

Pressure distribution under an English saddle and bareback pad (tandem riding) in riders with Cerebral Palsy

Bonnie L DePue, OTR/L, C.H.U.M. Therapeutic Riding, Inc. Dansville, Michigan, USA

Lee Ann Kaiser* , Lana Kaiser* , Hilary Clayton *

*Michigan State University, East Lansing, Michigan, USA

Introduction:

- Studies have used the Novel Pliance Saddle System to describe saddle fit (Clayton et al) and pilot studies have compared pressures of the Independence Saddle and English Saddle with riders with Cerebral Palsy (CP)
- Concerns about equipment fit/equine welfare are compounded with riders with physically compromised systems
- Tandem riding (rider and therapist/staff on bareback pad) in Equine Assisted Activities and Therapies (EAAT) has posed concerns for the welfare of the horse's back
- Research to guide the use of Tandem riding is lacking

Objectives:

- To compare pressure distribution profiles on the horse's back with an English Saddle and during tandem riding with a bareback pad in CP riders.

Hypothesis:

- We hypothesize that the bareback pad will distribute the force over a larger surface area resulting in lower pressure when compared to the English Saddle

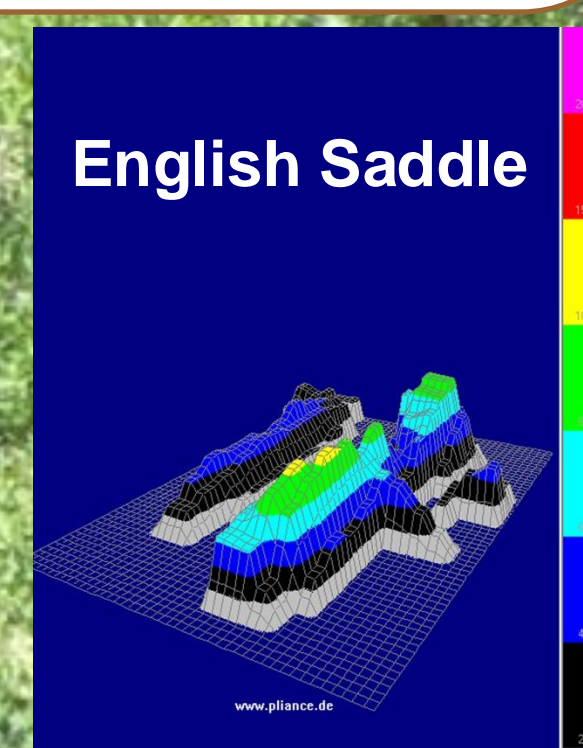
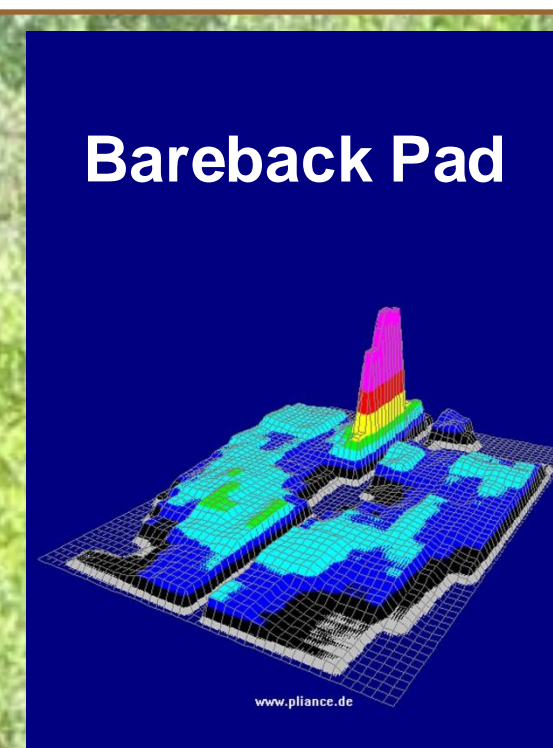
Methods:

- 5 riders – varying degrees of CP
- 2 horses – one for each piece of equipment
- Wintec English Saddle
- Traditional bareback pad using cinch girth
- Pliance Saddle System, Novel GmbH
- Lead at the walk along a straight path in a dirt area
- 3 trials at 10 seconds /horse/equipment

Results:

The results did not support our experimental hypothesis

	English saddle	Tandem Riding
Total force (N)	400±133.72	974±83.49
Mass normalized force (N/kg)	10.3±2.3	7.8±0.5
Maximal Pressure on any sensor (kPa)	28.75	63.75
Average number of sensors measuring pressure >40 kPa	0±0	148±65
Average Pressure (kPa)	4.65±0.75	5.41±0.20
Left front quadrant (kPa)	4.54±0.68	6.18±0.33
Right front quadrant (kPa)	4.27±0.60	4.42±0.25
Left middle quadrant (kPa)	4.47±0.77	5.74±0.52
Right middle quadrant (kPa)	4.45±0.70	4.37±0.87
Left rear quadrant (kPa)	4.59±1.74	6.08±0.66
Right rear quadrant (kPa)	4.94±1.64	5.29±0.77



Discussion:

(results pertain to the horse/equipment combinations)

- The results suggest that in this horse/equipment combination Tandem riding could cause tissue damage due to the equipment
- Average number of sensors measuring pressure >40kPa is 148 ± 65
- Maximal pressure is generally localized to the girthing system, specifically the left front and front middle
- Tandem riding can allow for the greatest impact on the rider's system and allow the staff to guide that impact with greater specificity.
- Due to the increased pressure from the pad's girthing system, the equipment used in Tandem riding should be modified.

Conclusions:

- The pressures due to the equipment used in Tandem riding is the concern rather than the riders.
- Due to increased pressure, equipment was modified. In this picture, avg. & max pressure decreased using the Double Rider pad along with the contrapedic foam western pad underneath for this horse.
- Equipment such as treeless or bareback pads should be fitted to the specific horse and rider combination as importantly and diligently as saddle fitting.

