Stress response and interaction with the horse of male and female riders in equestrian show jumping

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Introduction

- riding theories over centuries developed for men
- equestrian sports nowadays dominated by women
  (in Germany 79% of the riders are female)
- women and men participate in the same competitions
About the study

Experiment 1
- stress response in male and female riders and their horses during a show jumping course

Experiment 2
- pressure under the saddle of male and female riders
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Hypothesis
- less pronounced stress response in female riders
- horses are not affected by the sex of the rider
- male riders exert more pressure on the horses back
Experiment 1
Stress response of riders and horses

- riding students of the Brandenburg State Stud
  (n=16, 8 male and female each)
- 8 male horses of the Brandenburg State Stud riding school
- warm up phase
- standardised jumping course: 8 obstacles, 85 – 90 cm high
- cool down
Experiment 1
Stress response of riders and horses

- cardiac beat to beat interval (RR)
  - mobile recording system (Polar)
  - continuously from 60 min before until 30 min after the jumping course

- heart rate

- heart rate variability
  - SDRR (standard deviation of RR interval)
  - RMSSD (root mean square of successive RR differences)
Experiment 1
Stress response of riders and horses

- cortisol concentration
  - Collection of saliva (Salivette)
  - 60, 30, 15 Min. before mounting the horse
  - 0, 15, 30, 60 Min. after finishing the show jumping course

- analysis with a direct enzyme immunoassay
Salivary cortisol concentration before and after jumping a course of obstacles in (a) male and female riders and (b) horses ridden by either a male or a female rider. Grey bars indicate time of warm up period and the jumping course.
Results riders - heart rate

heart rate at rest, during a warm up phase (walk, trot and canter), during jumping a course of obstacles and at 15 and 30 min thereafter in male and female riders
HRV variables (a) SDRR and (b) RMSSD at rest, during a warm up phase (walk, trot and canter), during jumping a course of obstacles and at 15 and 30 min thereafter in male and female riders.
Results horses - heart rate

heart rate at rest, during a warm up phase (walk, trot and canter), during jumping a course of obstacles and at 15 and 30 min thereafter in horses ridden by either a male or a female rider
Results horses - heart rate variability

HRV variables (a) SDRR and (b) RMSSD at rest, during a warm up phase (walk, trot and canter), during jumping a course of obstacles and at 15 and 30 min thereafter in horses ridden by either a male or a female rider.
Experiment 2
Pressure under the saddle

- 10 riding students from the Brandenburg State Stud (5 male, 5 female)
- 1 male warmblood horse

- saddle pressure pad (medilogic)
  - walk, trot, canter
  - clockwise and counterclockwise
Results – average saddle pressure

Average pressure in the cranial, middle and caudal segment of the saddle of horses ridden by either a male (■) or a female rider (□), differences between male and female riders are indicated in the figures, differences between saddle sectors for walk, trot and canter p<0.01.
Conclusion

- no fundamental differences in the physical effort and stress response to the equestrian task between male and female riders
- stress response of the horse is similar with male and female riders
- pressure pattern onto the horse did not differ in men and women

➢ Riding theories and principles developed largely for male riders can also be applied to female riders.
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