Group housing of horses – a potential source of social stress?

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Equine-assisted interventions (EAI)

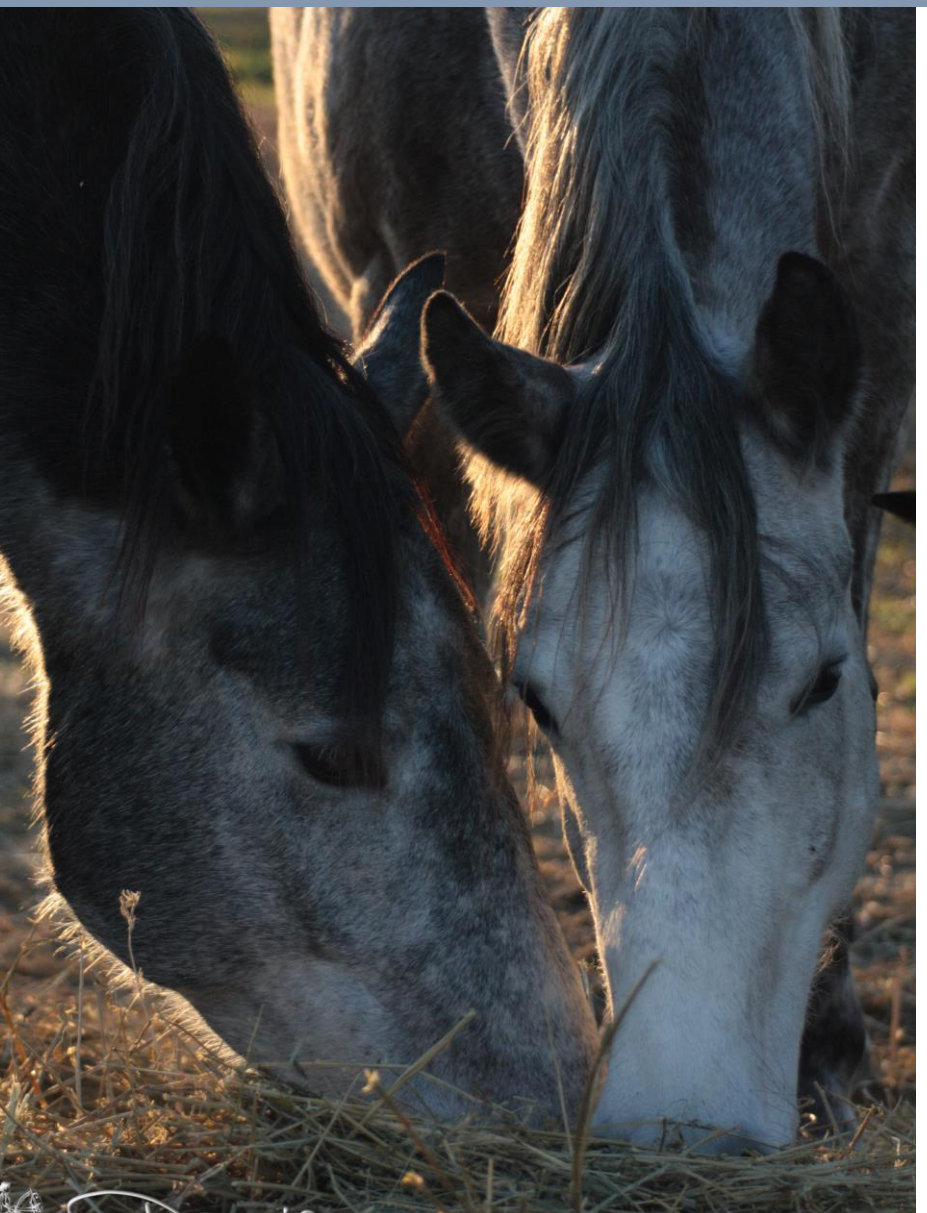
Horse

Client

Therapist

Gaeng, 2021

Welfare of equines in EAI



Quality of life, well-being

- Physical
- Mental

Boissy et.al., 2007, *Physiol. Behav*.
Dalla Costa et al., 2014, *Anim. Welfare*

Welfare of equines in EAI

Group housing

(British Horse Council 2017)

Freedom to express natural behaviour

Brambell Report 1965

Welfare of equines in EAI

Group housing

(British Horse Council 2017)



Allow positive experiences

Boissy et.al., 2007, *Physiol. Behav*.
Dalla Costa et al., 2014, *Anim. Welfare*

Welfare of equines in EAI

Group housing

(British Horse Council 2017)

Freedom from fear and distress

Brambell Report 1965

Social interactions

Agonistic interactions

- Aggression
- Threats and physical conflict
- Defence and submission

(Briffa et al. 2013)

They can cause a stress response

Pigs: Merchant-Forde et al. 1995, Appl. *Anim. Behav. Sci.*;
Birds: Wascher et al. 2008, Proc. R. Soc. Ser. B; 2009, *Anim. Behav.*;
Viblanc et al. 2012, *Behav. Ecol.*

Social interactions

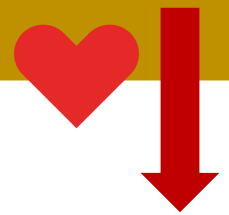
Affiliative interactions

- Friendly interactions such as grooming, touching, sniffing, body contact

(Feh 1999, *Anim. Behav.;* Wittig et al. 2008, *Horm. Behav.;* Burkett et al. 2016, *Science*)

They can cause a positive emotional state

Horses groomed by humans: Feh & Mazières, 1993, *Anim. Behav.*; Kowalik et al., 2017, *Anim. Sci. J.*;
Cattle: Laister et al., 2011, *Appl. Anim. Behav. Sci.*;
Goats: Briefer et al., 2015, *Anim. Behav.*)



Research questions

Are agonistic interactions a source of stress?

Are affiliative interactions a source of a positive emotional state?

Method

- Recording heart rate during social interaction of group-housed horses

Study group

N = 19 age: 17 ± 6 (Mean ± SD) different breeds, mixed sex groups

used in EAI, riding lessons, hacks

Data collection

Heart rate

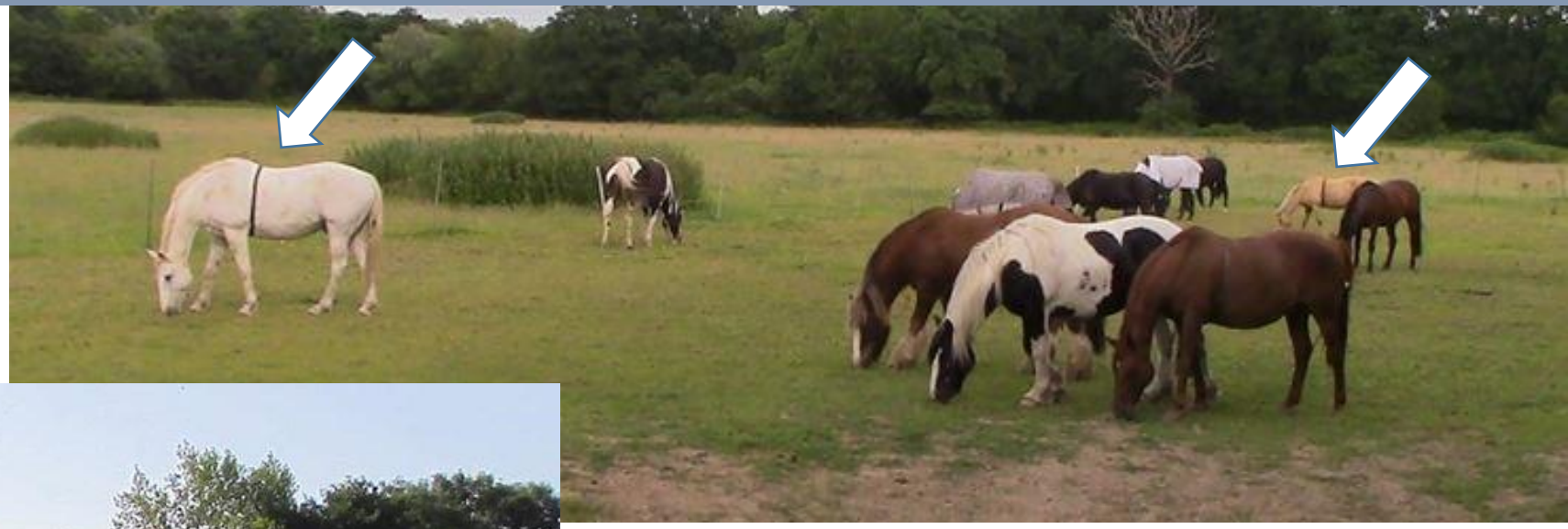
Behaviour

- Mobile heart rate monitor: (Polar V800 Equine)

time matched

- Video reccords in the field

Data collection



Behavioural variables

Agonistic

- Threats
- Bites
- Attacks
- Retreat

Total = 596 (14 horses)

Affiliative

- Sniff
- Touch
- Rub head

Total = 416 (13 horses)

- Groom

Total = 37 (8 horses)

Locomotion

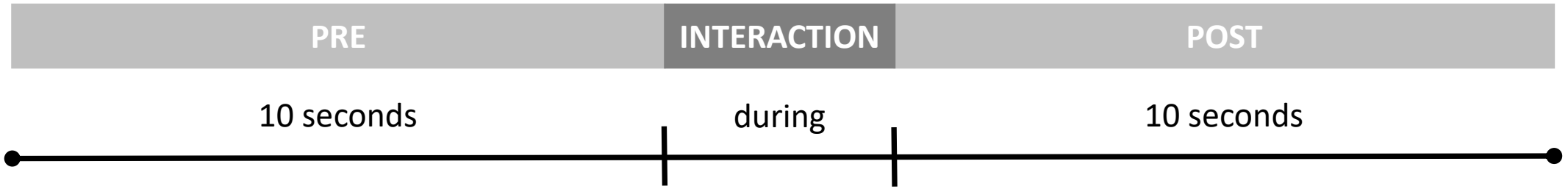
- Stand
- Walk

Total = 15 horses

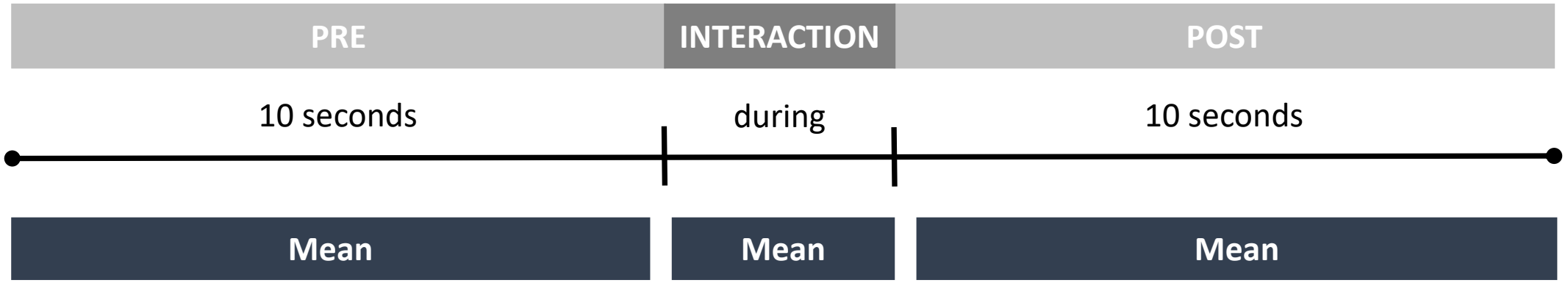
Heart rate variables

INTERACTION

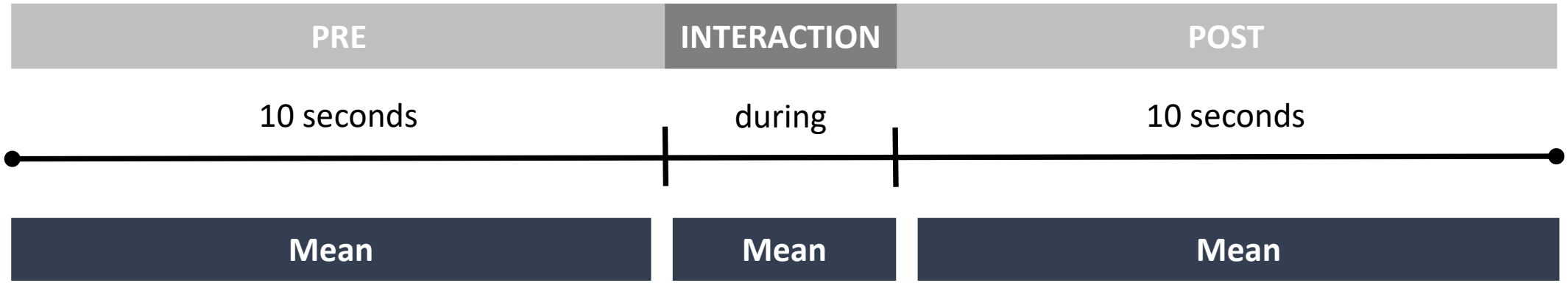
Heart rate variables

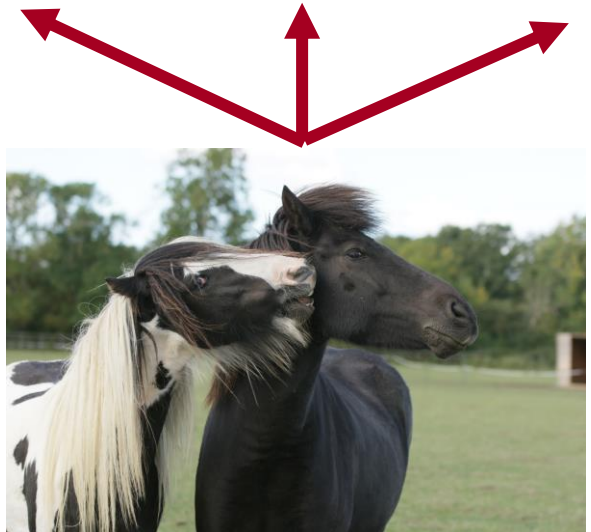


Heart rate variables

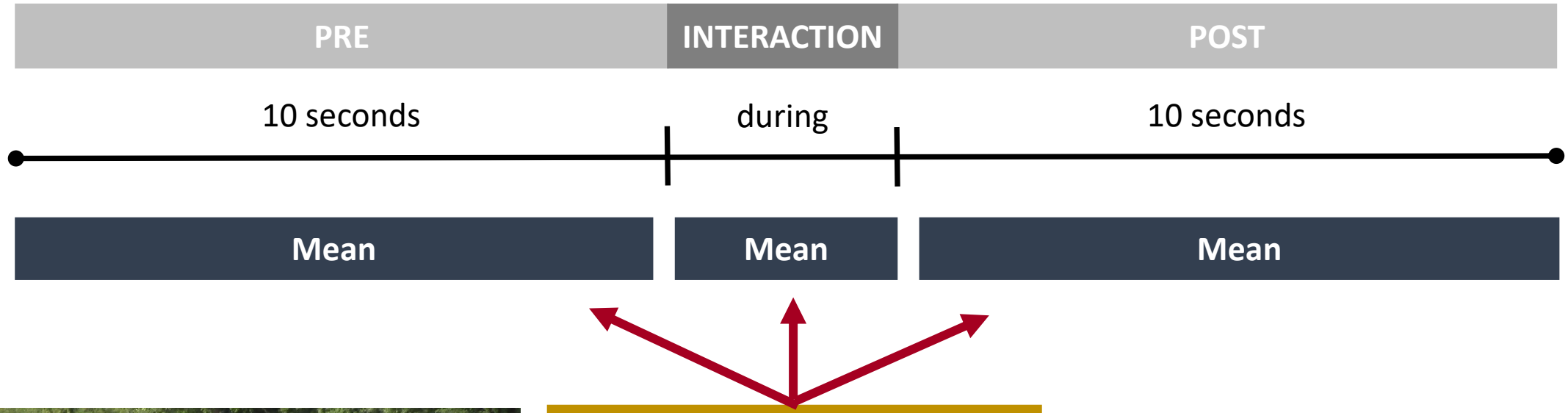


Heart rate comparisons 1





Heart rate comparisons 2

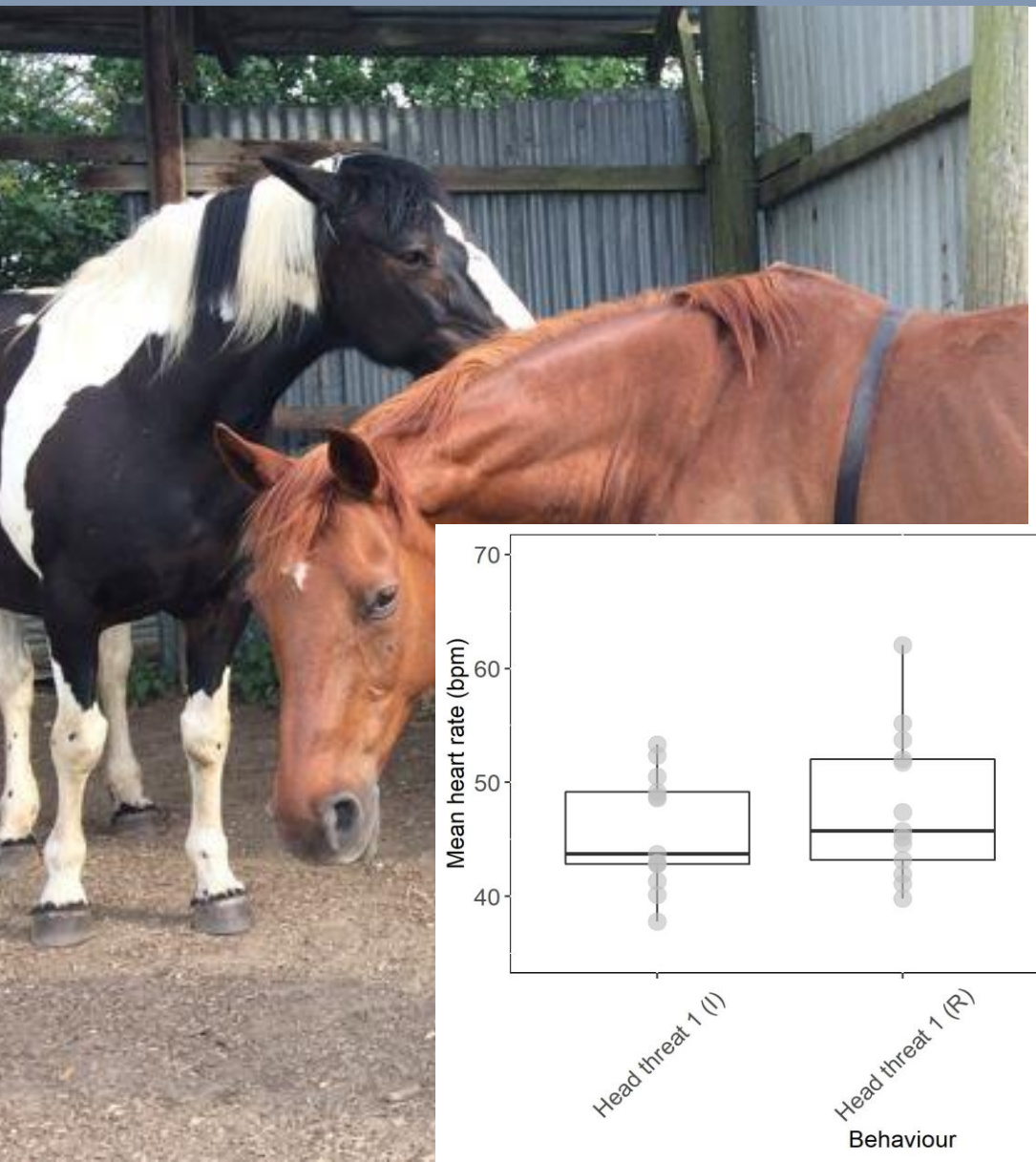


Other behaviours

Standing

Walking

Head threat 1



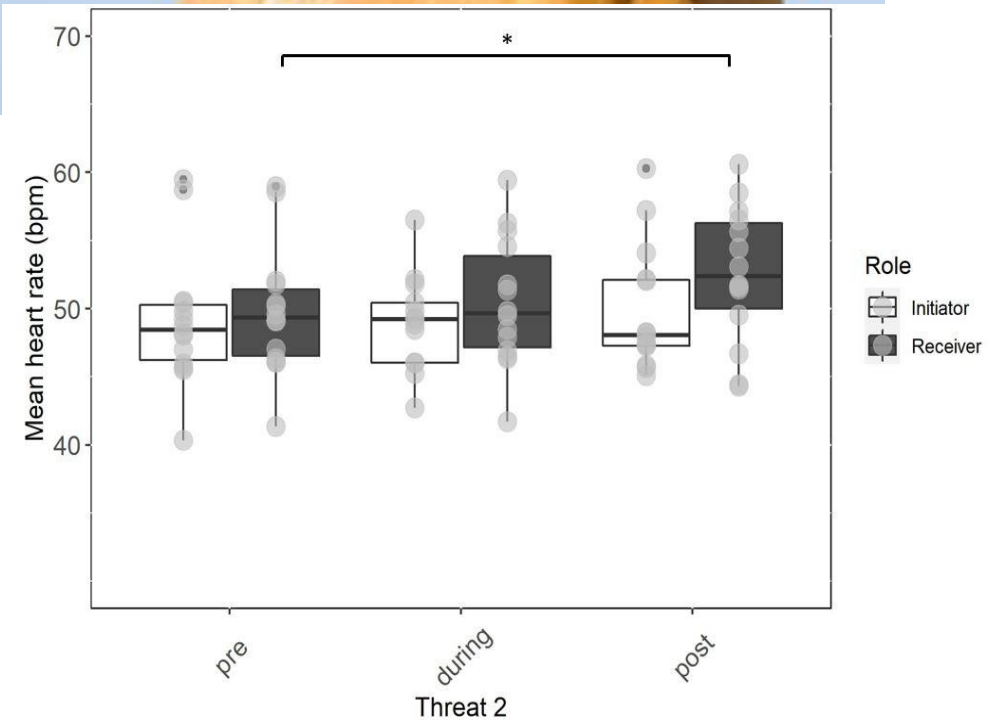
Pre – During – Post

Friedman Tests:
Initiator: n = 13, X^2 = 1.85, df = 2, p = 0.397
Receiver: n = 13, X^2 = 1.08, df = 2, p = 0.584

Head threat 1 vs Standing

Friedman Tests:
Initiator: n = 13, X^2 = 2.1, df = 3, p = 0.552
Receiver: n = 13, X^2 = 2.24, df = 3, p = 0.525

Head threat 2



Pre – During – Post

Friedman Tests:
Initiator: n = 14, X^2 = 1.08, df = 2, p = 0.584
Receiver: n = 13, X^2 = 7, df = 2, p = 0.032

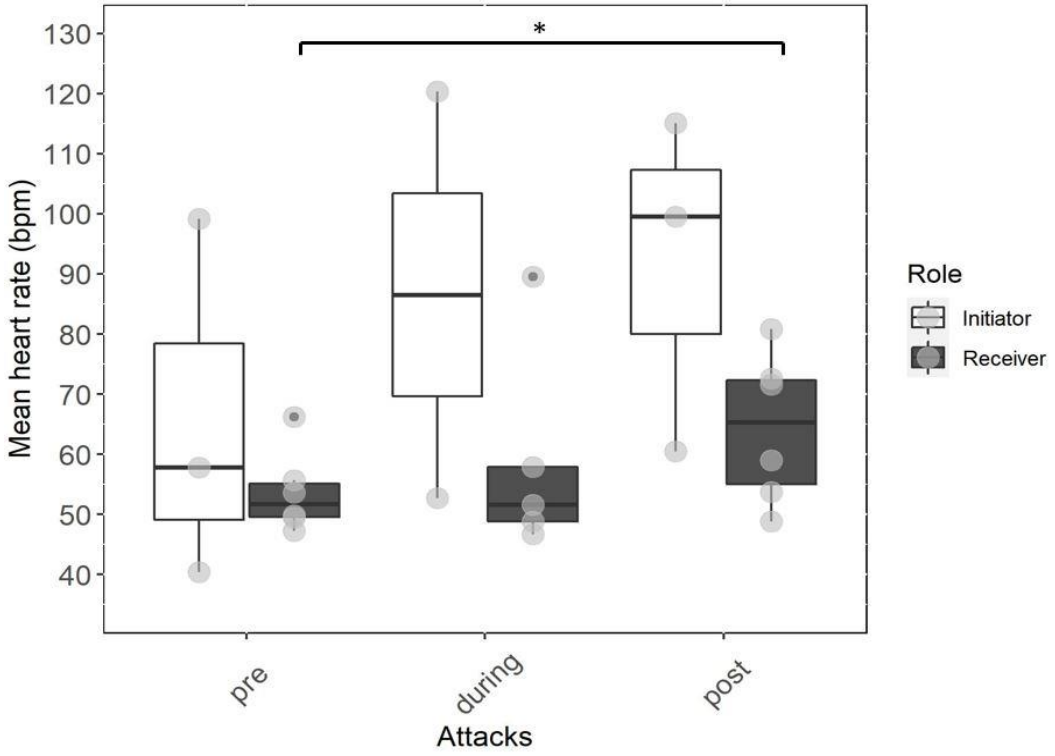
Nemenyi Multiple Comparison Test:
Pre-post: p = 0.02, r = -0.45

6% higher post in receivers

Head threat 2 vs Walking

Friedman Tests:
Initiator: n = 14, X^2 = 7.11, df = 3, p = 0.068
Receiver: n = 13, X^2 = 4.89, df = 3, p = 0.18

Attack



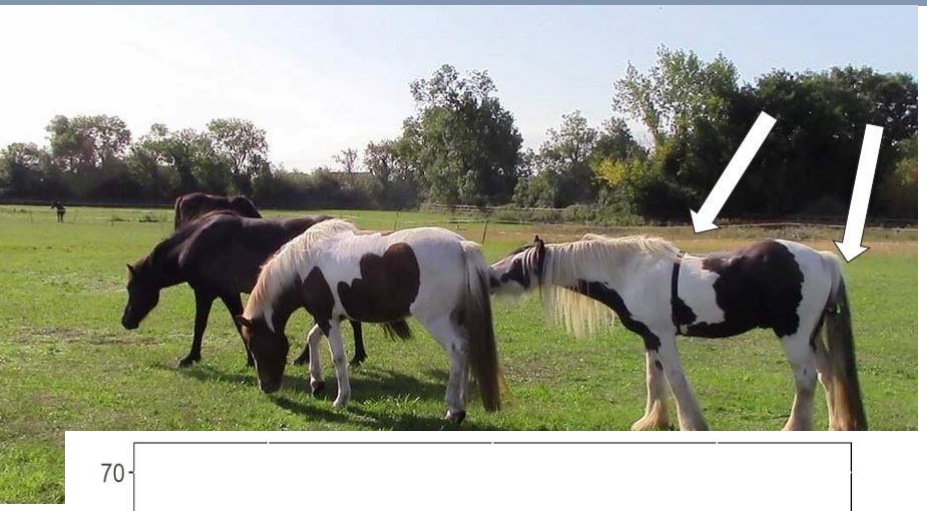
Pre – During – Post

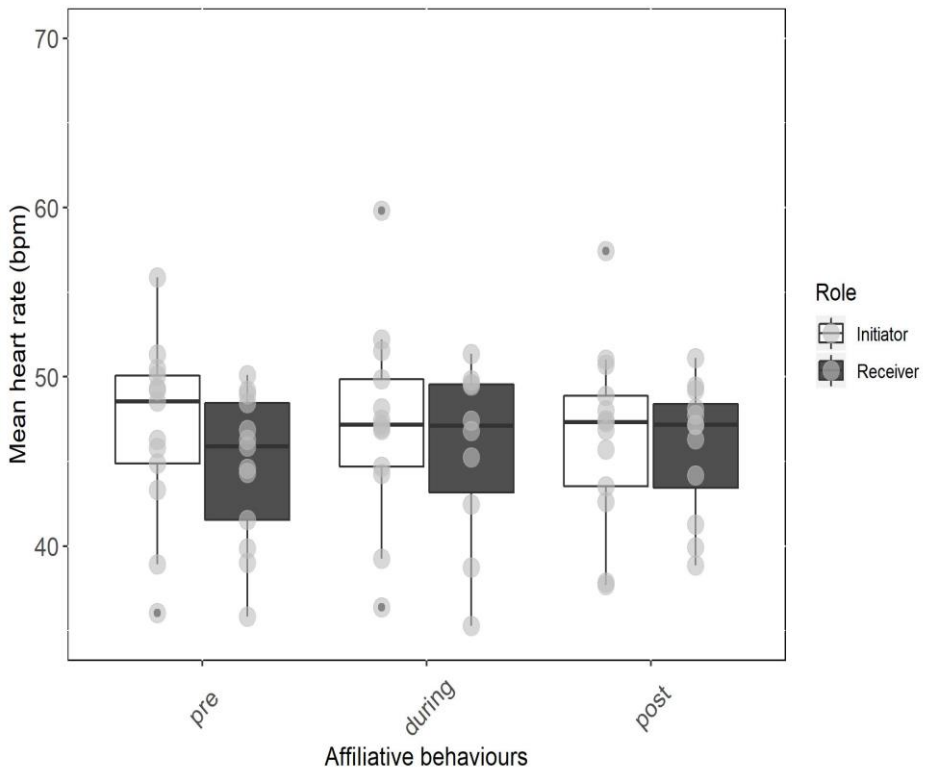
Friedman Tests:
Initiator: no analysis, low n
Receiver: n = 5, X^2 = 6.2, df = 2, p = 0.046

Nemenyi Multiple Comparison Test:
Pre-post: p = 0.031, r = -0.68

26% higher post in receivers

Short affiliative interactions





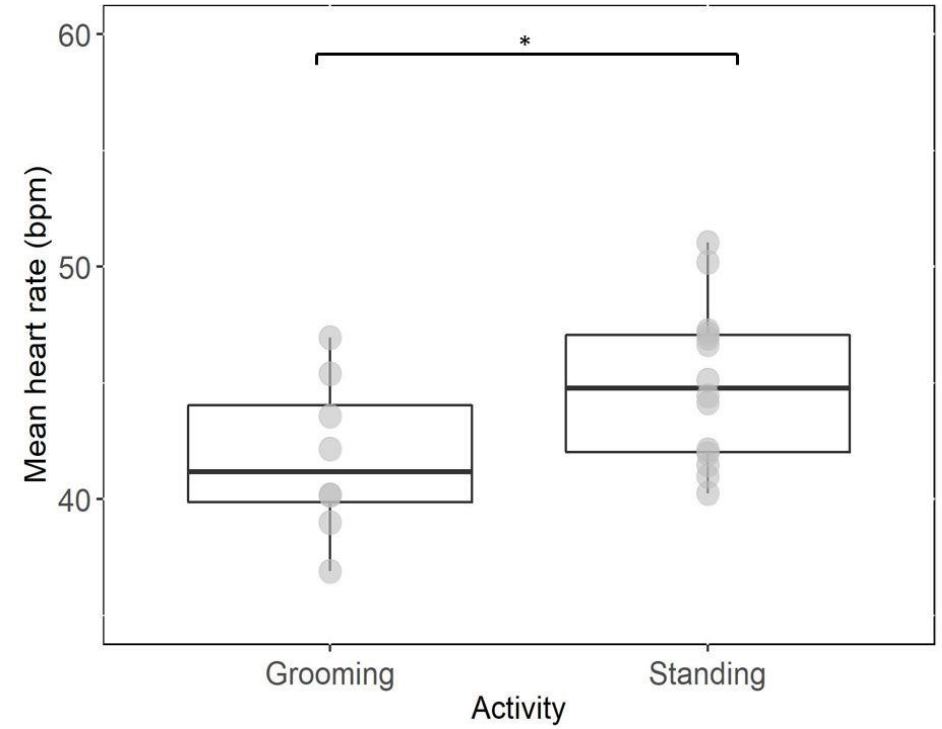
Pre – During – Post

Friedman Tests:
Initiator: n = 12, X^2 = 4.77, df = 2, p = 0.092
Receiver: n = 13, X^2 = 0.727, df = 2, p = 0.695

Short affiliative vs Standing

Friedman Tests:
Initiator: n = 12, X^2 = 3.7, df = 3, p = 0.296
Receiver: n = 12, X^2 = 1.44, df = 3, p = 0.698

Grooming



Pre – During – Post

Friedman Tests:
Partners: n = 8, X^2 = 1, df = 2, p = 0.607

Grooming vs Standing

Wilcoxon signed rank test:
Partners: n = 8, V = 26, p = 0.046, r = -0.53

HR 8% lower during grooming

Conclusion

- Agonistic interactions of low intensity did not facilitate a stress response.
- Short affiliative interactions did not affect heart rate.
- Grooming corresponded to lower heart rate and potentially a positive emotional state.


Thank you!

References & Picture Source

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Picture head threat 2
https://equimed.com/health-centers/behavior/articles/my-mare-pins-her-ears-when-approached-what-can-i-do-to-put-her-in-a-better-mood