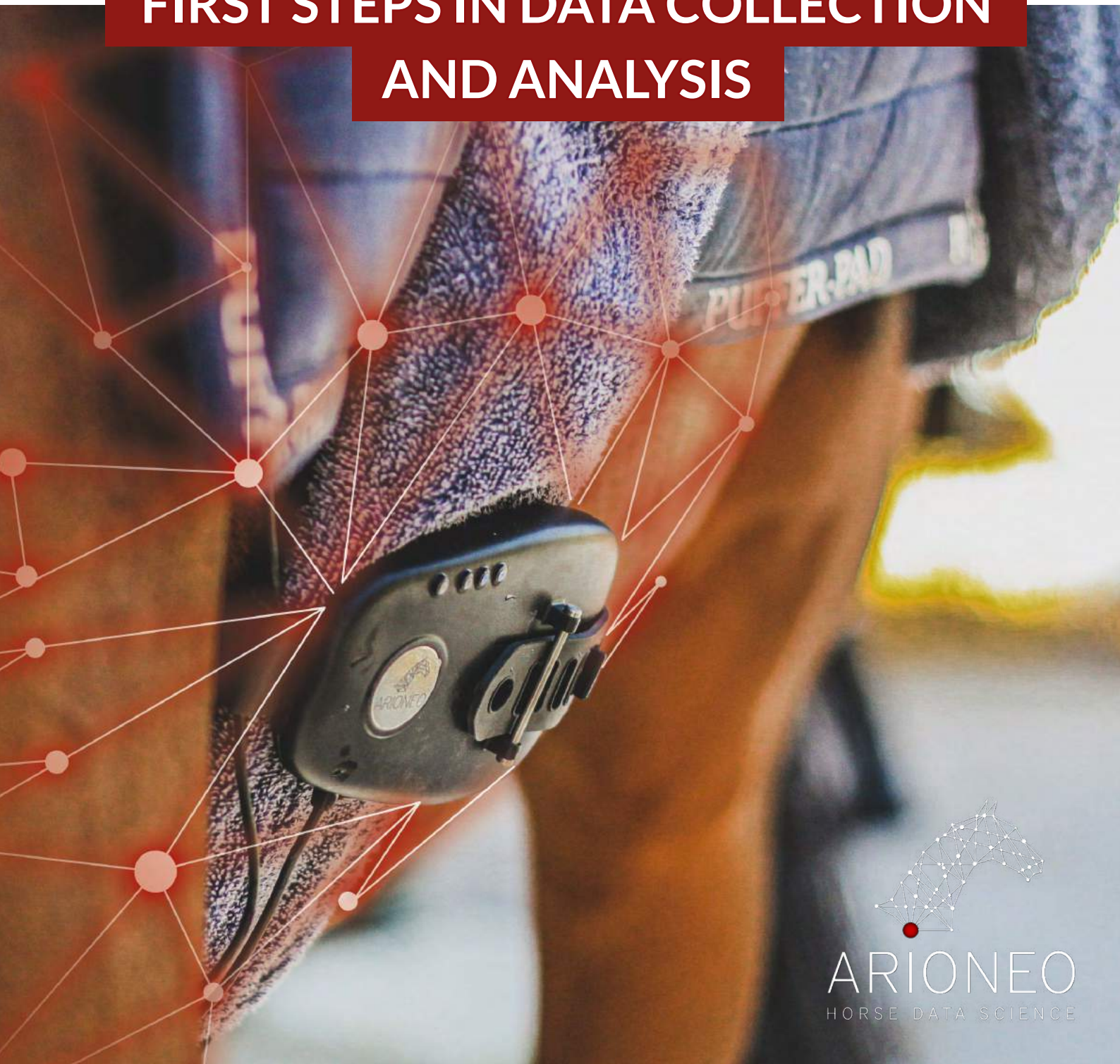
EQUIMETRE

Empower your expertise with data

FIRST STEPS IN DATA COLLECTION AND ANALYSIS



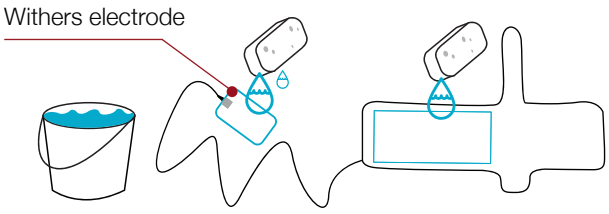
ARIONEO

HORSE DATA SCIENCE

How to install EQUIMETRE?

Before starting the installation of your EQUIMETRE, you must have saddled your horse as you usually do.

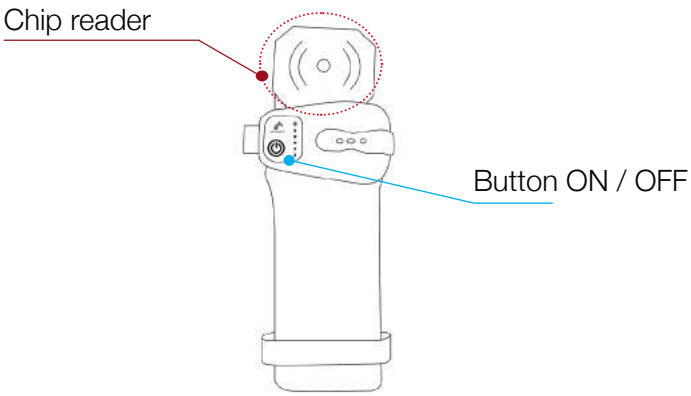
1 WET THE 2 ELECTRODES



Warning : Do not drown the EQUIMETRE.

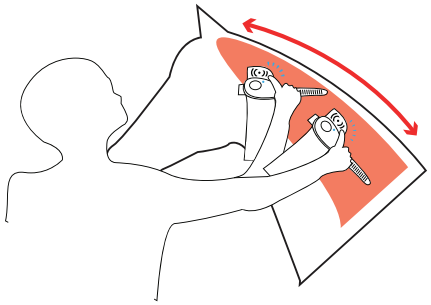
Wet the foam and the withers electrode. Equimetre should never be used without the foam.

2 TURN ON YOUR MONITOR



Turn on the EQUIMETRE by pressing the button once. The first white LED should blink.

3 LOOK FOR THE HORSE'S VETERINARY CHIP



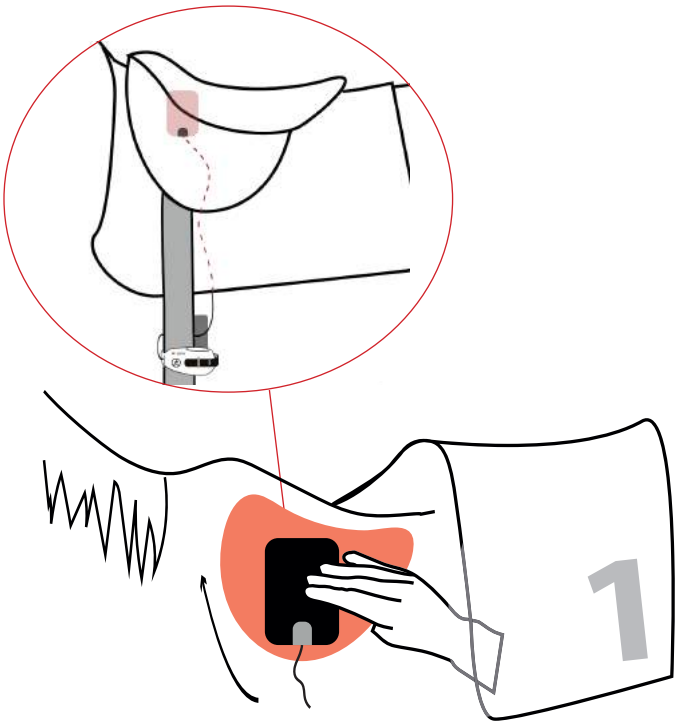
Look for your horse's veterinary chip by scanning the neck from withers to ears along the mane SLOWLY, until you hear a bip.

OR

Press the button 3 times to launch a training manually. You'll have to assign the horse's identity at the end of the training.

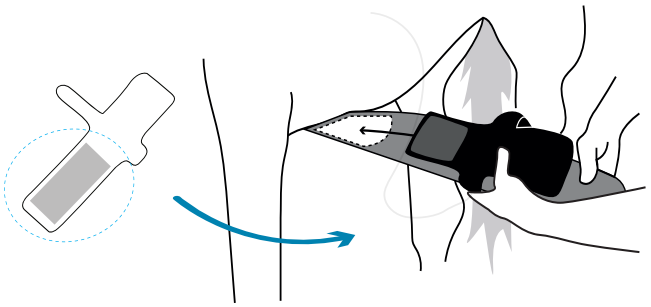
A bip sound indicates the start of the training. The first white LED should stop blinking.

4 INSTALL THE WITHERS ELECTRODE

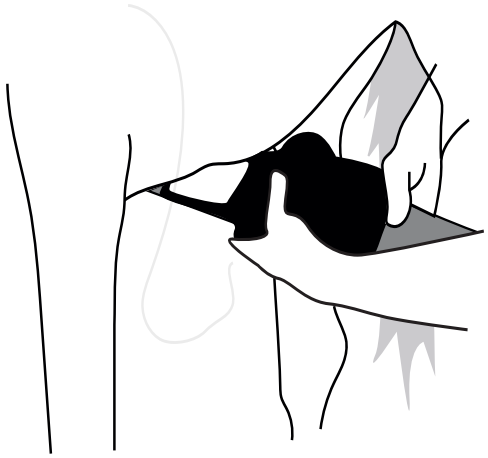


Place the withers electrode in direct contact with the horse's skin, **in the withers hollow, on the left side,** under the saddle pad.

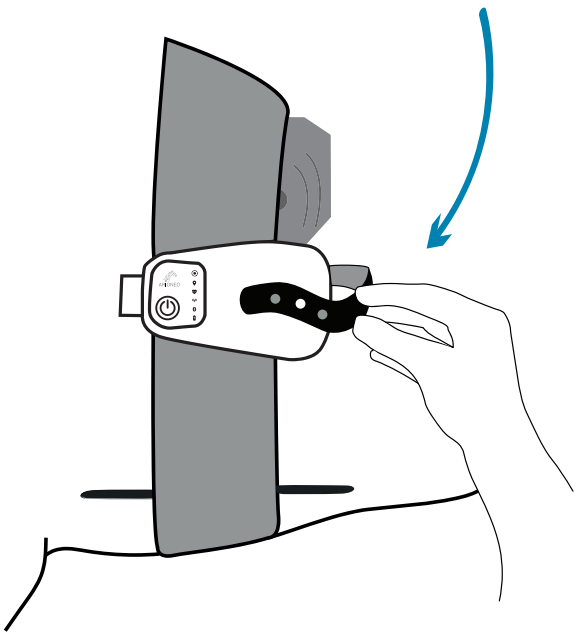
5 PUT THE SENSOR ON THE GIRTH



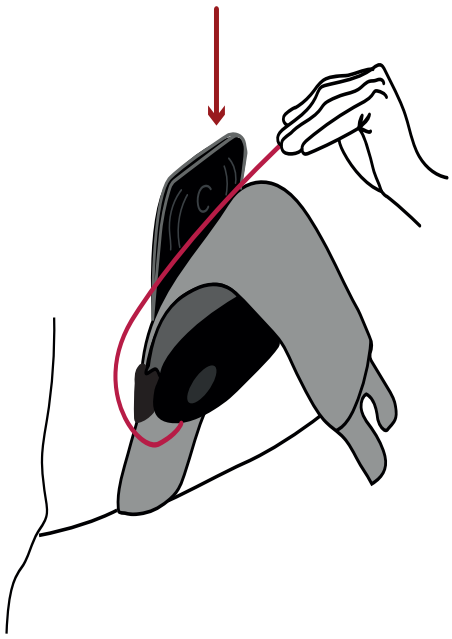
Place the sensor on the horse's girth, with the second electrode against the horse's skin.



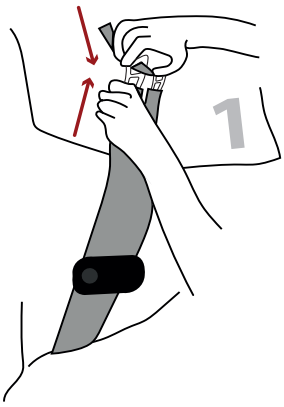
Slide your sensor no further than the middle of the abdomen, then fasten the sensor with the strap.



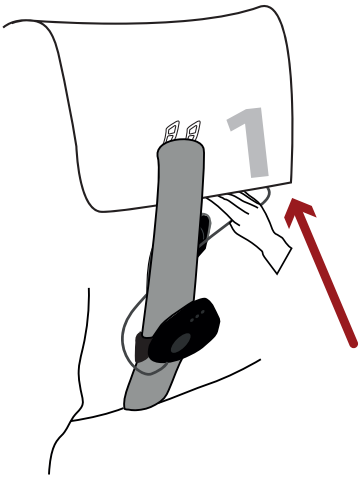
6 PUT THE CABLE BETWEEN THE CHIP READER AND THE GIRTH



7 GENTLY TIGHTEN UP YOUR GIRTH

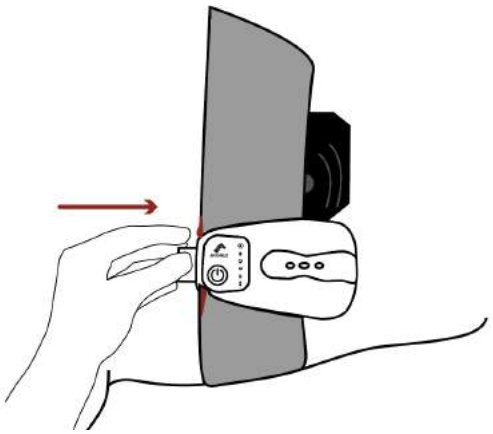


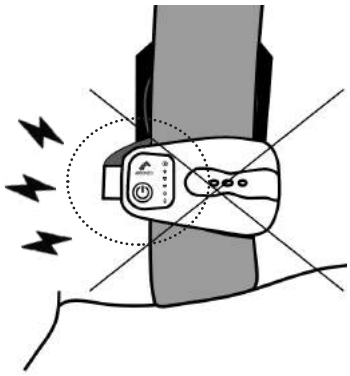
8 PUT THE REMAINING CABLE UNDER THE PAD



To avoid getting in the way of the rider's foot.

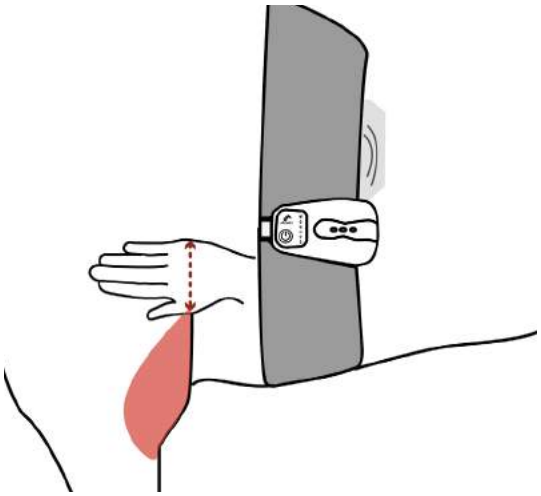
9 PUSH THE ELBOW OF THE SENSOR AGAINST THE GIRTH





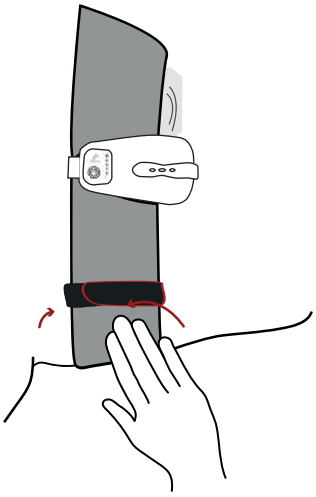
Otherwise the elbow may pinch / injure the horse during gallop.

10 MAKE SURE THE SENSOR IS PROPERLY SET UP



You should be able to put a hand horizontally between the sensor and the horse's elbow. This is a precaution to avoid friction during training.

11 CLOSE THE VELCRO AROUND THE GIRTH



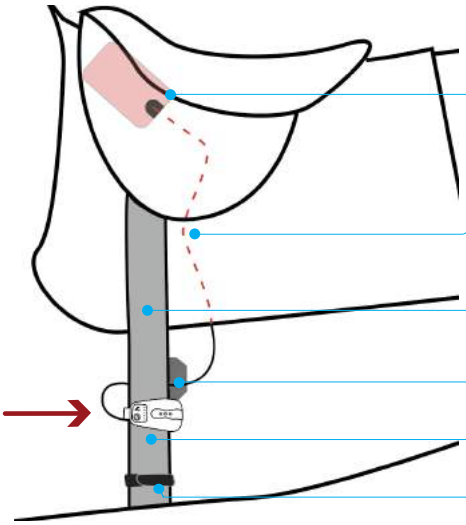
12 CHECK IF YOU'RE READY TO GO

The first white LED must be turned on and white.

The second green LED shows GPS and flashes until a signal is detected. When you are inside, it may flicker; when you are outdoors, it will stabilize.

The third red LED shows the heart rate. Once installed, the sensor should blink at your horse's heart rate.

13 YOU'RE GOOD TO GO IF



The withers electrode is humidified and in the withers hollow.

To avoid interfering with the rider's foot, the cable is hidden beneath the pad.

The girth is tightened to ensure good conductivity of the heart signal.

The cable is placed between the girth and the chip reader.

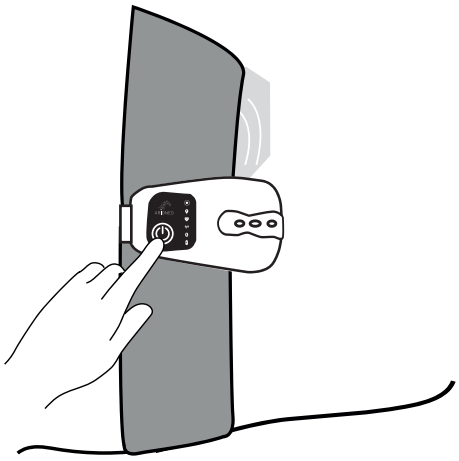
The elbow of the device is in contact with the girth.

The velcro are attached.

How to take the EQUIMETRE off?

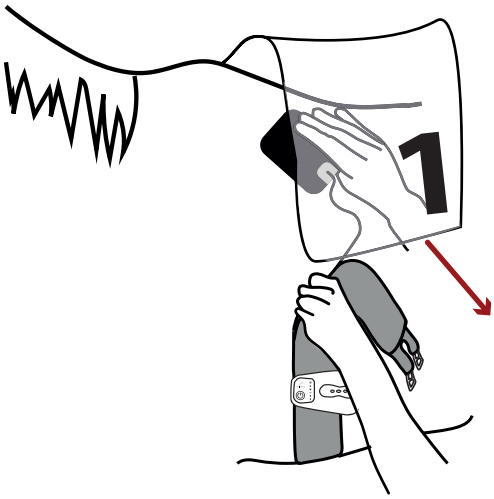
At the end of your training, it is important to remove your EQUIMETRE by following the instructions below.

1 TURN THE EQUIMETRE OFF



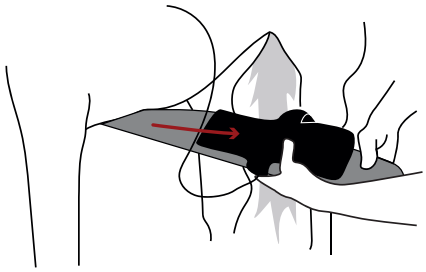
Turn the EQUIMETRE off by pressing the button during 3 secondes. All LEDs should turn off.

2 GRAB THE WITHERS ELECTRODE



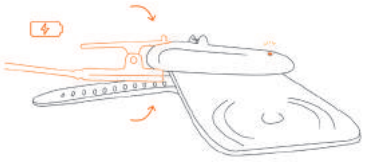
Warning : Do not pull on the electrode cable. You have to grab it with your hand under the saddle.

3 TAKE THE EQUIMETRE OFF THE GIRTH BEFORE UNSADDLING



Untie the velcro and strap to remove the sensor.

4 CHARGE THE EQUIMETRE

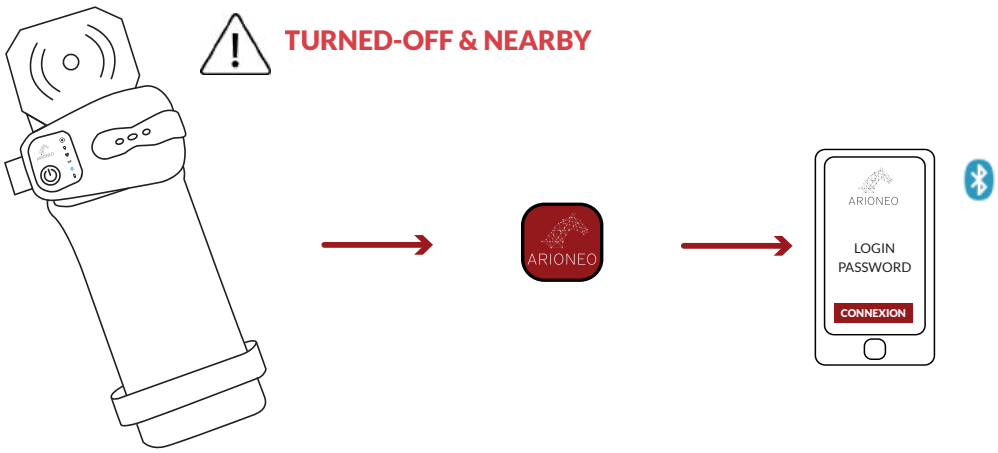


Warning : When not in use, be sure to always plug EQUIMETRE and check if the sensor is turned off. The charging orange LED should be on.

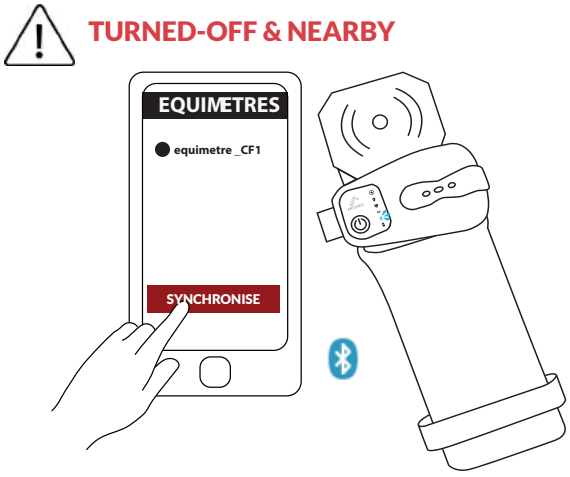
How to synchronise your data?

At the end of your training, access your data with your phone.

1 LOG IN TO THE EQUIMETRE APP



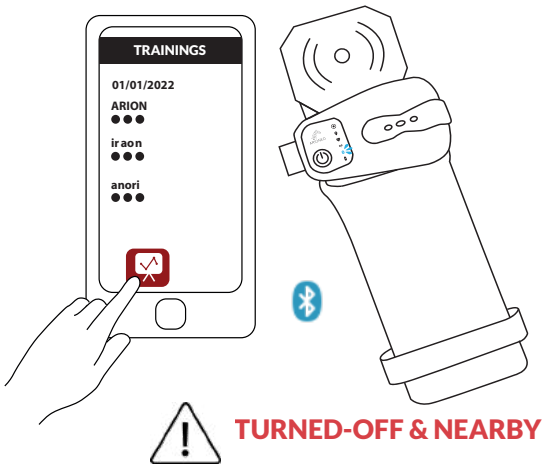
2 CLICK ON THE «SYNCHRONIZE» BUTTON



The download gauge reaches 100%. Equimetre must be turned off.

The bluetooth LED should start blinking. Your phone must be close to the sensor.

3 IN THE «TRAINING» TAB YOU WILL FIND THE LIST OF DOWNLOADED TRAINING SESSIONS



Trainings are automatically uploaded to the Cloud so you can find them from any device on Equimetre.com.

Click on the training to view it directly from the app.

DATA SHEET #1 | ARIONEO CONTACTS

Arioneo provides you with two contacts to answer your queries and assist you with Equimetre.

1 THE DATA SUCCESS MANAGER

Why?

- To analyse data together and to compare your expertise with our data analysis know-how.
- To learn how to use the device and its features optimally.
- To enhance your physiology and sports science knowledge.
- To share your ideas and needs.

How?

We provide you with several tools to facilitate communication with your Data Success Manager.

- **Data coaching:** One hour of screen sharing video conference to discuss your data.
- **WhatsApp group:** an on-going and direct contact to ask your questions at any time, by message, voice notes or screenshots.
- **Equimetre Chat:** a bubble appears in the bottom left corner of your platform, which our team answers Live on weekdays between 9am and 5pm (Paris CET time, France UTC +1).

When?

- Automatically book a data coaching session with your Data Success Manager whenever you need one thanks to his calendar link according to your availabilities.
- At any time, via WhatsApp or chat.

2 THE TECH SPECIALIST

Why?

- To provide you with technical assistance in your Equimetre utilization and data synchronization.
- To manage any potential technical issues or repairs.

How?

- **WhatsApp Group:** in addition to your Data Success Manager, a tech specialist is available in your WhatsApp group.
- **Chat Equimetre:** in case of a technical issue, messages are transferred to the Equimetre Customer service team.
- **Phone call** at +33 7 81 72 74 64

When?

- Our goal is to maintain service continuity so that you may use our solution with ease. We commit to have it fixed and return as quickly as possible.

DATA SHEET #2 | TRAIN YOUR HORSE WITH EQUIMETRE

1 ZOOM ON THE AUTOMATIC HORSE RECOGNITION

1. My horse is chipped and French

No manual step is required. Equimetre recognizes the horse's chip and connects to the SIRE database to automatically fill in its profile, which is linked to the monitored training.

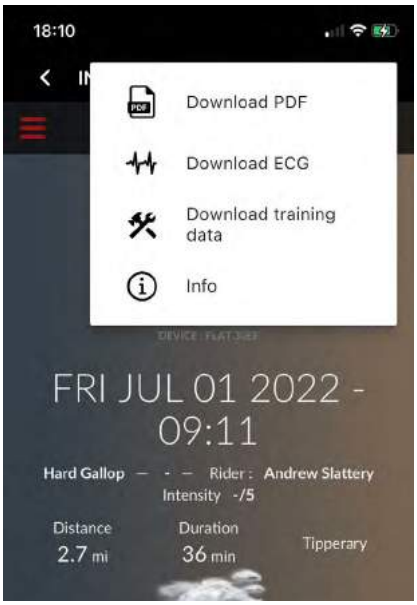
2. My horse is chipped and not French

Equimetre will recognize the horse's chip, but you will need to name the horse who's chip was read if his profile with his 15-digit chip number wasn't previously created either from your app or platform.

3. My horse is not chipped

If your horse does not have a veterinary chip, you can create his profile manually by skipping the chip number step.

Click on "**Add a horse**" from the tab **My Yard** or from the Dashboard, and click on "**My horse does not have a transponder**".



On the App

On the platform

2 DATA SYNCHRONIZATION

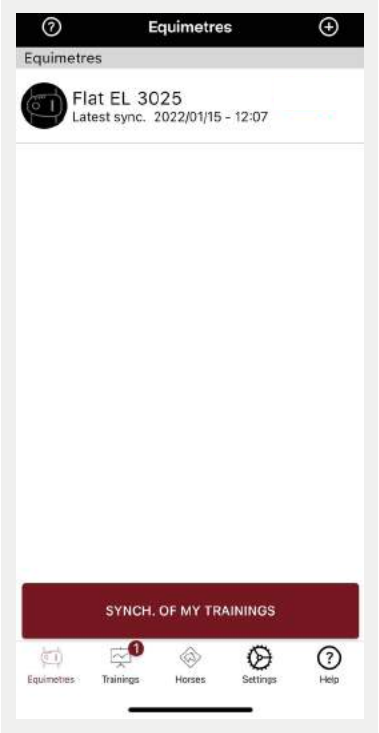
You don't need a phone to start collecting data.

To synchronize your data, despite you can do it after each lot, we recommend you wait the end of your morning trainings to download all data of the day at once.

You can collect data during all the morning lots, then perform all the synchronizations of the day.

No need to plug the sensor, it will synchronize via Bluetooth when in close range of your phone by a simple click on your Equimetre App. With a proper internet connection, phone will then send the data to the server for you to access anytime and anywhere.

- From the Equimetre application, connect with your login and password.
- Click on the red button "**SYNCH. OF MY TRAINING**".
- The download gauge progresses to 100%.
- The list of training sessions downloaded from the sensor can be found in the "**Trainings**" tab.
- Click on the training to view it from the application.

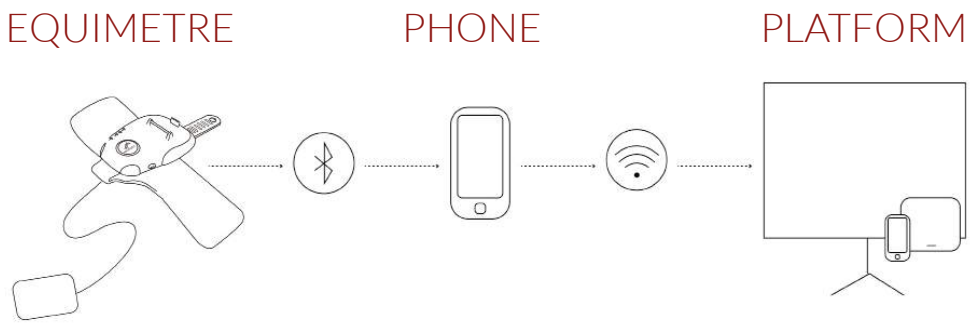


MEANING

Training data being sent

Training on the platform

Insufficient internet connection



CAUTION

- Make sure that your **phone Bluetooth is activated**, but that it isn't paired with your sensor. If so, forget the device, by going to your phone's settings.

- Make sure **EQUIMETRE is turned OFF** and still has battery.

- Check that **any Live App (Equimetre Live and/or Equimetre ECG) have been closed** as Equimetre can only connect to one app at a time.

- Keep the device that is downloading the training data **close to the EQUIMETRE** sensor.

- The sensor should never be paired manually from your **phone Bluetooth** settings. If so, forget the device.

- A **training cannot be sent to the servers, and thus your platform, if it is not associated with a horse**. Click on the message "Select a horse" to associate the training .

DATA SHEET #3 | FIRST LOGIN TO THE PLATFORM

When your Equimetre account is created, you will receive a confirmation email asking you to choose a password. To do so, just click on the link and follow instructions.

We recommend setting up your account before your first recording.

Import your horses list

1. French Horses

This step is not required for French horses. When a horse's chip is scanned for the first time, it is automatically added to your stable.

2. Foreign Horses

For foreign or non-chipped horses, we advise you to create their profile in advance with their 15-digit veterinary chip number indicated on their passport (if any).

If you have many horses, do not hesitate to send the list to your Data Success Manager so we can import them for you.

Name - Chip number (if any) - Date of birth - Sire - Dam - Dam Sire - Sex

Set up your tracks

Go to the tab "**My Account**" - "**Settings**" - "**My tracks**".

We advise you to edit the training with the track name on which the recording took place. This way, you will be able to make relevant and interesting comparisons.

Add your tracks in this tab.

CAUTION

If you're working on the same track on both hands, add two separate tracks, one on the right hand and one on the left hand.

TIP: ADD A FINISH LINE

The finish line is an imaginary line perpendicular to the track formed by two GPS points. When the horse crosses these two points, Equimetre records the end of the intense work.

WHY WORK WITH A FINISH LINE?

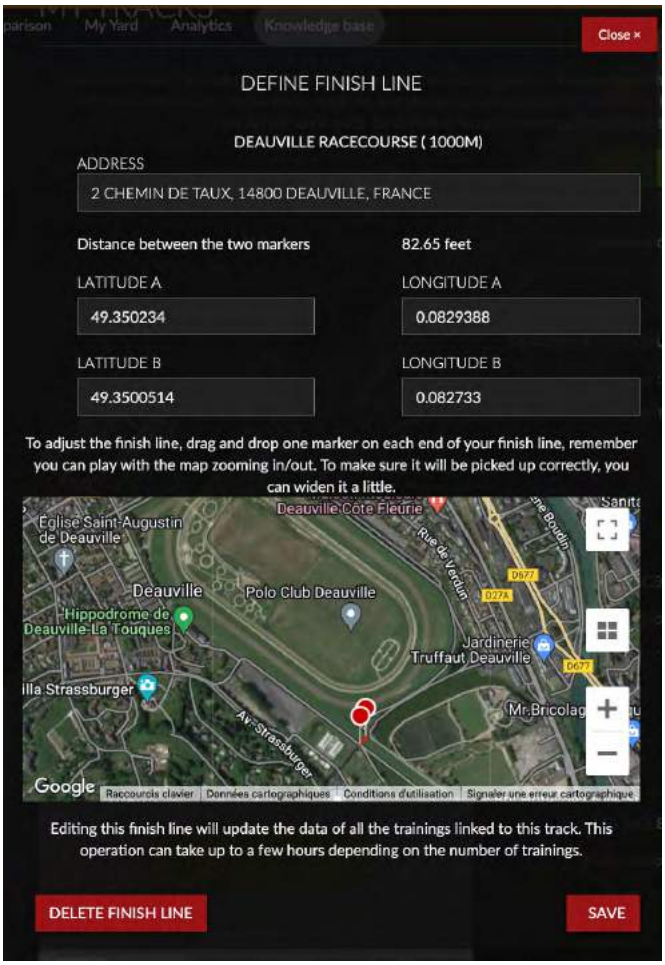
Adding a Finish Line allows you to see it on the map of your training. You can then analyse:

- If the horse held his effort until the end.

- If his speed drops drastically after crossing the finish line.

- The last 200m, 400m and 600m more accurately to efficiently compare them with targeted race tracking times.

- Identify your horses' acceleration strategy.



DATA SHEET #4 | EDIT TRAINING SESSIONS

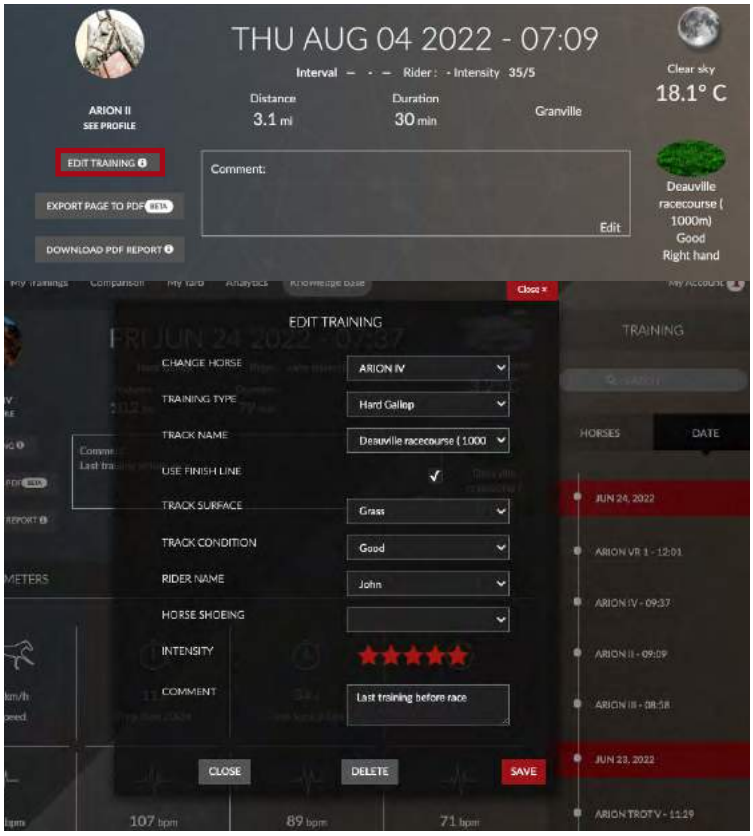
Each training should be edited. Take the time to visualize your training. When you do so, click on **Edit training** at the top of the page.

The more you edit your trainings, the easier it will be to analyse the evolution of your horse's performance. This will allow you to always compare what is comparable!

- Edit at least **training type**, **training track** and **ground**.
- The type of ground will be filled in automatically when the track is created from the **Settings** > **My tracks tab**.

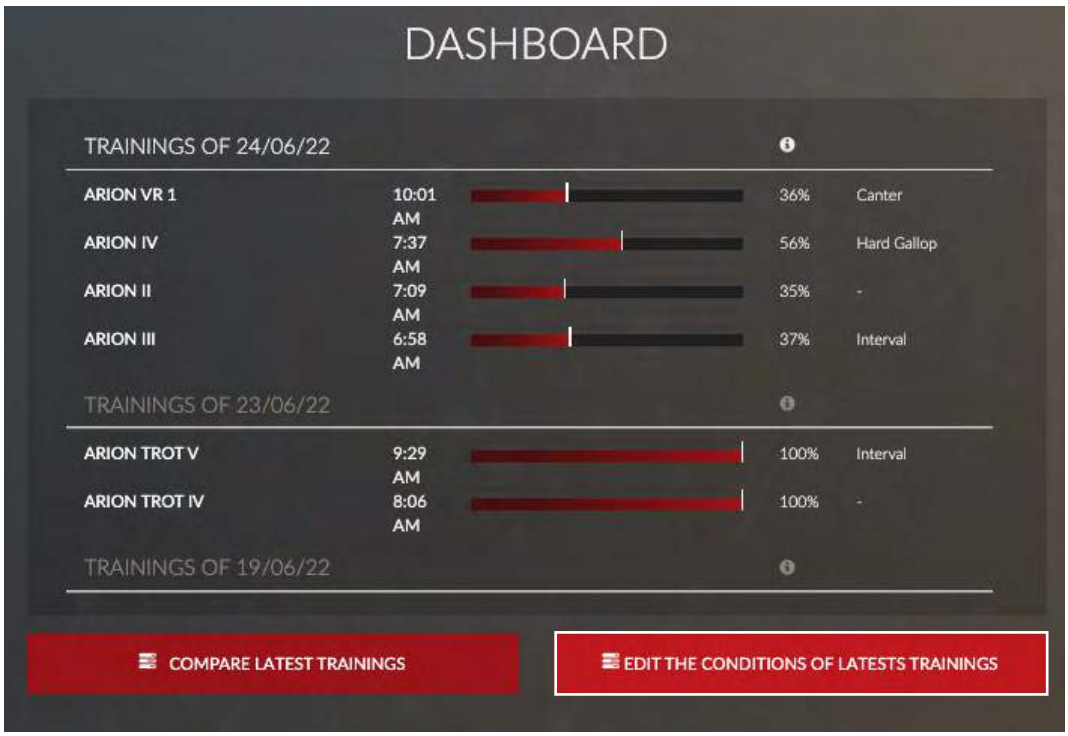
HOW DO I EDIT MY TRAINING ?

Click on the "**Edit training**" button to modify the qualification elements. After filling in at least the training type, track name and ground click on "**Save**".



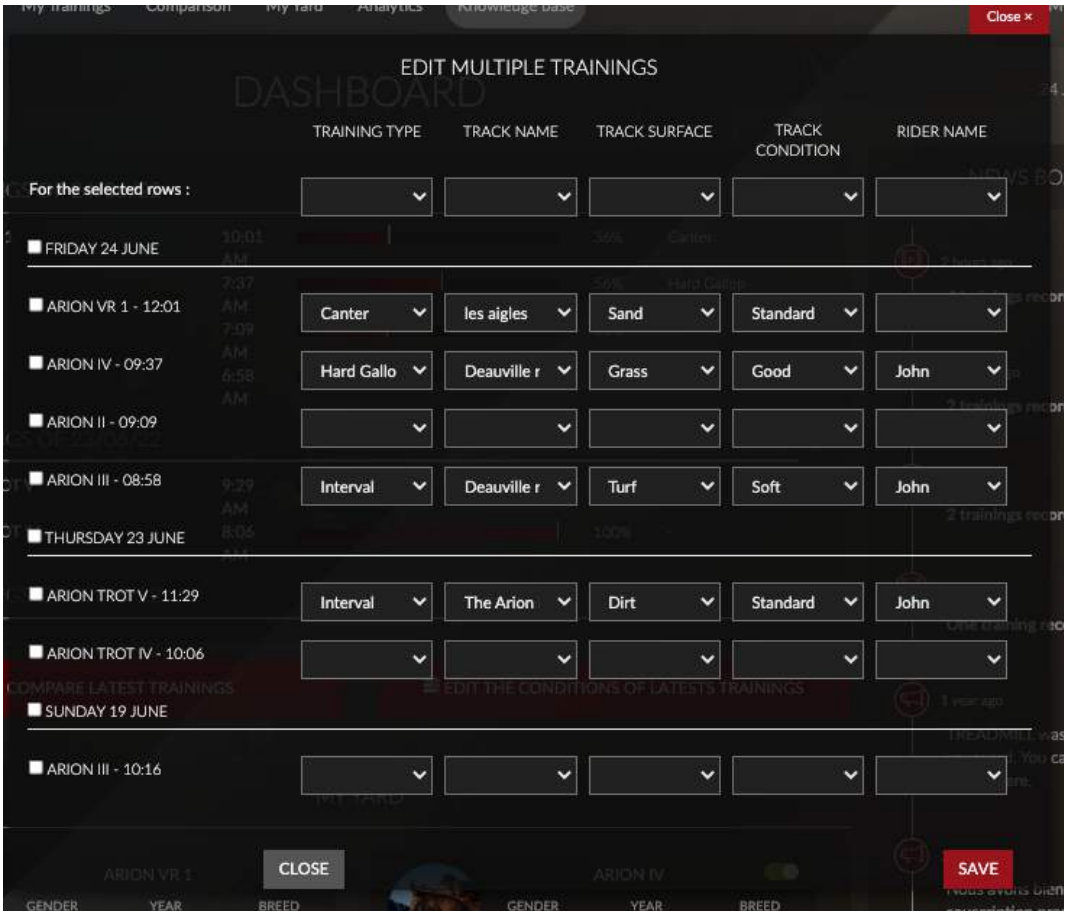
This step is mandatory as without edition, you will not be able to compare your data in time.

Edition enables the data analyst to get context and compare what is comparable.



TIP

Edit several trainings at once with the multiple edit window.

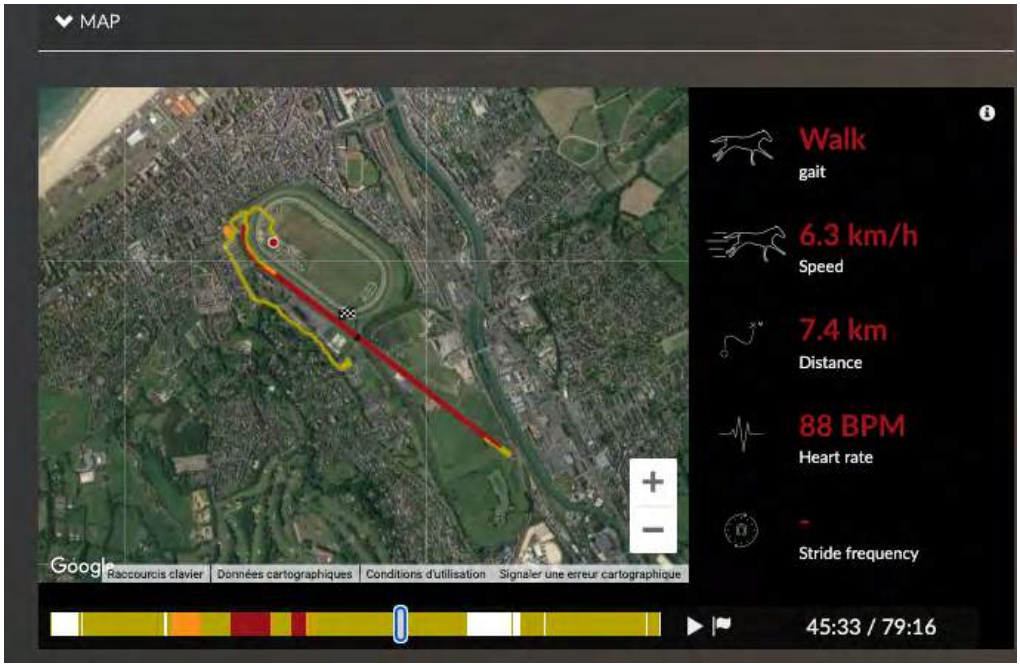


DATA SHEET #5 | TYPES OF DATA

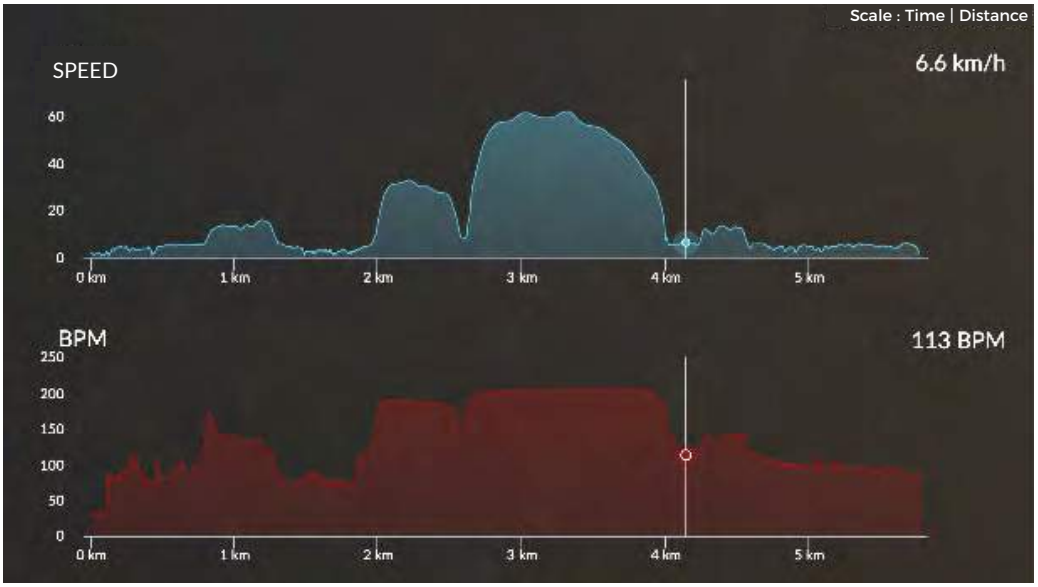
SPEED

- On each workout a scroll bar allows you to replay the training session.
  Move the cursor along the scroll bar if you want to find a point of interest. Press play and pause to see the progress of the point and the evolution of the data on the right of the map and on the graphs.

- Analyse speed evolution, acceleration and deceleration.



- The speed curve must be analysed along with the cardio curve: the more similar the two curves are, the better!



- For a more detailed analysis, take a look at the **Intervals table**. You can choose the distance interval that suits you best.

		Gait	Distance meters	Time min	Pace km/h	Average HR bpm	Average tilt %	Stride Length meters	Stride Freq. stride/s
	1	Inactivity		03:45.0		34	0.0	0.0	0.00
▶	2	Walk	1265	11:36.0	6.5	87	-0.0	0.0	0.00
▶	3	Trot	745	03:47.0	11.8	124	-0.1	2.3	1.45
▶	4	Walk	480	03:55.0	7.4	98	-0.1	0.0	0.03
▶	5	Gallop	1685	05:12.0	19.4	125	-0.1	3.1	1.77
▶	6	Walk	280	02:28.0	6.8	133	-0.3	0.0	0.04
▼	7	Gallop	1475	01:53.0	47.0	202	-0.1	6.7	2.17
			75	00:06.0	45.0	185	-0.7	5.9	2.17
			200	00:13.0	55.4	202	-0.3	6.9	2.22
			200	00:12.0	60.0	208	0.1	7.4	2.25
			200	00:11.5	62.6	207	1.1	7.6	2.28
			200	00:11.0	65.5	209	0.0	7.6	2.38
			200	00:11.8	60.8	210	-0.0	7.5	2.31

WHY	HOW
To evaluate a horse's sporting abilities.	**Max speed:** top speed.
Objectivize the effort given and the application of instructions.	**Best 200m:** sprinting skills. **Best 600m:** ability to maintain speed.
Compare speed data and race tracking data during preparation.	**Intermediate times:** compare the last 200, 400, 600 meters to a race pace.

HEART RATE

- Heart rate (HR) is measured by the number of beats per minute (BPM) made by the horse's heart.
- It should always be analysed in relation to speed to give it context.
- Resting heart rate and maximum heart rate are specific to each horse. It is the recovery analysis that can allow you to judge the day's work to adapt the following training.

You should then pay attention to HR levels after effort in relation to individual Max HR.

RECOVERY

- **Recovery after effort:** immediately after the effort the heart rate stabilizes quickly at a first level. This allows to assess the intensity of the effort for the horse.
- **Recovery after 15 minutes:** in a second phase, heart rate gradually decreases. It allows to evaluate the horse's fitness.
- When the horse struggles to find a low heart rate, it means that the work was very intense for him and this intensity of training has not yet been fully assimilated. It can be interesting to allow a recovery period (light work the next day, and a day of rest) before repeating the exercise to improve recovery.

SOME HEART RATE AVERAGES

HR MAX	HR AFTER EFFORT	HR AFTER EFFORT *in % of max HR*	HR AFTER 15 MINS	HR AFTER 15 MINS *in % of max HR*	HR AT END
215 BPM	118 BPM	< 55%	100 BPM	< 50%	80 BPM

TO REMEMBER

HR after 15 mins is only available **if you leave the sensor on the horse for at least 8 minutes after the main work.** If this organization is difficult to set up, you can then edit your parameters and focus instead on the HR after 1 minute to 5 minutes, or on the Time to 100 or 120 bpm, which are also very good indicators to assess the recovery of the horse.

HEART RATE ZONES

- The chart for interpreting heart rate zones relies on the maximum heart rate of each horse. Maximum heart rate is physiologically determined; it varies little and decreases slightly with age.

- The max HR is not correlated with performance. By default, this value is displayed at 218 BPM. It is calculated automatically when the horse is running 600m in less than 42 seconds.

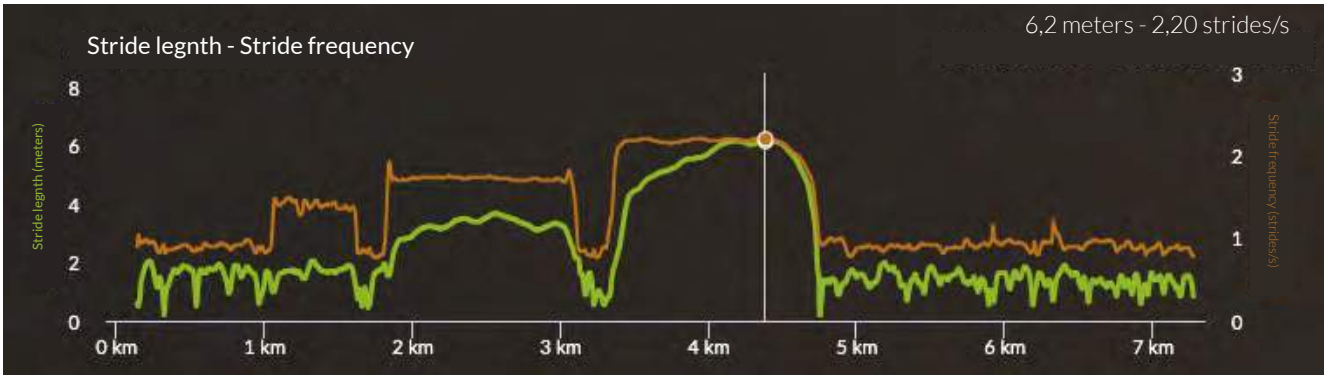
- Heart rate zones are therefore not the same for all horses and indicate work intensity.

Aerobic: Zone 1-3 (Endurance/Moderate/Tempo)	The body uses oxygen to break down fat and produce energy without lactic acid (mechanism used until max HR is reached).
Anaerobic: Zone 4-5 (Threshold/Anaerobic)	The body degrades the sugars in the muscles: very efficient mechanism to produce energy, but it produces waste, lactic acid.

When the effort is very intense, lactic acids cause pain in the muscles.
The lactic acid is evacuated by the oxygen brought by the blood.
Heart and breathing rates remain very high even after the end of the effort to eliminate the lactic acid : we speak about oxygen debt.

LOCOMOTION

Stride length: the length of the stride.
Stride frequency: the frequency of the stride.
Regularity: how much the strides are identical to each other.
Symmetry: for trot, how identical are the half strides to each other, comparing the right diagonal to the left diagonal.



Stride Frequency and Stride Length data work together. At constant speed, when one increases the other decreases and the product of the two gives the speed :

Stride length x Stride Frequency = Speed

DID YOU KNOW ?

During gallop, the breathing frequency is set to the stride frequency: the horse inhales during the projection phase and exhales the rest of the time. A horse with a high stride frequency will therefore have more difficulty maintaining its effort over time because its breathing rate is high. Also, a change of leg, which induces a longer projection time, allows the athlete to catch his breath.

WHY	HOW
Objectivize the acceleration strategy: in stride frequency (high acceleration capacity), or in stride length (more progressive acceleration).	Thanks to the curves study. **Tip:** merge the stride length and stride frequency curves to see which one takes the lead during the acceleration phase.
For Thoroughbreds: define the locomotor profile and study the preferred distance of the sprinter, miler or stayer.	Stride length and stride frequency at 60km/h.
Monitor any stride shortening to detect potential pain.	Stride length at constant speed, Stride length at maximum speed.

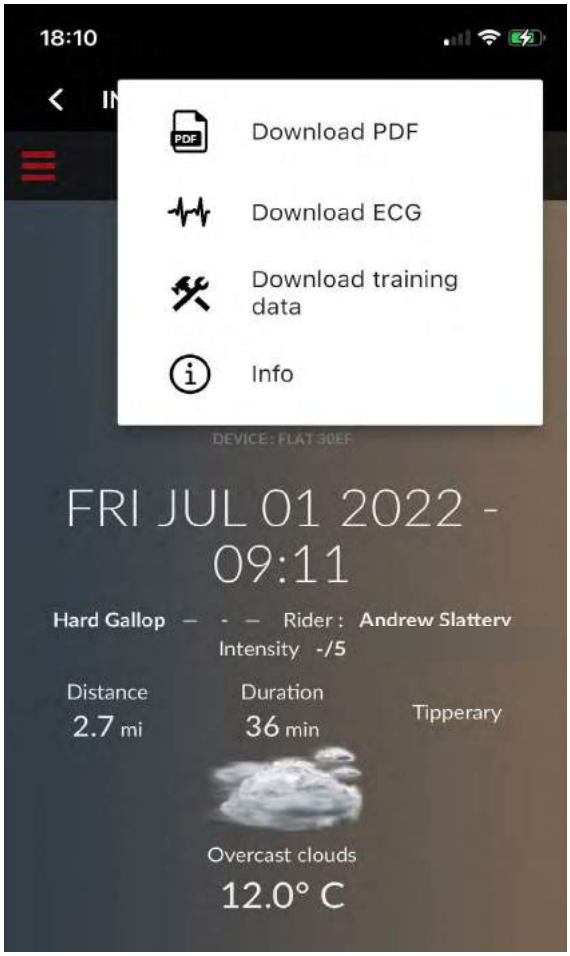
DATA SHEET #6 | DETECT PATHOLOGIES

CARDIAC PATHOLOGIES

A significant increase in the horse's maximum heart rate or a peak in heart rate during exercise may be a sign of a serious heart pathology that requires veterinary advice. Equimetre can detect arrhythmias and atrial fibrillations, as it automatically collects the horse's electrocardiogram during exercise and therefore allows you to act quickly if necessary.

You can download a raw ECG data for each training session from the application: open the training session you are interested in, then click on the three white dots at the top right of the screen to start downloading the ECG, similar to a regular data synchronization.

You should then make sure the Equimetre is turned off and leave your phone near the sensor as usual.

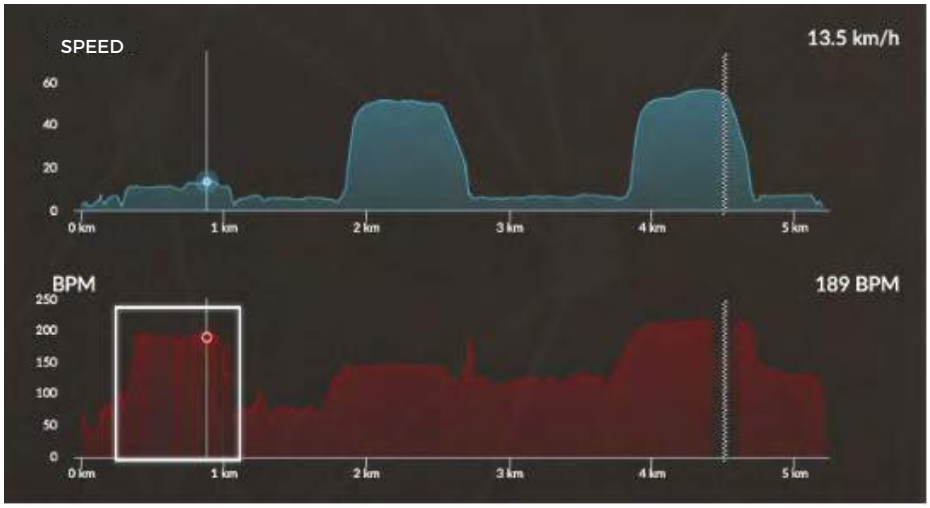


Your Data Sucess Manager will be able to analyse the ECG and identify if a veterinary opinion is necessary.

PAIN

During warm-up, the horse's muscles are still cold, so this is the **ideal time to detect possible aches and pains.**

At similar speeds, if the HR at the first trot or canter appears significantly higher than usual, this may give us a clue to a possible pathology: Pain, which is not necessarily visible to the naked eye, induces an increase in HR.



DEGRADATION OF SYMMETRY DURING FIRST TROT

In addition to the increased heart rate, there can also be a degradation of the symmetry during the first trot.

Symmetry determines if the half strides are identical to each other (100% indicating perfect symmetry), and therefore helps to prevent lameness and other pains if the percentages decline from one training session to the next.

Mean symmetry first trot (%)	Mean regularity first trot (%)	Mean heart rate first trot (bpm)
83.40	94.28	113.24
84	96	110
82	97	100
81	96	104
78	96	115
95	97	98
88	96	115
81	96	110
76	96	108
N/A	N/A	N/A
87	95	120
64	82	119
79	91	163
N/A	N/A	N/A
81	92	119
82	91	N/A

STRIDE LENGTH AT 60KM/H OR CONSTANT SPEED

Another indication of locomotion pain is a reduction in stride length at a constant speed and on a similar track surface (it is very important that the context is comparable to objectivize the analysis).

If the horse is no longer physically comfortable, it will not stretch as much if it feels discomfort.

Stride length at 60 km/h (m/str)	Stride frequency at 60 km/h (strides/secs)	Fast Recovery (bpm)	Fast recovery quality
2.38	7.43	128.20	-
2.38	7.45	115	Fair
2.40	7.25	142	Poor
2.46	7.50	148	Bad
2.38	7.30	120	Fair

DATA SHEET#6 | PARAMETERS CUSTOMIZATION

Tailor your platform to your training. The data should answer specific questions you have about your training.

KEY PARAMETERS :

Key parameters are the first data you want to look at after you have synchronized your data.

We generally focus on 3 topics :

Max speed data and split times

Recovery data and max HR

Max and constant speed stride data

You can choose the settings that interest you the most on the platform and define your own **Training page** at any time (**My Account** > **Settings** > **My Workouts**).

Feel free to discuss this with your Data Success Manager, who will be able to help you choose the most pertinent settings according to your interests and curiosity.

ANALYTICS (PRO OFFER) :

This is the most powerful analysis tool available on the Equimetre platform. This board gathers all the recorded trainings and is able to extract more than 300 parameters with exceptional accuracy.

You can focus on a particular horse, type of training or track by using the filters, which allows you a quick and organized analysis when preparing a specific race for example. **It is very important to edit your trainings, in order to filter and sort your database. The goal is to compare what is comparable.**

Your Data Success Manager knows this tool by heart and will guide you step by step in the most efficient way to use it.

Our best advice would be to always find similar trainings in terms of working distance and best 200m times for a relevant comparison.

Get in touch with him/her to learn more !