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Genetic analysis of data from Swedish stallion performance test

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Swedish Warmblood

71,000 horses
4,400 covered mares (2017)

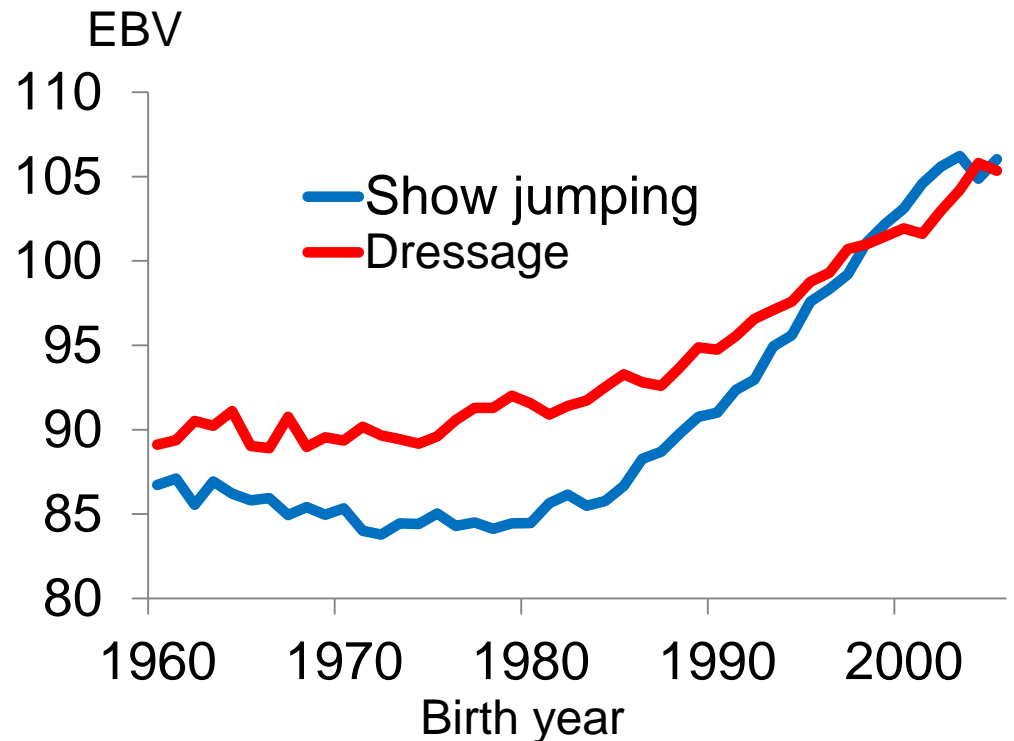"Internationally competitive horses in dressage, show jumping or eventing"

Stallion Performance Test

Introduced in the early 80'ies

Station test

Most important step in breeding program

EBV

(Viklund et al. 2011)

Stallion Performance Test

Important changes in 2002:

Shorter test – one week

3-year-old stallions can be temporarily approved

Test divided into two phases with specialization in second phase

Total Hope 1307. Photo Laila Berglund

Aim

Estimate genetic parameters for SPT traits 2002-2017

Estimate genetic correlations between SPT and competition traits

Ike 1348. Photo Roland Thunholm

SPT data 2002-2017

569 stallions (660 test results), 174 approved

Stallions originated from 20 studbooks

Traits

conformation

type, head-neck-body, correctness of legs

gaits

walk, trot and canter (under rider)

jumping

technique & capacity and general impression (free or under rider)

Studbook	Proportion
SWB	46%
KWPN	11%
HANN	11%
OLDBG	11%
HOLST	7%
Other	14%

Competition data

50,943 horses born 1980-2012

432 stallions with SPT data

6,771 offspring to stallions with SPT data

Traits

dressage and show jumping

lifetime accumulated points transformed with 10-log

Statistical models

SPT

y = year + age + stallion + perm. env. + residual

Competition

y = birth year + sex + horse + residual

Genetic parameters SPT

Trait		Heritability
Conformation	Type	0.57
	Head-neck-body	0.34
	Correctness of legs	0.04
Gaits	Walk	0.44
	Trot	0.62
	Canter	0.49
Jumping	Technique & capacity	0.55
	General impression	0.50

Genetic correlations between SPT and competition

	Dressage	Show jumping
Gaits		
Walk	0.73	
Trot	0.75	
Canter	0.79	
Jumping		
Technique & capacity		0.74
General impression		0.68

Relationship between stallions

	Average relationship (%)
Jumping stallions	3.3
Dressage stallions	2.5
Jumping & dressage stallions	0.7

Ironman H 1351

Ike 1348

Photos: Roland Thunholm

Average relationship within and between groups of dressage and show jumping horses
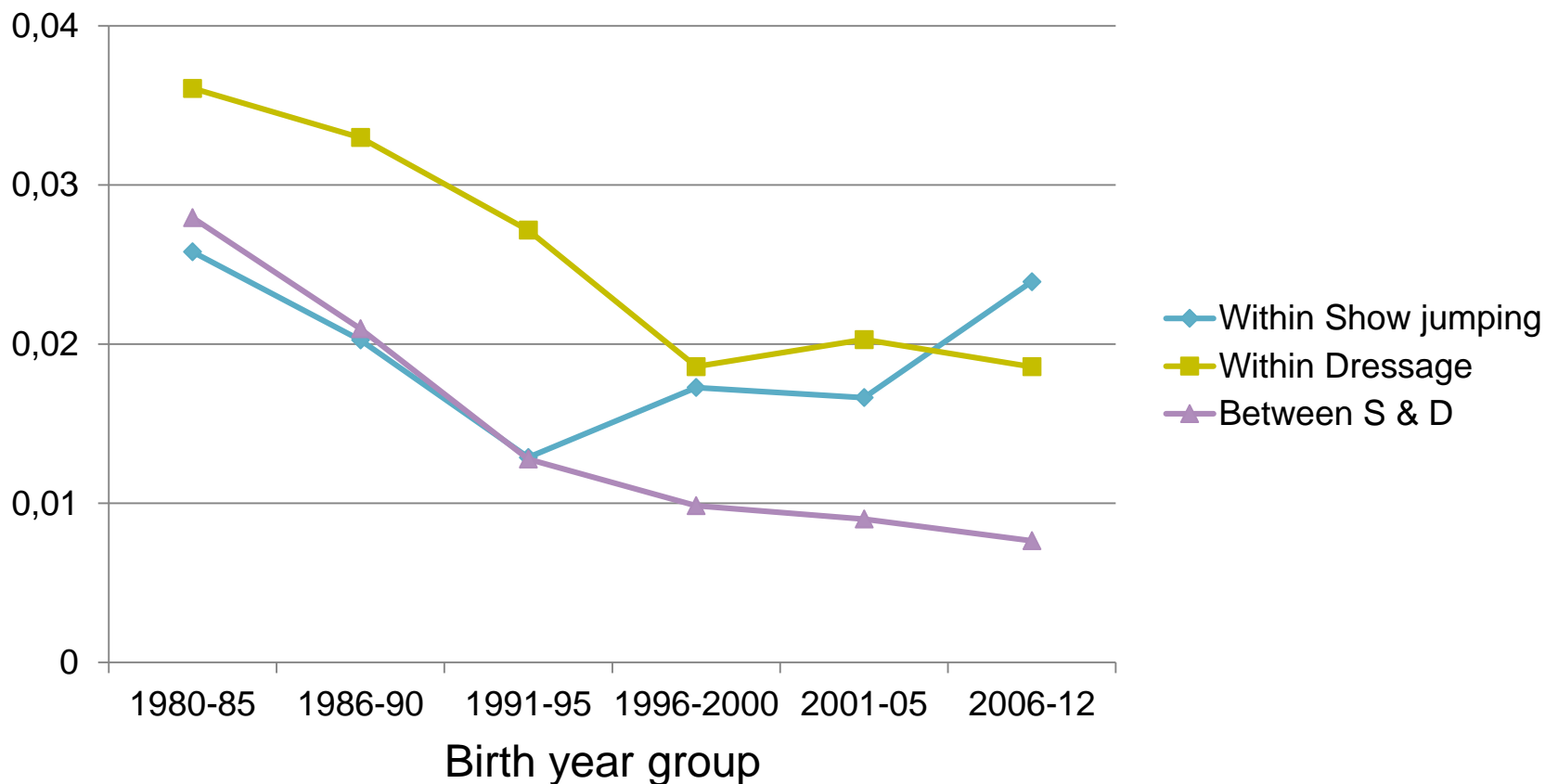
Conclusions

SPT is a good selection tool

    high heritabilities

    strong correlations to breeding goal

Specialization has increased

    stallions in SPT is strongly preselected for one discipline

    SPT data should be analyzed together with less selected data

Photos: Laila Berglund

Demand (SWB) 1344

Point Break (SWB) 1374