

AT THE HEART OF PERFORMANCE:

HEART RATE IN THE RACEHORSE



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CARDIAC MONITORING: DESIGNED FOR RACEHORSES, SERVING TRAINERS.

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CARDIAC MONITORING: DESIGNED FOR RACEHORSES, SERVING TRAINERS

Company director, physical trainer, technician, manager... Racehorse trainers have to cover a multitude of roles and functions if they want to succeed. The diversity of the tasks involved is one of the main difficulties of this profession.

To meet these challenges, it is essential to surround yourself with the right people and choose the right tools to make decisions efficiently, quickly and easily. It is the combination of skills, in the service of a shared passion, that leads a racing team to victory.

At Arioneo, all our products are designed with passion, with the objective of improving horses' performance, while preserving their physical integrity. By equipping and supporting trainers, vets and the horse's entourage, we provide information that answers the fundamental questions linked to the development of performance in athletic horses. By confirming your intuition, the EQUIMETRE heart rate monitoring sensor becomes an ally in your decision-making.

This white paper is written for all trainers, whether or not they are familiar with horse monitoring. It sheds light on how EQUIMETRE can help you find quick and effective answers on a daily basis thanks to cardiac monitoring.

Here are 3 questions frequently asked by trainers, to which we will provide answers in these pages:



**HOW CAN WE IMPROVE THE CONDITION OF ATHLETIC HORSES
AND REDUCE THE RISK OF INJURY?**



HOW CAN WE DEVELOP EACH HORSE'S INDIVIDUAL POTENTIAL?



HOW CAN WE MAXIMISE CHANCES OF SUCCESS AT THE RACES?

In this white paper, we will look at the essential data you need to master in order to set up cardiac monitoring. Finally, we will focus on the detection of pathologies through monitoring.

DECODING HEART RATE IN RACEHORSES

THE ESSENTIAL CONCEPTS.

In order to be able to analyse your horse's fitness, it is useful to look at (or review) a few essential concepts relating to the racehorse's cardiac system.

| Heart rate: why measure it?

The **cardiovascular system** is a key component of the horse's body. Considered as an engine, it distributes oxygen to all the body's cells, including the heart, via the blood.

This system is made up of the heart and blood vessels. The volume of blood that the heart ejects with each beat during **cardiac contraction** (systolic ejection volume) is more than one litre in a racehorse. The weight of the heart represents around 1% of a horse's mass, and training has an impact on the horse, increasing his cardiac mass by around 15%.

Measuring a racehorse's heart rate provides information about his level of **physical fitness** and his **adaptation to training**. It is therefore important to assess it during and after exercise and throughout physical preparation.

| Maximum heart rate: an essential reference

The **maximum heart rate (or maxHR)** corresponds to the maximum number of beats per minute that a horse can reach during an effort.

This number is specific to each horse. maxHR decreases slightly with the age of the horse, but is only slightly influenced by training. This is why it is not considered to be a performance indicator.

It is recommended to measure this maxHR **twice a season using an exercise test supervised by a vet**. These measurements give a better understanding of your horse's work and enable you to tailor your training to your horse's specific heart rate zones. Each horse can therefore have training tailored to his maxHR.



When should I have a standardised test?

A **standardised test** is a high-intensity exercise designed to assess a horse's work capacity by measuring his response to training.

On average, a horse's maximum heart rate is considered to be around **218 BPM** and varies from **204** to **241 BPM** (*Evans, 2007*).

Recovery: an indicator of fitness level

A racehorse's **recovery** is one of the **main indicators of his fitness level**: the better the recovery, the better the fitness. Analysed alongside the intensity of the work required, a horse's heart rate after exercise is a good way of confirming if he is ready to run his next race. Optimal fitness is reflected in the ease with which a horse recovers from effort, and therefore in his ability to recover from heavy work.

Recovery is generally studied at two different times:



Fast recovery:

When the horse stops making an effort, during which his heart rate has remained at a high level, the heart rate decreases very rapidly over a few tens of seconds. This is when the parasympathetic nervous system (responsible for slowing down the heart rate) takes over from the sympathetic nervous system (responsible for increasing the heart rate during stress or sporting exertion). Measured as a percentage of maxHR, this recovery phase is an excellent way of **assessing the intensity of the effort required**.



Slow recovery:

This recovery takes place a few minutes after the effort has stopped. It is used to **characterise the horse's fitness level**, because the quicker he returns to his initial heart rate, the better his level of fitness. In fact, it has been shown that slow recovery time is correlated with the horse's level of performance: the lower the recovery time, the better the horse. Similarly, a significant increase in recovery time indicates that the horse is having difficulty recovering.

Examples of recovery parameters

PARAMETER TYPE	DEFINITION	WHY?
Fast recovery	Corresponds to the first stabilisation of the heart rate just after exercise.	Indicates the intensity of the effort felt by the horse.
Rapid recovery as a percentage of MaxHR	Percentage of maximum heart rate at the end of rapid recovery following the last high-intensity exercise.	Allows horses to be compared with each other, taking into account their difference in MaxHR. 56% for a medium intensity, neither too hard nor too easy.
Heart rate at 15 mins	Corresponds to the heart rate after 15 minutes of recovery following the last high-intensity exercise.	Indicates fitness level. A horse with a good level of fitness has a good capacity to lower his heart rate.
Recovery after 15 mins as a percentage of MaxHR	Percentage of maximum heart rate after 15 minutes of recovery following the last high-intensity exercise.	Allows fitness levels of horses to be compared with each other, taking into account their difference in MaxHR.
Heart rate at end	Corresponds to the last heart rate recorded before the sensor was switched off.	Indicates the horse's ability to return to his initial heart rate. Goal: return to initial heart rate levels.

There are many other recovery parameters: each trainer will choose the parameters that best suit their method.

| Energy creation processes: the horse's engines during effort

In order to better analyse heart rate and recovery and establish an objective diagnosis of your horse's state level of fitness, it is interesting to take a closer look at the **physiological mechanisms** at work when a racehorse is exerting himself.

To produce physical effort, the body, and more particularly the muscle cells, need energy, fuel. This source of energy is called **adenosine triphosphate or ATP**. Every exercise, whatever its intensity, requires a supply of energy from the ATP molecule. It is the essential energy component that enables the muscles to respond to the exercise required. It is the only source of energy used for **muscle contraction** and **relaxation**.

1st energy production process - ATP already present in the body

The first, and quickest, way to make ATP is to **use the ATP already in the horse's body**. This molecule is naturally present in the body thanks to a reserve formed by the muscle cells.

Unfortunately, this first method of producing ATP only works for a short time, as the muscles are only capable of storing a limited quantity of ATP. The effort required cannot therefore be sustained for more than a few seconds. Without a sufficient supply of ATP energy, the muscle filaments cannot produce energy properly.

So, for a horse to sustain an effort lasting more than a few seconds, he must be able to re-synthesise ATP quickly and more permanently.

2nd energy production process - aerobic

This brings us to the second and the most efficient way of producing ATP: **aerobic metabolism**. When a horse is running at slow speed, his body mainly uses the breakdown of fat by oxygen to produce energy. The horse will then use the oxygen in his environment and convert it into CO₂, water, heat and numerous ATP molecules.

The advantage of this mechanism is that it is highly efficient, virtually inexhaustible and does not produce lactic acid, which is a source of pain. However, it is also the slowest way of producing ATP and the amount of energy delivered is limited by the amount of oxygen assimilated by the horse.

This quantity depends on various parameters such as the volume of the lungs, the respiratory rate, the volume of the heart and the efficiency of the cardiac contraction.

The quantity of oxygen that can be assimilated, for example, is limited by the maximum heart rate, which, as we saw earlier, is specific to each horse and varies little with age and training.

Aerobic ATP production will therefore be sufficient for a demanding effort such as a slow trot or canter, but is not suitable for higher paces because it is not fast enough.

3rd energy production process - anaerobic

The final and quickest method for energy production is through **anaerobic metabolism**. When the intensity of the effort increases significantly, fats can no longer produce energy rapidly enough. The horse's body will then break down the glucose and glycogen (sugar) reserves stored directly in his muscles, without using oxygen. Glycogen, unlike fat, is in short supply in the body, but its breakdown is rapid and produces more energy.

However, this process produces a waste product: **lactic acid**. If there isn't enough oxygen in the blood to eliminate it, it accumulates in the muscles, degrades the quality of contraction and can cause pain in the horse. This is why the effort must be limited in time and cannot last *ad vitam æternam*.

The different training intensity zones

ZONE	% MAXHR	INDICATIONS
Endurance	0-60%	Light warm-up rhythm.
Moderate	60-70%	Light, aerobic training rhythm during which all lactic acid is eliminated and recovery processes are improved. It improves basic endurance and is mainly practised as part of strengthening.
Tempo	70-80%	A moderate, mainly aerobic, training rhythm in which lactic acid plays a minor role. It improves endurance and develops the cardiovascular system to improve oxygen utilisation.
Threshold	80-90%	An intense training rhythm, mainly anaerobic, increases tolerance to lactic acid, which delays the start of fatigue during a race and therefore contributes to the horse's stamina.
Anaerobic	90-100%	Very intense, anaerobic training rhythm improves sprint speed and neuromuscular coordination at running speed. This work must be carefully controlled in the event of extreme fatigue.

IN PRACTICE

INTEGRATING CARDIO DATA INTO THE ATHLETIC HORSE'S TRAINING SYSTEM.

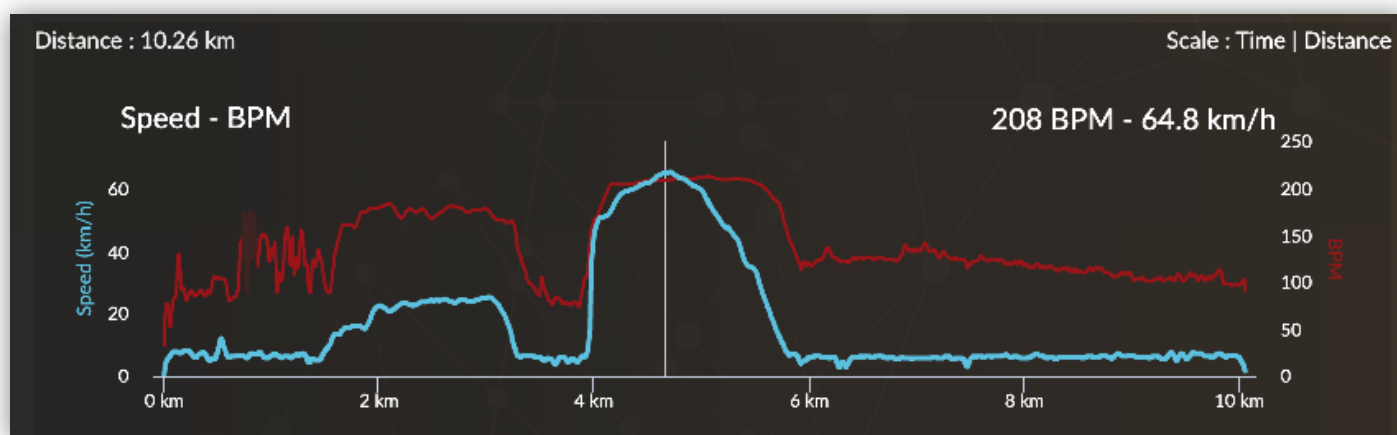
You now have all the keys you need to understand what the data can tell you about your horses. Let's see how these different parameters fit into the analysis of a training in practice.

Reading a training heart rate

The first way to put this data into practice is to read (or re-read) a training session. The EQUIMETRE sensor can measure up to 300 cardiac and locomotor parameters. This is why it is important to know how to use the parameters that can give you a quick general idea of your horse's state of fitness, without going into a detailed analysis at first.

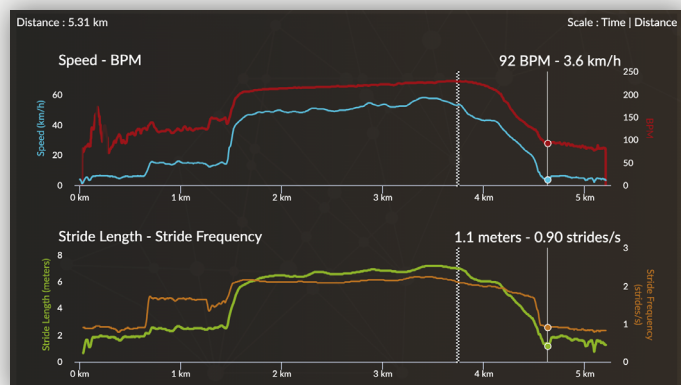
Speed and heart rate curves

The two main types of data to analyse when reviewing a workout are cardio data and speed data. The **speed and heart rate curves should follow the same trends**. These two curves give an indication of the **impact of the training on the horse**.

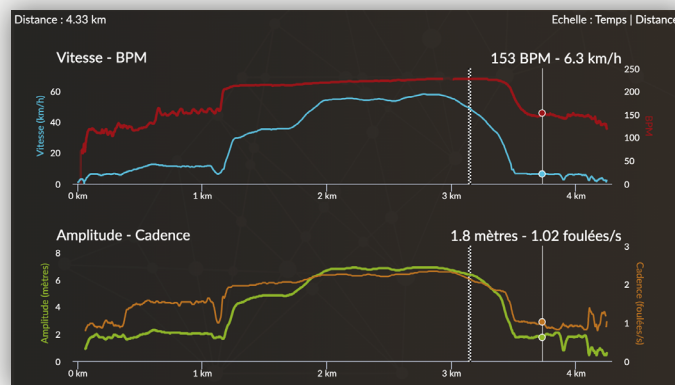


Ideally, the red curve for beats per minute (BPM) should fall at the same time as the blue curve for speed. If this is the case, the horse is in good physical condition and has coped well with the exercise. When a horse's heart rate tends to remain high while speed has fallen, this means that the training has been too intense and poorly tolerated by the horse.

Good recovery



Bad recovery



Data from the EQUIMETRE platform

In this example, we can see very clearly in the graph on the left that the heart rate curve (in red) falls at the same time as the speed curve (in blue), unlike the graph on the right, where the heart rate curve remains high despite the end of the effort.

Warning : Heart rate depends not only on effort, but also on **external factors** such as the inclination of the course, the rider's weight, a change in the type or condition of the track, weather conditions, etc. To compare two training sessions, it is therefore important to ensure that the **conditions are as standardised as possible**.



REMINDER - Editing your trainings :













To do this, it is important to edit the conditions of your trainings (training type, track name, track condition, etc.). This will give you a full description of each training conditions, enabling you to compare them in a meaningful way.



The key parameters table

In order to read these trends between cardio and speed a little more accurately, you can use the **key parameters table**. It displays the data that allow you to see at a glance the horse's performance during a specific training session.

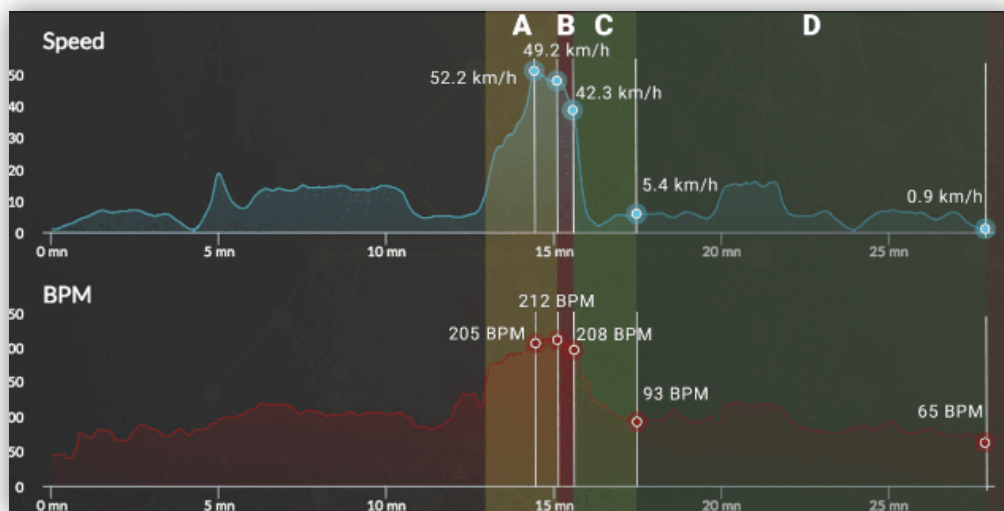
-  In particular, you can find data on speed, with the maximum **speed** measured as well as the best times over 200m and 600m, the horse's stride frequency and stride length.
-  This table also provides the key figures in terms of **cardio**, indicating the maximum heart rate during exercise and the heart rates after exercise and 15 minutes later.

 65.1 km/h Max Speed	 11 s Time Best 200M	 - s Time Last 200M	 1785 m Working Distance
 213 bpm Max Heart Rate Reached During Training	 126 bpm Fast Recovery	 122 bpm Heart Rate After 15 Min	 91 bpm Heart Rate At End
 7.15 m/str Stride Length At 60 Km/H	 2.32 strides/s Stride Frequency At 60 Km/H	 7.65 m/str Max Stride Length	 2.36 strides/s Max Stride Frequency






This table reflects the same trends you can see on the speed and cardio curves. It can be customised to highlight the parameters most relevant to the trainer.

Zones of interest

The heart rate depends on the horse's activity. In fact, **it changes according to the level of the effort intensity**: it is different if it is a gallop or a canter. It is therefore interesting to analyse how the horse copes with the effort by dividing the exercise into different intensity zones.



There are 5 zones of interest to be observed:

- 
Warm-up: should be at the same heart rate from one training to the next. It is useful for spotting nervousness/stress peaks. If the level is higher than usual, it could be a sign of pain or that something is wrong.
- 
A - The work zone: this is the zone where speed and heart rate are high. It is used to quantify the maximum heart rate reached during exercise.
- 
B - The deceleration zone at the end of the training: this is the zone where speed decreases significantly but the heart rate remains high. This zone reflects the intensity of the exercise.
- 
C - The rapid heart rate decrease zone: this is the zone where speed is considerably reduced and the heart rate drops significantly. It is used to qualify rapid recovery and the ability to recover immediately after exercise.
- 
D - The slow heart rate decrease zone: this is the zone where speed is considerably reduced and the heart rate drops slowly. It qualifies slow recovery and gives an indication of physical fitness.

The oxygen debt

When a horse makes an intense effort, he accumulates lactic acid, because all the oxygen is mobilised to produce energy and is therefore not available to eliminate it. As a reminder, a horse is considered to produce an intense effort and to eliminate the lactates when it exceeds the threshold of 80% of his maxHR (see table on page 8).

Oxygen debt



Data from the EQUIMETRE platform

At the end of the effort, when the speed decreases, the heart rate may remain high for a while. This is because the heart continues to beat at a high rate to rapidly deliver oxygen to the muscles and continue to eliminate the lactates accumulated by the horse during the effort. The curve shows a plateau effect at maxHR, even though the speed has started to fall. This is the time taken to compensate for the oxygen debt.

The shorter the oxygen debt compensation time, the less difficult the effort was for the horse, so he needs less time to recover. A low oxygen debt compensation time therefore corresponds to good fitness. It is interesting to observe this indicator because it provides an insight into the horse's state of fitness, and more specifically, his level of recovery after exercise.

REMINDER - Choose the right key parameters :

Several hundreds parameters are available on the EQUIMETRE platform. So it is important to check with your Data Success Manager which key parameters correspond to your types of training and the objectives you've set yourself.

How do I know if my horse is ready to race?

The parameters seen above give you **an initial idea of your horse's general state of fitness following training**. It may be worth investigating your horse's fitness and recovery capacity in more detail, to find out whether he is ready to run his next race. EQUIMETRE enables you to analyse a number of key parameters to support your choices and decisions, so that your horse is in the best possible condition on the big day.

Analyse recovery as a percentage of maxHR

Rapid recovery as a percentage of maxHR :

Rapid recovery as a percentage of max HR reflects the intensity of the work experienced by the horse, and his ability to recover after this effort.

Medium intensity is considered to correspond to recovery after exercise at around **56% of his maxHR**.

For example, if your horse has a maxHR of 217 BPM and his post-exercise heart rate is 118 BPM, his post-exercise recovery will be:
 $(118 / 217) \times 100 = 54\%$.

This horse has a good level of rapid recovery. The intensity of the exercise was well controlled.

Slow recovery as a percentage of maxHR :

Slow recovery is also a very good indicator. Measured 15 minutes after the last effort, it enables us to check **the horse's ability to return to his initial pre-effort heart rate**.



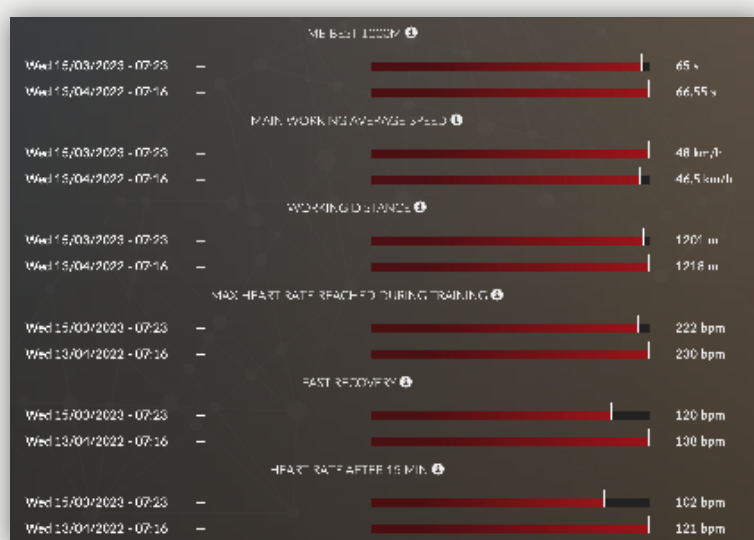
On average, we aim for the heart rate to be below 44%. This indicates that the fittest horses return to a heart rate nearly identical to their starting rate within these 15 minutes of recovery.

The « snapshot training »

Another way of knowing whether your horse is ready to race is to **compare his last workout with a training that preceded a race**. This comparison technique could be called the «Snapshot training».

You can use the pre-race training as a reference to compare significant data such as speed, effort level, recovery capacity and stride profile. As if you were taking a picture of the horse fitness level at a certain time.

So, if the horse performed well in the race, you will expect to find parameters as good as or better than those from the photo training. If the result of the race was disappointing,



Taking the example of this 3-year-old mare, the April work was followed by a good performance in the race.

In full preparation for a new competition, we can therefore compare the last work in June with the 'snapshot' from April.

Data from the EQUIMETRE platform

Conclusion: the mare has made progress compared to the snapshot of her state of fitness, which was already sufficient to perform. All the lights are green for racing... And winning?

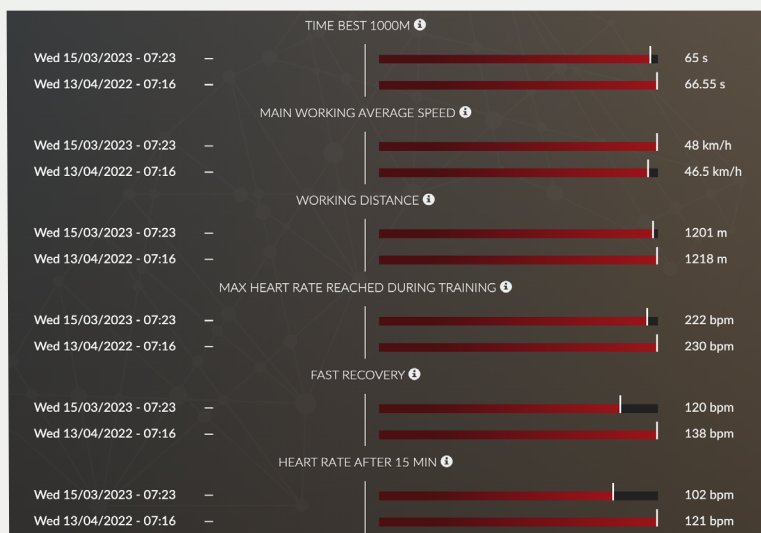
Using «snapshot trainings» is an excellent way of adjusting a training according to **your horse's objective and progress**. For example, you can re-evaluate a chosen distance or terrain, add a canter before the race or simply work to maintain an already satisfactory level of fitness add an additional gallop.

Compare your horse with a horse ready to race

After comparing your horse with himself, it is interesting to compare his fitness data with another horse that you think is ready to race and that shares the same training as your horse. This could also be a reference training from one of your good horses from the previous season. This method of analysis is convenient because it allows you to **identify directly the differences and points of convergence** between the training of the reference horse and that of your horse. In this way, you can **individualise the needs of each horse**, by observing the effects of the same training on two different horses. This makes it easier, for example, to detect an unusual under-performance, or to spot a future crack horse with exceptional abilities.

However, to be effective and fair, we need to be able to compare data that is comparable. The comparison of two horses, head to head, must therefore meet certain prerequisites in order to obtain an analysis that is not erroneous:

- 🎯 The comparison must be made between **two horses of the same age** and with the **same locomotor profile**.
- 🎯 Both horses must have done the **same trainings**, in the **same conditions** (terrain, outdoor environment).



Data from the EQUIMETRE platform

In this example, we can see a comparison of the data from a 2-year-old Future Performer and a Group 1 winner, when he was the same age. We can see that the data for the Future Performer is very encouraging for his future career, as it is similar to, or even better, than that of the Group 1 winner.

Improving the fitness of athlete horses through longitudinal follow-up

Now you have all the information you need to assess your horse's fitness before his next race. However, your horse's fitness evolves with training and progresses throughout the racing season, so it is worth tracking and comparing your horses over time. It is therefore worth monitoring and comparing your horses over time

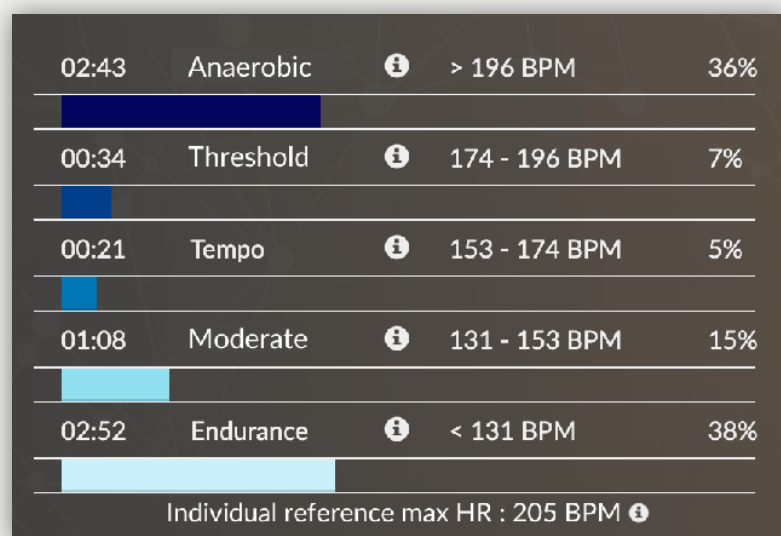
Establishing a **longitudinal follow-up** of your horses over time allows you to analyse the parameters that are influenced by training. We will look at what these parameters are and how to interpret them in order to improve your horses' fitness over time.

Using HR zones

First of all, it is interesting to know whether your horse's training is effective. To do this, the **heart rate zones** are relevant for measuring how your horse copes with different exercise intensities.

This table converts the horse's heart rate during exercise into a percentage of maximum heart rate. It allows you to visualise the time spent in each effort zone through the different gauges. Each intensity is useful depending on the objectives you have set, which are determined by the maximum heart rate.

On average, a horse who has worked at **70% of his maxHR** can still work more intensely. Once he has reached **90% of his maxHR**, the horse is in zone 5: the anaerobic zone. He has therefore been working very hard.



Data from the EQUIMETRE platform

In this example, Arion's maxHR is 218 BPM. He spent 36% of his training at an effort heart rate in excess of 196 BPM. If we relate these numbers of beats to his maxHR, this represents an effort in excess of 90%.

We can conclude that Arion's training was of a high intensity.

This table is an excellent tool for evaluating the intensity of a training session, but also for visualising a horse's progress. The more a horse progresses, the less time he spends in zones 4 and 5 for the same level of intensity. This means that his heart can cope better with the effort required and that he is improving his fitness through training.

First example: improving your horse's endurance

Let's take the example of a horse for which your objective is to **improve his endurance capacity**. You'll need to **look at the effort time in zone 4**. This zone represents the threshold before moving on to zone 5, and therefore entering a zone of very intense work.

Working in zone 4 helps to **delay the appearance of fatigue during a race**, by increasing tolerance to lactic acid, a source of pain. The horse thus becomes more enduring and resistant to the workload. If you wish to work on this point, the intensity of the work should not exceed 80% of maxHR.

Second example: follow your horse's fitness progress

If your goal is to **follow the evolution of your horse's fitness**, it is **zone 5** that should be analysed. The time spent in this zone of very intense work allows you to visualise your horse's progress.

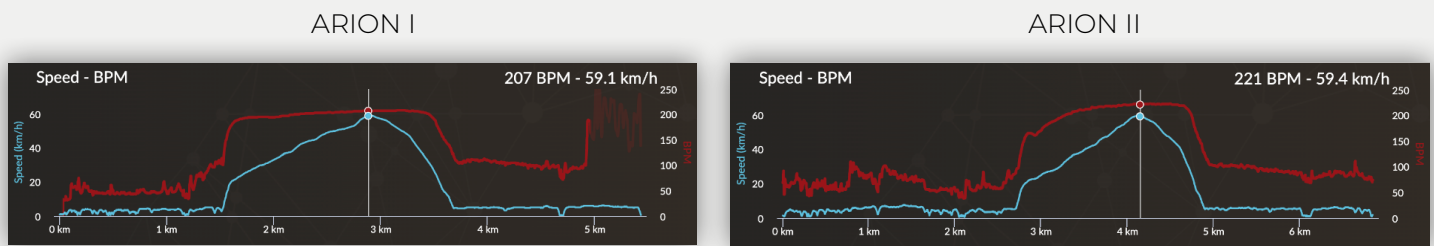
By comparing this zone during several training sessions throughout the season, you will be able to **see whether your horse is pushing his threshold between the aerobic and anaerobic zones**. This shows that your horse is tiring less quickly and becoming more enduring as the training progresses.

ARION

Date	Horse	Training type	Working Duration (hh:mm:ss)	Working distance (m)	Max Heart Rate reached during training (bpm)	Heart rate at end (bpm)	Fast Recovery (bpm)	Duration effort zone 5 (hh:mm:ss)
AVERAGE		-	03:38.81	2547.88	214.87	72.13	108.57	02:37.67
27/11/2021	Arion	Galop	03:56	2654	211	52	N/C	04:05
03/03/2022	Arion	Galop	03:53	2624	217	65	106	02:30

Data from the EQUIMETRE platform

In this example, we can see that ARION's physical condition has improved because his time in effort zone 5 has been considerably reduced for the same amount of work: he has therefore become more enduring.



Data from the EQUIMETRE platform

Let's also take a look at this graphical example of two horses performing the same exercise (1200m progressive). We can see that ARION I's heart rate curve rises directly, then stagnates much more than that of ARION II.

ARION II therefore seems to have a more efficient aerobic system: he enters zone 5 later.

Warning : Make sure that these training sessions have been done in comparable and similar conditions.

Finding the balance between over-training and under-training

One of the most complex tasks for a trainer is to **find the balance between under-training and over-training**.

Data can help you **find that balance using the data collected by EQUIMETRE** and help you ensure that training is tailored to each individual horse.

Overtraining:

Signs such as a drop in the ability to sustain effort for as long as before, or a loss of appetite and weight can indicate an over-trained horse. If stopping training for the short term is not enough, the **workload needs to be re-evaluated**.

Overtraining is caused by a workload that is too intense. This can be the result of an inappropriate distance or too short a recovery phase. Data can help to re-establish a balanced relationship between these two phases.

Under-training:

Under-training refers to the fact that the horse is not in a sufficiently intense work zone and is therefore not sufficiently trained. This state can be dangerous because the horse lacks physical preparation and can lead to accidents during a race.

An under-trained horse will not reach his maximum heart rate during exercise and his heart rate will drop immediately once the effort has stopped. The goal of the data is therefore to **enable the horse's training to be re-evaluated so that he can improve his physical, physiological and mental qualities**, so that he can progress and be ready for his next races.



Data from the EQUIMETRE platform

In the example above, we can see that, for a training session of similar intensity, Arion's recovery capacity has deteriorated: his heart rate after exercise is 166 BPM compared with 114 BPM when he arrived at the training session in October. The same applies to his recovery 5 minutes after the end of exercise.

From this observation, the trainer was able to question the various hypotheses explaining this loss of fitness. By questioning Arion's former trainer, he was able to establish that the intensity of his training had decreased, following the use of a different training method.

So Arion's trainer decided to adapt his training and lengthen the working distance. Once his training had been readjusted, Arion was able to regain his pre-race fitness levels, and even won more Groupes.

Individualising training

We have already seen that the point of balance is specific to each horse and that it is therefore important to establish specific training for each one. This is why it is necessary to **individualise each horse's work**, so that each can reach an optimum level of fitness to **maximise the chances of winning a race while minimising the risk of injury**.

Detecting an under-trained or over-trained horse is an important point that can be addressed by individualising training, as we saw earlier. This tool can also enable you to **choose the races best suited to each horse's locomotor profile and adapt their training accordingly**.

By setting up longitudinal monitoring, you can keep track of each horse's progress. You can compare your horse's performance between different training sessions, and also with other horses in your stable who share the same objectives.

To do this, it is important to ensure that the horses you're comparing are from the same group. As we saw earlier, the comparison should be made between two horses of the same age and with the same locomotor profile. In addition, the training sessions must have taken place under the same conditions.



FOCUS

DETECTING PATHOLOGIES IN RACEHORSES THANKS TO DATA

Using a connected sensor is an excellent way of making horses talk: the objective data collected during training can be used to detect respiratory and locomotor pathologies.

Find out in this mini case study how the ECG was used to detect **heart failure**.

Context

- Arion is a 4-year-old gelding who has never raced
- After arriving at a new stable, his diet was revised upwards following a lack of physical condition
- Shows signs of premature fatigue during training

How can we explain Arion's repeated premature fatigue during training, as well as his lack of physical condition?

Analysis

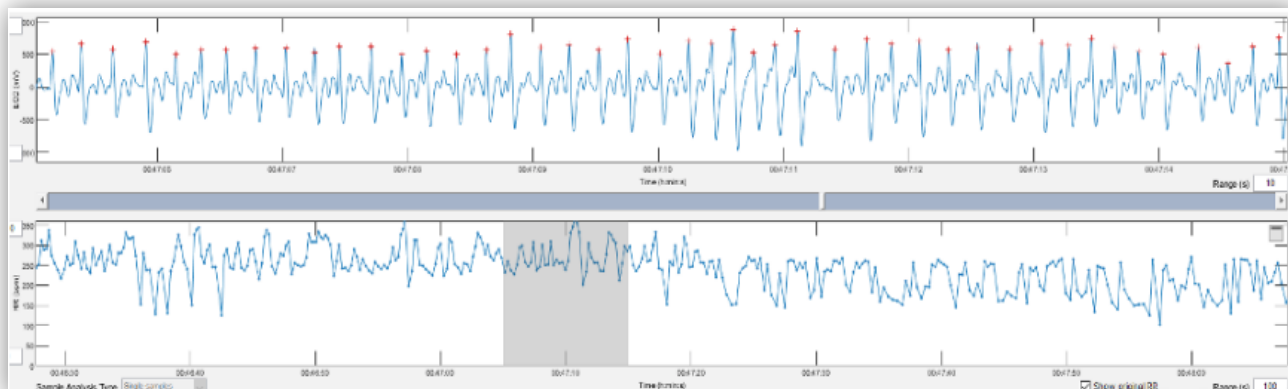


Data from the EQUIMETRE platform

Thanks to the heart rate and speed curves, we can see that Arion's heart rate is very high: 250 BPM for an effort at 50km/h.

The vet then asked to analyse Arion's electrocardiogram to investigate this high heart rate.

Results



The electrocardiogram (which is automatically taken throughout each workout using EQUIMETRE) revealed an **atrial fibrillation**.

Actions taken based on the data

So Arion had a heart check-up. Following a clinical examination, heart auscultation and echocardiogram, the horse was diagnosed with congestive heart failure associated with severe tricuspid insufficiency.

Atrial fibrillation may be a secondary development linked to heart failure.

ATHLETIC HORSE HEALTH MANAGEMENT: SOME SCIENTIFIC INSIGHTS

Want to find out more about pathology detection thanks to data?

[DOWNLOAD THE GUIDE](#) ➤



CHEAT SHEET EQUIMETRE ARIONE0

SPEED 🏇

BEST 200M	< 12 SEC
BEST 600M	< 36 SEC
BEST 1000M	< 1 MIN

Big reference points for race speeds.

PEAK SPEED: BEST/LAST 200M

SPEED HOLDING ABILITIES: BEST/LAST 600M/800M

MAX SPEED: ON 10M (≈ 1,5 STRIDE)

HEART RATE ❤️

MAXIMAL INDIVIDUAL HR :

Not an indicator of fitness, used to judge recovery.

HR AFTER EFFORT 🎯 55%

— WORK INTENSITY

HR AFTER 15 MINS < 45%

— OVERALL FITNESS

HR AT END: DOWN TO PREWORK LEVEL

RECOVERY: THE LOWER THE BETTER

LOCOMOTOR PROFILE 🐎

STRIDE FREQUENCY AT 60 KM/H	SPRINTER MILER STAYER		
	> 2.5	← 2.42	→ < 2.2

On flat grass.



Those are big reference points that can be used as graduations. It is a theory and horses will make us lie!

UPHILL
DEEP SURFACE

— IMPACT STRIDE FREQUENCY ↗

ACCELERATION STRATEGIES 🏇

ACCELERATION USING STRIDE FREQUENCY:

Strong acceleration power / turn of foot but hard to hold.

Explosive

ACCELERATION USING STRIDE LENGTH:

Slow acceleration but lasting and long.

Gradual

USING BOTH:

Balanced acceleration power.

Polyvalent

EQUIMETRE

CONTROLLED AND MONITORED WORKLOAD



CARDIO DATA



STRIDE DATA



SPEED DATA





ARION

MALE - 4 YEARS OLD

BAY - 1M67

THOROUGHBRED

EQUIMETRE

TECHNOLOGY DEDICATED TO THE RACEHORSE'S MONITORING.

Manage health and performance by collecting relevant data in terms of:

FITNESS



Heart rate



ECG



Recovery

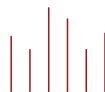
SPEED



Speed



GPS



Split times

LOCOMOTION



Stride frequency



Stride length



Locomotor profile

CONTACT US TO ASK MORE INFORMATION

Meet with one of our consultants to learn more about EQUIMETRE.

We can also organize demonstrations in your stable if you wish.

