In addition to saddle and stirrup, there are for sure many other places on the horse and the rider where load measurement can be reasonable, e.g. under the bridle or the rider's helmet.

loadpad® force sensor under the bridle

saf loadpad®, 15.5 x 10.5 cm

mk loadpad®, 3 x 2 cm

The loadpad® sensors measure the total force acting on the sensor in the normal direction. novel also offers the pliance® system which enables dynamic pressure distribution measurement. Both the pliance® and the loadpad® sensor families can be configured according to customer-specific requirements in terms of shape, size, sensitivity, and surface coating.
All novel systems work with capacitive sensor technology and provide accurate, reproducible, and reliable pressure and force data.

Features

- Measure the normal force during riding or standing
- Scan the saddle and/or stirrups with up to 100 Hz
- Display force vs. time and give biofeedback
- Provide force curve and feedback for adjustable force levels
- Run via the loadpad® app providing various settings
- Enable connection to the novel loadpad® software
- Use patented, capacitive sensors
- Use small, lightweight electronics
- Transmit the measurement in real time to mobile devices
- Work with iOS and Android devices
- Provide ASCII output for scientific data analysis
- Operate with disposable or rechargeable coin cell batteries

Technical data	
size riders' loadpad® (cm)	33.5 x 30.5
number of sensors riders' loadpad®	6 (3 for left and right side, each divided into frontal, medial, and posterior areas)
size stirrup loadpad® (cm)	10.5 x 5.0
number of sensors stirrup loadpad®	1
sampling rate (Hz)	max. 100
transmission	Bluetooth® LE
operating device	iPhone, iPad, iPod touch, Android mobile devices
power supply	3V coin cells (or rechargeable batteries)

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loadpad®

horse

load measurement

novel has now developed load measuring systems to quantify equine specific assessment for riders and riding trainers. Using its extensive scientific knowledge in load measurement, novel is able to meet the rider's needs providing various measuring systems and powerful software. While the pliance® horse saddle system monitors the local pressures occurring under the saddle, the riders' and stirrup loadpad® systems evaluate the total force between horse saddle and rider or between the feet and stirrups.

loadpad® force sensor system

The loadpad® measures the normal total force using a thin, flexible sensor. Based on a new patent, it is the first sensor which can accurately measure the total force even if partially or heterogeneously loaded across the sensor surface. The loadpad® sensor has matchbox-sized electronics and communicates wirelessly via Bluetooth® with a mobile device. The force values are displayed in real time. The user can also receive immediate feedback regarding the applied force via an auditory, visual, or vibratory signal. The measured data can be stored on the mobile device and to the cloud and additionally transferred to a computer for a more detailed analysis. Long-term measurements allow the evaluation of different force parameters such as impulse, frequency, or loading rate.

The loadpad® app can be modified for specific applications. It is easy to use, offers numerous display options, and allows the analysis of various parameters. Data can also be exported to an ASCII file for additional analysis not included within the app. Additionally, the Windows loadpad® analysis software offers an extensive evaluation of the loadpad® data on the computer.

riders' & stirrup loadpad®

riders' loadpad® monitors the normal force between the rider and the horse saddle.
The sensor mat consists of 6 sensors (3 for left and right side, each divided into frontal, medial, and posterior areas). Placed on the saddle, the sensor pad provides feedback regarding the rider's balance, symmetry, and stability while riding. The stirrup loadpad® measures the normal force exerted on the stirrups by the rider's left and right foot. The combination of the riders' loadpad® and the stirrup loadpad® enables precise monitoring of the rider's posture and balance.

Preparation of load measurement before riding

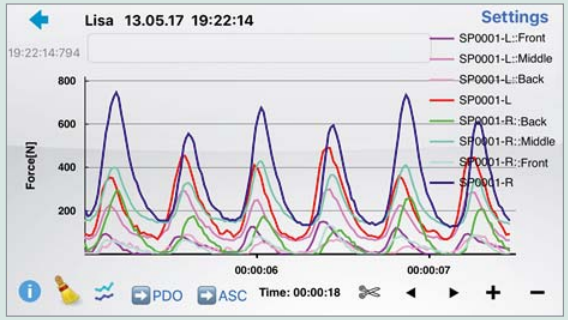
Fixation of the stirrup loadpad® sensor

loadpad®

With the help of real-time biofeedback the rider can immediately correct his or hers sitting position during riding. This system supports both the rider and the trainer in achieving a more harmonious riding position and obtaining a better understanding of the interaction between the rider, the saddle, and the horse.

The visualisation is made twofold:
As bars (each color represents an area and the force measured in that particular moment), and as force diagrams, showing the whole measurement over time, with the possibility to zoom in a particular sequence. The force diagram shows that the rider is not sitting well balanced, as the right area (blue) shows a force higher than on the left (red).

Force display as bars



Measurement screen rider's loadpad®

With the help of the loadpad® system and its powerful software the progress of the changes in posture of the rider can be measured, visualized, and documented.