
- Large effect on the LOCO trait: 21% had flexion test reactions, 4% had unprovoked lameness (0.4% moderate/severe)
- Despite low heritability, showed significant genetic correlations to longevity/success in competition at 0.28-0.32







Take home messages for breeders and riders

A correct and sound horse has better chance of performing well both as a young horse and in competitions later in life

Conformation at young age

- Promote a good type, head-neck-body conformation and good movements in trot at hand. Proportionality and correctness is important!
- Promote intermediate withers heights at 163–171 cm
- Do not favor the largest horses as much as today, in particular in dressage
- Conformation is important also for show jumpers, they should not be low in the front

Health at young age

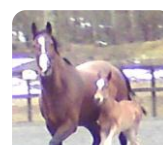
- The flexion test is a good indicator of future health and longevity
- Joint effusions influence the longevity in competition

Recommendations for breeding organisations that wants to improve horse longevity and performance

Health status

Start routine, whole animal based recordings of health regarding:

- Hooves
- Palpatory orthopaedic health
- Locomotions – important to include flexion test



Thank you!

Conformation

- Be careful not to keep selecting for larger and lighter horses in the modern sport horse populations
- In addition to a good type and head-neck-body conformation - focus on movements without a rider – it tells a lot of the health status and correctness of the horse
- Keep limb deviations as a low level in the population

Consider health, conformation and talent in the breeding evaluations!