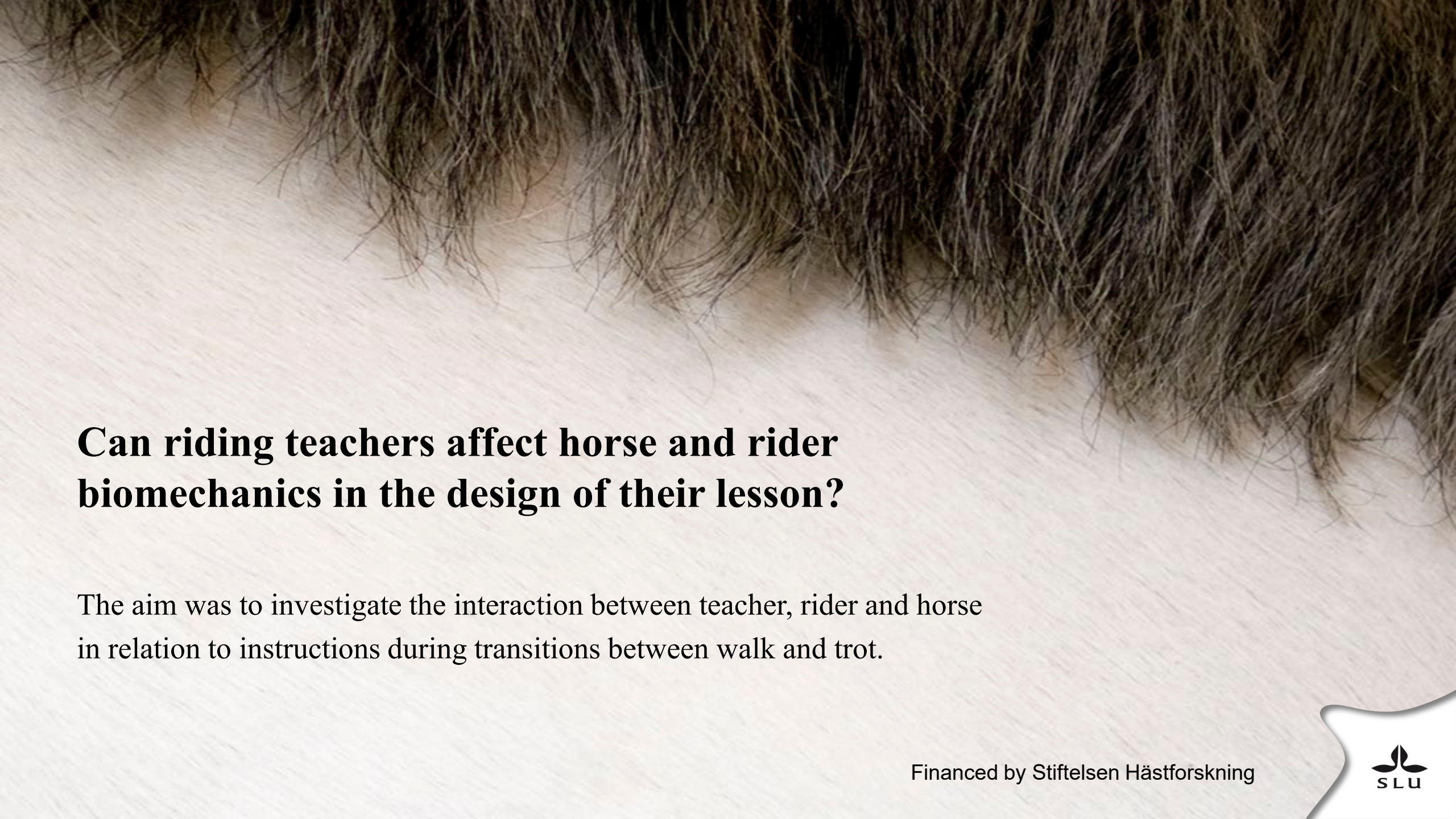


A close-up photograph of a horse's hindquarters and tail. The tail is dark brown and thick, hanging down. The hindquarters are light-colored, possibly white or cream, with some darker patches. The background is a light, textured surface.

Can riding teachers affect horse and rider biomechanics in the design of their lesson?

The aim was to investigate the interaction between teacher, rider and horse in relation to instructions during transitions between walk and trot.

Interdisciplinary project!

Riding teachers' perception (stimulated recall interviews)
Susanne Lundesjö Kvart

Rider movements (equi move system)
Maria Terese Engell

Riding teachers and riders interaction (conversation analysis)
Susanne Lundesjö Kvart



Riders' experience (stimulated recall interviews)
Susanne Lundesjö Kvart

(Measure rein tension)
Marie Eisersjö

Horse movements (biomechanical measurements)
**Anna Byström,
Agneta Egenvall**

Participants



- In Sweden and Norway
- Two riding teachers
- Five riders
- Five horses
- Each rider received instructions on two horses
- Each rider received two lessons for each teacher

Recording of lessons



- 20-minute lessons with focus on timing of the aids **during transitions**
- At least two transitions in each direction
- Transitions performed primarily on one long side
- **Instructional space**
- **In total 40 lessons with 334 transitions between walk and trot**



Biomechanical measurements to capture horse and rider movements



- EquiMoves motion sensor system and rein tension meters.

Interviews

- With each teacher, before and after all lessons.
 - Regarding instructions and timing of aids in general
 - Stimulated recall
 - Progression for each rider on the two horses
- With each rider, immediately after riding the two lessons
 - Stimulated recall
 - How did the rider interpret the horse?
 - How did the rider understand the teachers instructions?



Results

- The importance of discussion
- Quick and timely feedback

“For me, it is quite important that you should have a communication and understanding with the person that’s riding, know that you are on the same page.” (Diana).

“When you manage to time it such that I have time to give feedback in a way that the rider understands to do the same thing next time to get a good transition. So that they recognise which part of their body they used to make a good transition.” (Cecilia).



Instructions during transitions between walk and trot

FOCUS	Anna	Bella	Cecilia	Diane
Riders seat	21	18	19	16
Riders hand	18	18	19	12
Riders thigh			14	1
Riders gaze			10	1
Straighten the horse	21	23	26	8
Higher tempo	46	18	3	6
Slower tempo	3	3	7	11
Horses pace	6	1	3	8
Counting strides	4	25	5	1
Precision	1	6	5	10
Instructions in total	120	112	111	74

Instructions addressed to each rider

	SR1	SR2	SR3	SR4	SR5	NR1	NR2	NR3	NR4	NR5
Riders seat	15	4	3	9	8	9	7	5	7	7
Riders hand	7	8	9	4	8	2	5	7	7	10
Riders thigh	0	0	0	0	0	1	5	1	2	6
Riders gaze	0	0	0	0	0	1	0	3	4	3
Straight horse	6	3	15	13	7	11	8	10	3	2
Higher tempo	12	5	17	18	12	3	0	5	0	1
Slower tempo	1	0	2	0	3	2	8	2	3	3
Horses pace	0	3	3	1	0	1	3	2	3	2
Counting strides	7	12	4	0	6	1	4	1	0	0
Precision	3	1	0	2	1	7	2	0	2	4

Time to prepare

- Anna and Diane spent more time on preparing the riders for the given task.
 - Anna started with transitions on the circle
 - Diana started with walk-halt transitions
- Resulted in;
 - During both Anna's and Diane's lessons, *rein tension were lower just before and during down-transitions*
 - During Anna's lessons *rein tension were more symmetric* in trot and during up-transitions
 - During Diane's lessons, the horses showed *longer stride length and extended push-of in walk*



Focus on the walk

- Teachers Bella and Diane had a relatively greater focus on the walk
 - Bella asked the riders to feel and count each walk stride between down- and up-transitions.
 - Diane asked for longer walk sequences in-between transitions and commented more on the walk rhythm than the others.
- Resulted in;
 - Bella's riders achieved *longer stride length, better walk mechanics in terms of the relative timing between the withers and the croup* in walk and during up-transitions
 - Diane's riders achieved *a walk with the best symmetry and regularity*

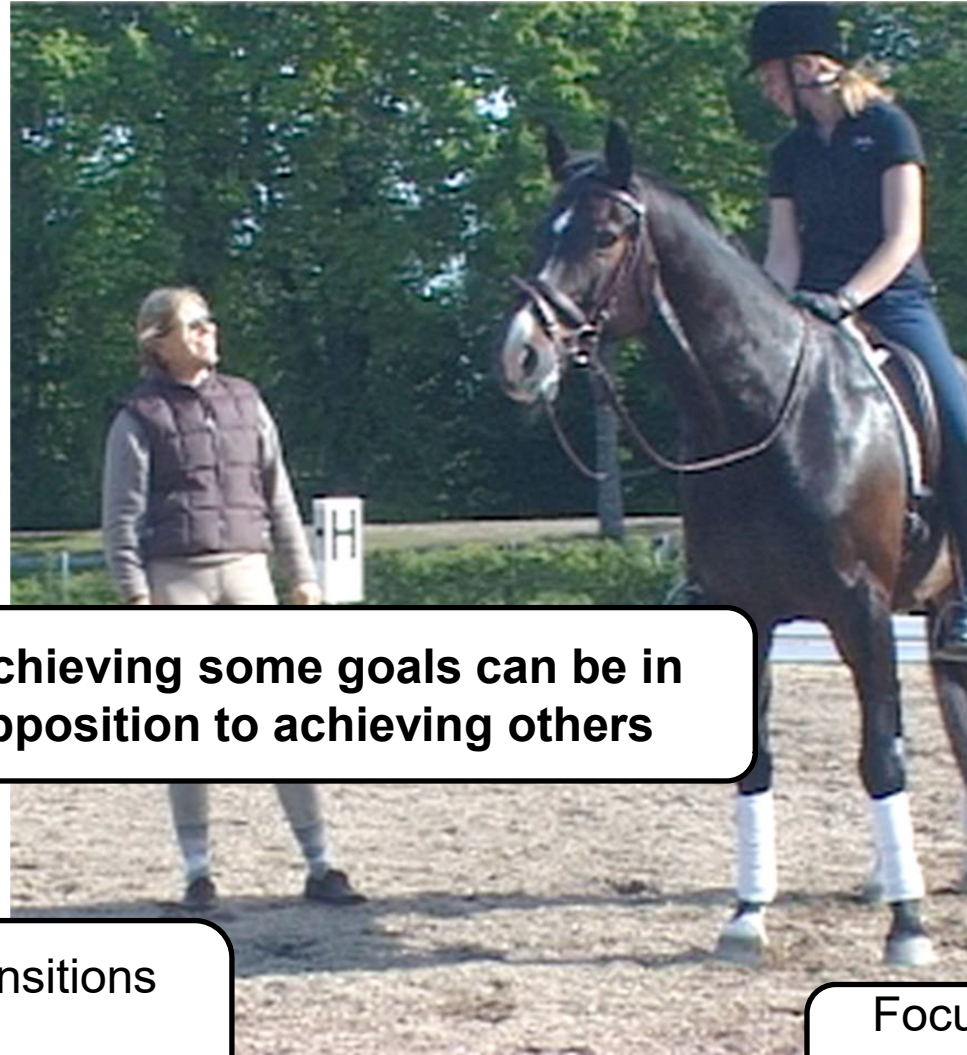


Focus on energy

- Anna and Cecilia focused more on that the horse should be quick, energetic and attentive, ready to transition back to trot after only a few walk strides.
- Resulted in;
 - During Anna's lessons, the horses showed a *more pronounced push-off in trot*
 - Cecilia's riders achieved *longer stride length and better forward reach of the hind limbs in walk*

Riding teachers *can* affect horse and rider biomechanics through their lesson design

Focus on one thing at the time and follow up
or
address the most crucial aspect in each transition



Achieving some goals can be in opposition to achieving others

Focus on understanding
or
performing and timing

Address rider's seat and position
or
the horse's actions

Long preparation before transitions
or
repeated transitions in desired place

Focus on calm walk
or
energy in transition