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General information

Dear customer, right now you have become the owner of a unique tool that will allow you to look into the world of horses. Find out about your pet something that was previously inaccessible. We will help you, based on the latest technical advances, to take maximum care of your pet and create conditions that will provide him with a long and happy life, and you the opportunity to enjoy joint sports results or simply the gratitude of your four-legged friend.

And so... HORSECARE knows everything about horse movements!

Over the course of several years, our friendly team has persistently created and improved the complex, which has its own very smart Artificial Intelligence, more than 7 different neural networks, space station-level mathematics and some of the most advanced sensors. The accumulated database, which contains tens of millions of records, allows, relying on BigData technologies, to make reliable and accurate conclusions about the health and condition of your horse.

Of particular note is our Early Lameness Detection System, designed to detect problems early, before they are visible to the naked eye. This allows you to take timely treatment measures and prevent the progression of lameness.

Lameness is a disorder in a horse's gait that can be caused by a variety of causes, such as injury, disease, or developmental disorders. It can lead to poor horse performance and more serious health problems.

The horse lameness early detection system works by measuring various gait parameters and then processing them using neural networks and Artificial Intelligence. To obtain data from a horse, a set of sensors is used that connect to a mobile phone and transmit the data necessary for analysis.

With HORSECARE you will always be one step ahead, providing your pet with a healthy and active life.

What does the project consist of?

The main element of the project is Artificial Intelligence, which we have located in the computing cloud along with a huge database that gives it information to think about. Right there, not far away, are his assistants, Neural Networks, who carry

out preliminary processing of data received from other elements of the project and put them into a database.



This part of the project is a huge underwater part of the iceberg that is there, but the average user is unlikely to interact with it.

What else is there?

Yes, these are SENSORS. There are 5 of them as standard (or there can be 6 of them, depending on the user's wishes). And you are holding them in your hands now. They are the eyes and ears of HorseCare, providing the information center with a wealth of data about your horse.



The sensors are very durable and will work even if they are thrown into sand, submerged in water, or lightly hit with a hammer. They require power to operate, so they have a battery inside. For recharging, a special cradle is provided, which immediately serves as a convenient storage case. The sensors start functioning when you remove them from the cradle, and turn off when you put them back.



On the right side of the cradle, on the bottom side, there is a standard connector for charging USB Type-C sensors.

The charger is NOT included in the delivery package.

The sensors can be charged with a standard USB Type-C, 5V charger with a current of at least 1A.

When the charger is turned on, the sensors in the cradle begin to blink with the LED located on the top of it, signaling the user about the charging progress.

When each sensor reaches 100% charge level, the LED stops blinking, indicating that the sensor is fully charged. Different sensors in the kit take different times to charge, since each sensor has its own built-in battery.

Thus, your sensors are always ready to provide accurate and timely information, ensuring maximum care for your pet's health.

What are sensors?

A sensor is a small, smart device that helps you collect data about your horse's condition and movement. On average, sensors can go without recharging for about 1 week. You can read information about how to see the remaining battery charge of the sensor later in this manual. Each sensor is individual and carries a QR code that allows you to distinguish one from another, as well as letters that determine the location of the sensor.

Here's what these symbols mean:

- FR – front right leg
- FL – front left leg
- HR – rear right leg
- HL – back left leg
- B – sensor, which is located on the horse's back
- R* (Rider) – an additional sensor that is mounted on the rider's body (not all versions of "HorseCare" work with an additional sensor. For additional information about the features of your particular set of sensors, contact your supplier).



1 Mobile application

One of the important elements of the project (and your main window into the world of the horse) is the “Horse Care” application.

It is with its help that you can start a workout and see its results. Through the application, our Artificial Intelligence will inform you about the condition of your pet, help you build the most effective training schedule, and also notify you of situations that require your attention to the horse’s health.

We would like to immediately point out that your version of “Horse Care” is strictly individual, and only you have data about the horse’s movements. That is why, after downloading the application, you need to enter data about the horse and “link” your set of sensors to this data. Thus, our Artificial Intelligence will be able to take targeted care of your horse and will inform you if dangerous or worthy of your attention changes are detected in the movements of your pet.

Below we provide instructions for installing, configuring and working with the mobile application.

1.1 Download

The application is available for mobile phones running Android operating systems (not lower than version 4.5) and iOS (not lower than version).

To download the Android application, follow the link:

<https://play.google.com/store/apps/details?id=com.horsehealthdatareciver>

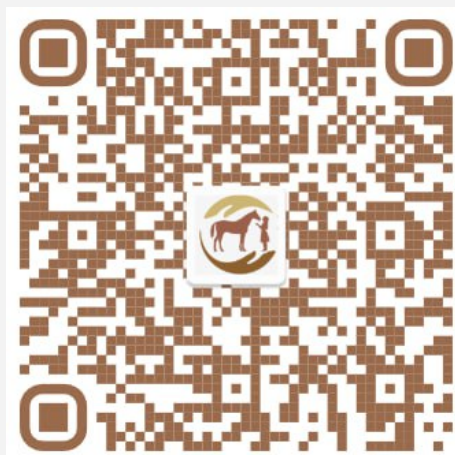
You can also scan the code. which leads to the application download page on Google Play.



To download the iOS application, follow the link:

<https://apps.apple.com/ua/app/horsecare-dr/id6475778907?l=uk>

You can also scan the code, which takes you to the app download page in the App Store.



1.2 Launching and registering an account

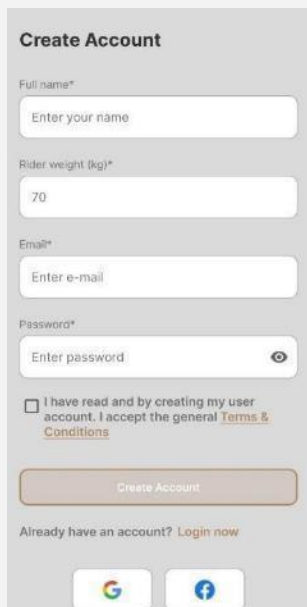
After installing and launching the application for the first time, the account login window appears:

A screenshot of the 'Horse Care' app's login screen. At the top is the 'HORSE CARE' logo. Below it is the title 'Login'. There are two input fields: 'E-mail' with a placeholder 'Enter e-mail' and 'Password' with a placeholder 'Enter password' and a toggle eye icon. Below the password field is a link 'Forgot password?'. A brown 'Login' button is centered below the fields. At the bottom, there is a link 'Not a member? Create account now' and two social media icons for Google and Facebook.

You must use your email address as your username, and your personal password created during registration as your password.

If this is your first time launching the application, then you first need to create a personal account in the system. To do this, click on the link "*Create account now*" and go to the account creation page.

When creating an account, you must fill in the required fields:



«*Full name*» - the name of the rider who will train the horse;

«*Rider weight (kg)*» - rider's weight in kilograms (this parameter will be used in the future when calculating the dynamics of the center of gravity;

«*Email*» - email as username. Email can be used to contact the user if password recovery is necessary.

«*Password*» - password for logging into your account. The password must meet security requirements - contain letters, numbers and special characters.

After filling out all the fields, you must read the license agreement for using the program and accept the user agreement by checking the appropriate checkbox. After this, the user must click the "*Create Account*» and complete account creation.

If the profile is successfully created, the user will receive a letter to his email address specified during registration notifying him of the creation of an account.

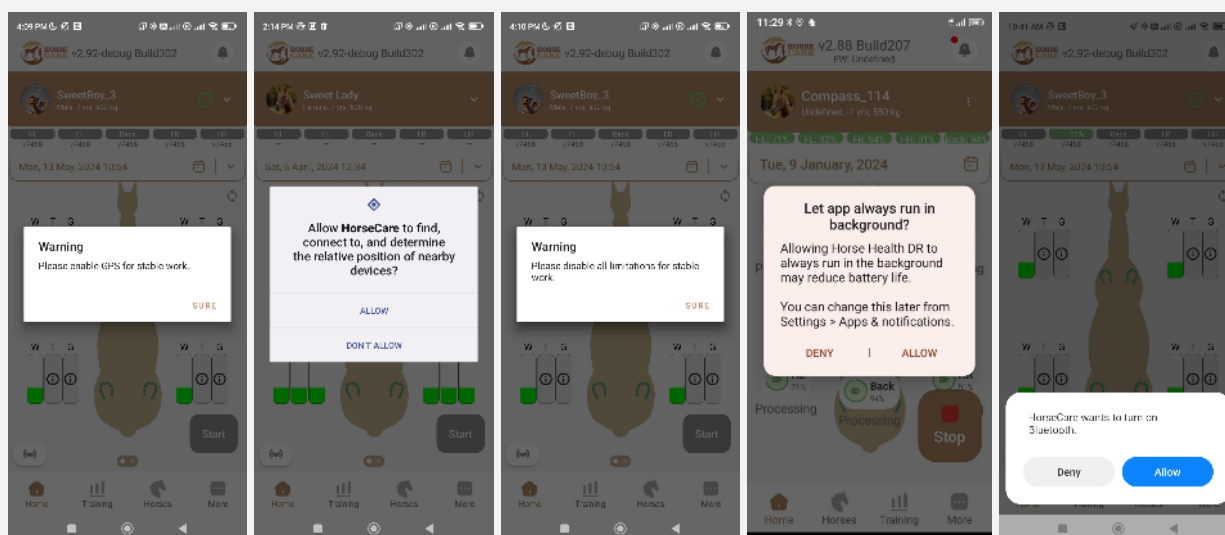
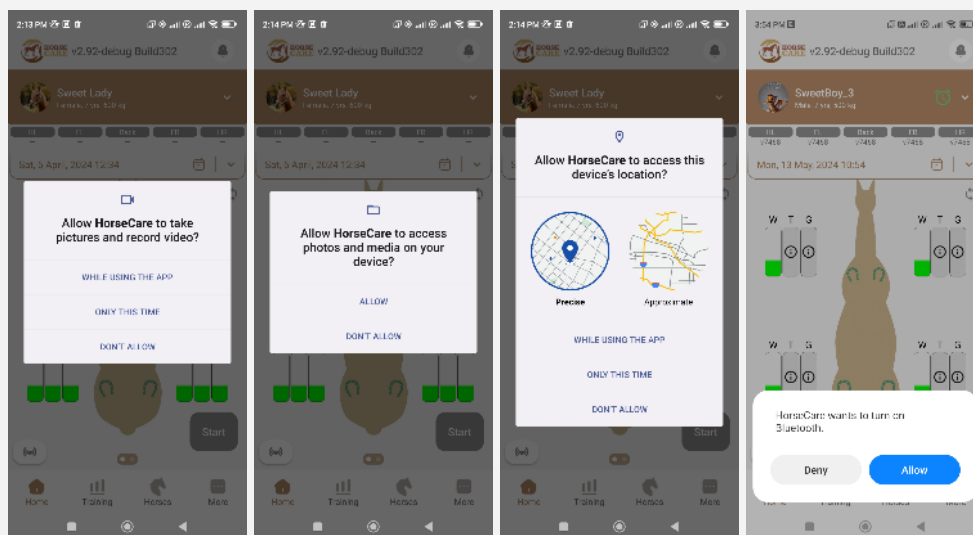
In parallel with creating an account for you on the resource www.horsecare.si A personal account will be created, where you can log in using the login and password you used earlier when creating your account.

To simplify the account registration process, the user is given the opportunity to link their credentials from their Google or Facebook profiles. To do this, he can click on the appropriate buttons.

Depending on the characteristics of the mobile phone and the operating system installed on it, the application may request additional permissions when first launched. Since the application significantly uses phone resources to operate, the following requested permissions must be provided for the application to function correctly:

- permission to access the camera to take pictures and video;

- permission to access photo and media storage on the device;
- permission to access geolocation to determine the location of the device;
- permission to work with Bluetooth to connect to sensors;
- permission to turn on GPS (if it is turned off);
- permission to search and connect to nearby devices;
- Permission to disable power-saving mode to keep the application running continuously.



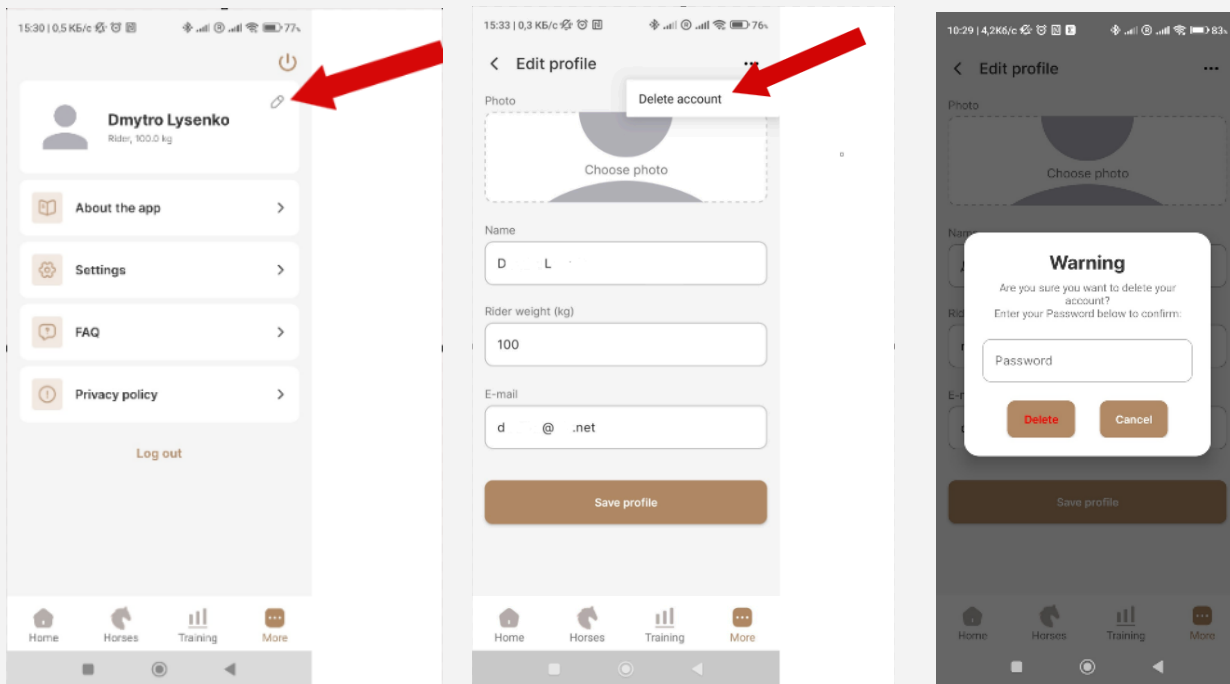
After granting all permissions, the user gets access to the main screen of the mobile application.

1.3 Account deletion

If desired, the user can delete his account and stop using the application.

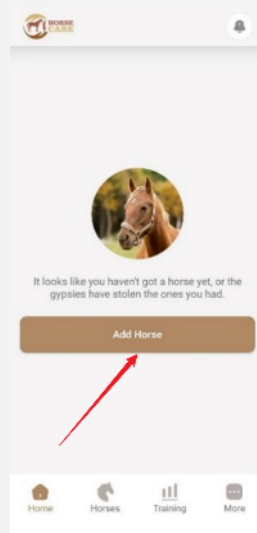
To delete an account, you need to go to the **“More”** and select edit account (click on the pencil symbol). After this, the user card will open. In the card

you need to click on the three dots in the upper right corner and then select *"Delete account"* After this, the application will ask for a password to confirm account deletion.



2 Adding a new horse

In order to be able to use the "HorseCare" complex, when you first start it, you should add to the system data about the horse (or several horses) with which you will work. To do this, click on the button *"Add Horse»*



After clicking the add horse button, you will be able to enter a window for entering the basic parameters of the horse:

«*Photo*» - select a photo from the gallery.

ATTENTION !!!

Real-time photography is not possible!

The photo size should be approximately 800*250 pixels.

«*Name*» - enter the horse's name;

«*Age*» - enter the age of the horse;

«*Horse weight (kg)*» - it is desirable to have the most accurate weight of the horse;

«*RFID*» - unique RFID number of the horse

(BE SURE TO ENTER THE REAL RFID OF THE HORSE. IT CAN BE FOUND IN THE HORSE PASSPORT);

«*Gender*» - gender of the horse (mare, stallion, gelding);

«*Disciplines*» - sports disciplines in which the horse can take part. It is possible to simultaneously select several disciplines.

Dressage – dressage;

Jump - competition;

Horse racing – horse racing;

Western – Western sports;

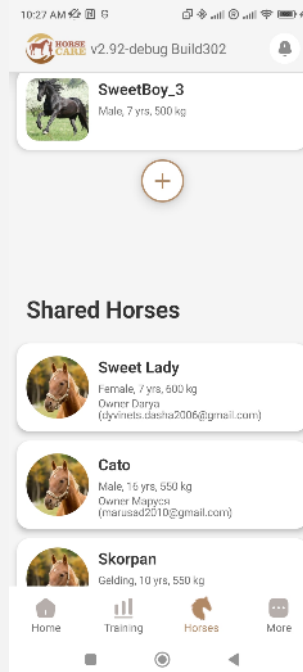
Triathlon – triathlon;

Vaulting – vaulting;

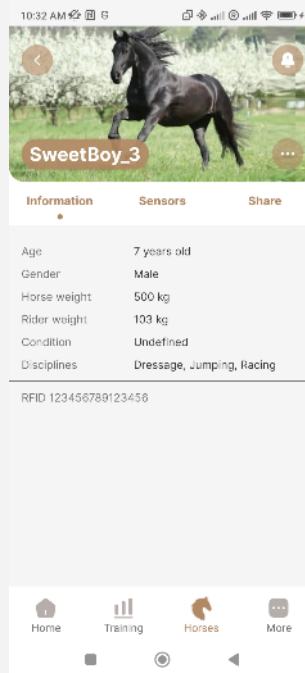
Driving – sled competitions;

Hobby – if the horse does not participate in professional sports disciplines but is simply a hobby for its owner.

After filling out all fields correctly, click on the *"Add Horse"* after which the horse will appear in the list of registered ones in the application (in the application section **"Horses"**). If desired, the user can add several horses to the application; for each of them, the entire list of parameters must be re-entered.



When you click on a horse's account, its information card is displayed.



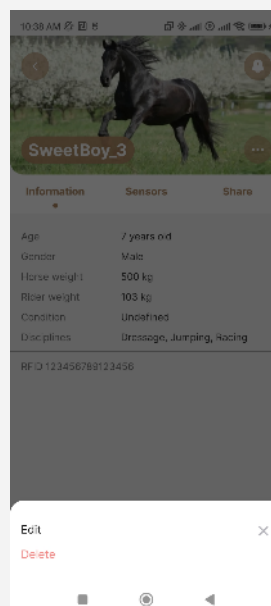
The card contains three bookmarks: «**Information**», «**Sensors**», «**Share**»

Tab "**Information**» - displays the basic parameters of the horse saved at the registration stage;

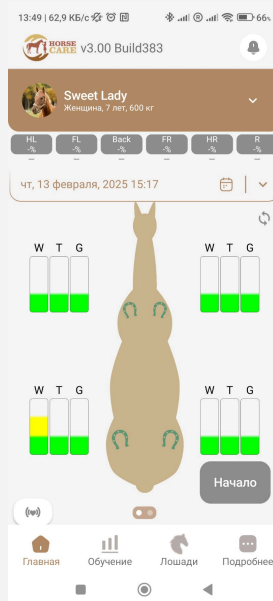
Tab "**Sensors**» - allows you to bind and edit sensors for a horse;

Tab "**Share**» - allows you to share the results of this horse's training with other users of the system - for example, with a trainer, a veterinarian, or with anyone to whom you would like to provide this information.

By clicking on the three dots to the right of the horse's name, you will be able to edit information about the selected horse, or completely delete the horse account you created.



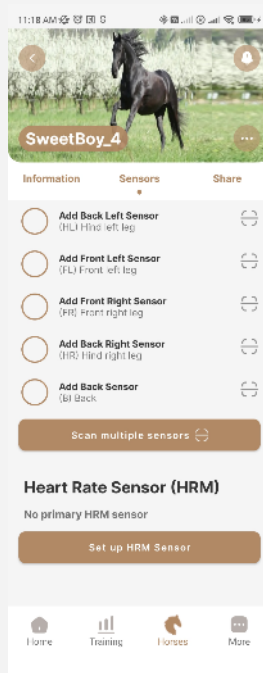
In the application section "**Home**» a registered horse will appear that has no recorded training yet.



3 Linking sensors

3.1 General information

For the system to function fully, each horse must be assigned a set of sensors. A set of sensors can only be associated with one horse with its unique RFID code. This code must be taken from the horse's passport and copied very carefully into the horse's card. To assign sensors, you need to go to the "**Sensors**" in the section "**Horses**».



For each horse, the system has 6 sensors:

«HL» - Hind left leg - rear left leg sensor;

“FL” - Front left leg - front left leg sensor;

“FR” - Front right leg - front right leg sensor;

“HR” - Hind right leg - rear right leg sensor;

“B” - Back - back sensor.

“HRM” - Heart Rate Sensor (HRM) - heart rate sensor.

The housings of the sensors, which are designed for installation on the legs and back of the horse, look the same; each sensor is marked with a designation of the location of the sensor and a unique QR code.

**ATTENTION !!! Each set of sensors can be linked
ONLY FOR ONE HORSE!!!**



A QR code is needed to automatically link a specific sensor to a horse. A set of sensors for one horse is supplied in a special cradle.



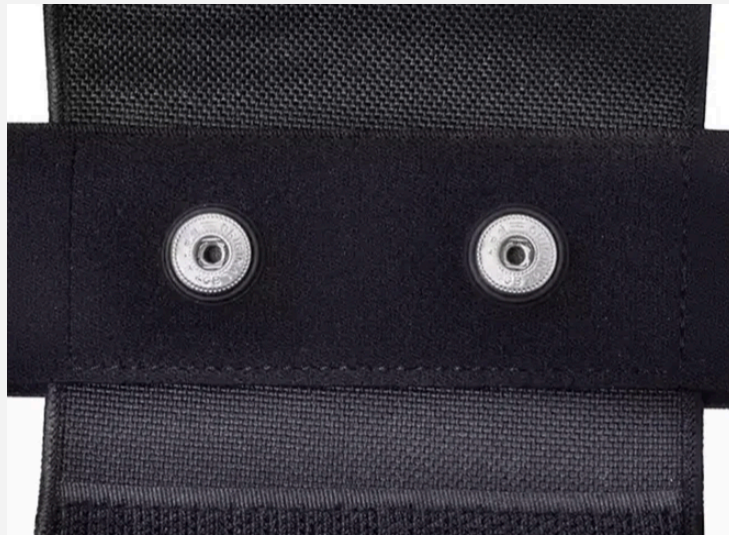
There are 5 sensors inside the cradle. On the bottom surface there is a QR code for group binding of sensors. On the side surface of the cradle there is a connector for charging sensor batteries.

ATTENTION !!! To bind, the sensors must be removed from the cradle and lie on the table!!!

After successful scanning, the application automatically captures information from the QR code, communicates with the sensor, reads its unique number recorded in the Bluetooth communication interface and, if the numbers are correct, fills in the sensor ID input field.

This procedure allows you to cut off obviously faulty sensors and avoid re-sticking stickers between sensors.

The heart rate sensor is designed to monitor the horse's heart rate (HR) during exercise. Changes in heart rate can alert the horse owner to potential problems, whether there are signs of injury, illness or fatigue.



Characteristics	
Model Number	HR100
Origin	Mainland China
Measurement unit	piece/pieces
Each pack	1
Product name	horse heart rate monitor
Function	detect heart rate
Certificate	CE Rohs
Material	Nylon, ABS+Nylon
Length	100-165cm

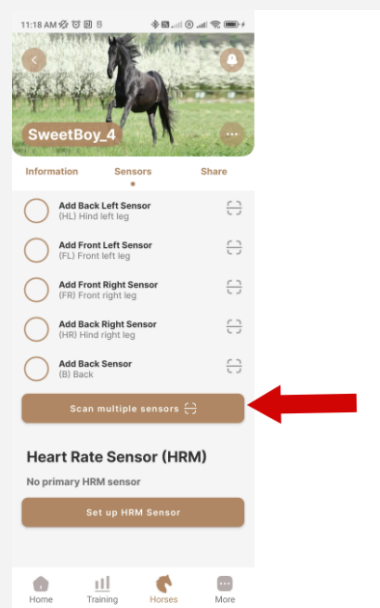
At the customer's request, a special rider sensor can also be supplied.



The rider sensor must be attached to the body (body) of the rider and is designed to collect data about the movement of the rider on the horse. In the future, riders, after analyzing the data received from this sensor, can make adjustments to their behavior on the horse during training, thereby improving overall training performance.

3.2 Group binding of sensors

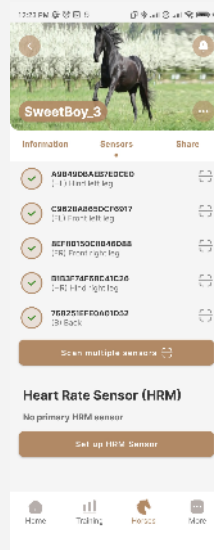
To speed up the process and avoid errors when binding sensors, the application provides the ability to simultaneously bind all sensors. To do this, the user must go to the “Horses” section. Next, select the horse for which you need to attach sensors and go to the “Sensors” tab. For group binding you need to click on the button “*Scan multiple sensors*».



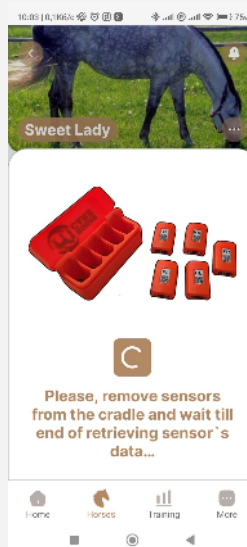
After this, you need to bring the QR code, which is located on the bottom surface of the cradle, to the camera.



After scanning this code, the application will automatically fill in the ID entry fields for each of the five sensors (4 legs and back).



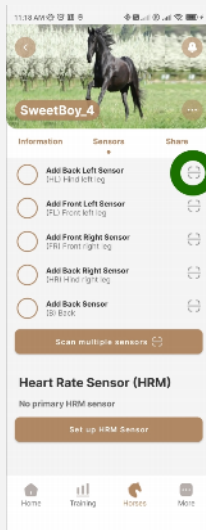
Next, the user needs to click on the button *“Save sensors”*, after which all sensors will be linked to the selected horse. The application will be able to save sensors only if they are all removed from the cradle - a corresponding warning is displayed on the screen about this.



3.3 Binding a single sensor

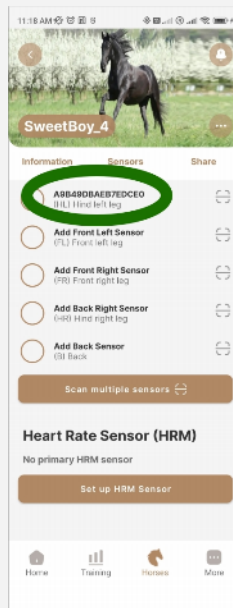
Binding a single sensor may be necessary if the complete sensor fails and is replaced with another.

To bind the sensor, you need to press the button to turn on the camera and scan the QR code:



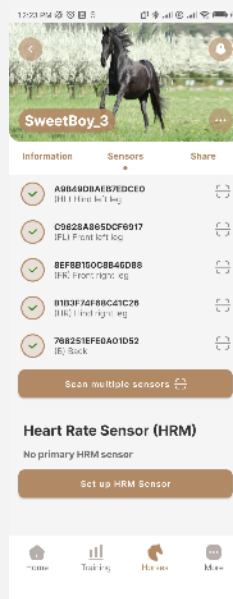
After this, you need to scan the QR code from the back of the sensor.





If necessary, these steps must be repeated for all six sensors: 4 sensors for the legs and 1 sensor for the back, 1 sensor for the rider.

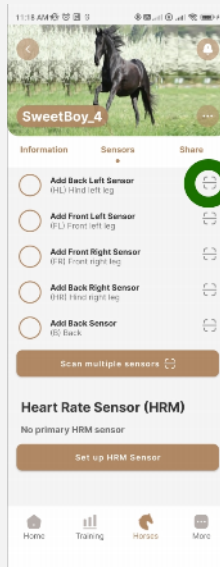
After completing the sequential scanning of all codes, the user needs to click on the *“Save sensors”* after which all sensors will be linked to the selected horse.



3.4 Selective binding of sensors

The application also has the ability to selectively link sensors (for example, if one of them fails or is lost)

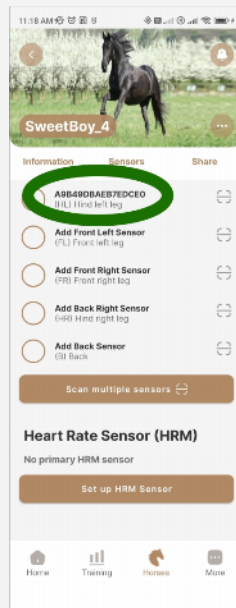
In order to replace one of the already linked sensors, the user needs to click on the scan button to the right of the name of the sensor that needs to be replaced (similar to binding a single sensor in paragraph 4.3).



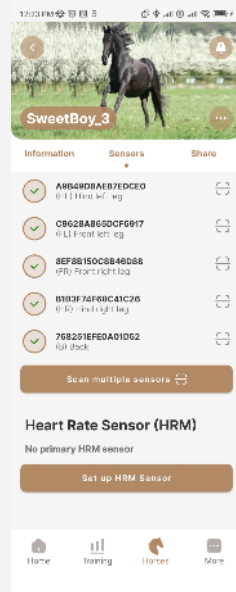
The application launches the phone's camera and indicates which sensor needs to be brought to the camera to scan the QR code.



After successfully scanning the code, the application automatically adds information about the sensor and fills in the ID field.

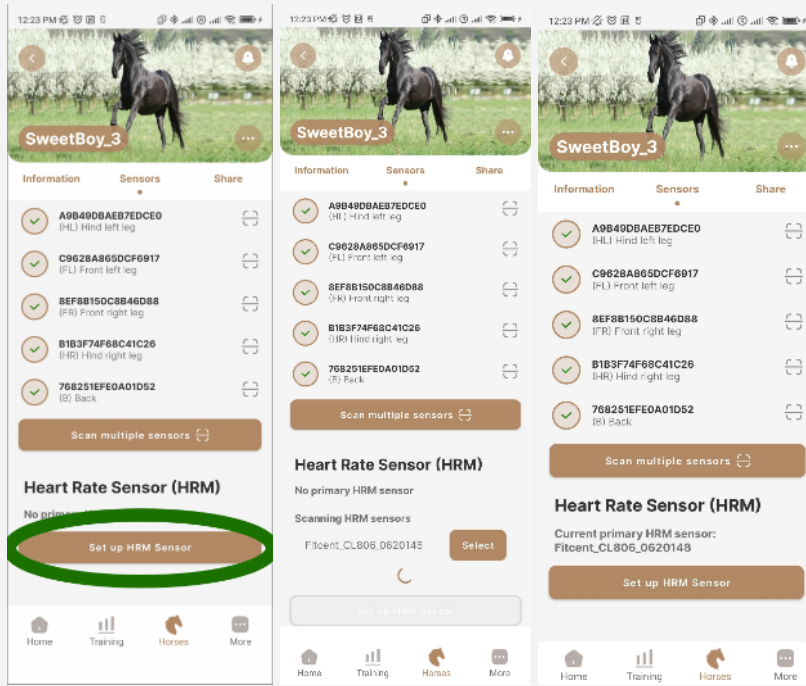


After replacing the desired sensor, the user needs to press the *“Save sensors”* and confirm the new binding of all sensors.

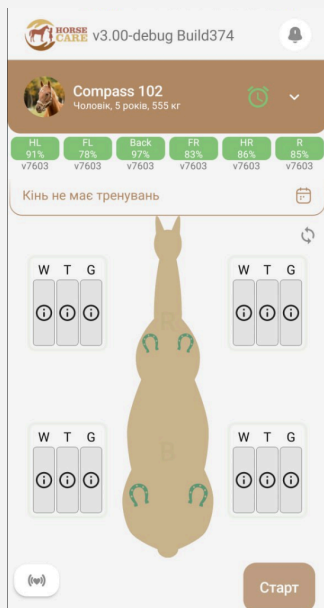


3.5 Linking a Heart Rate Monitor (HRM)

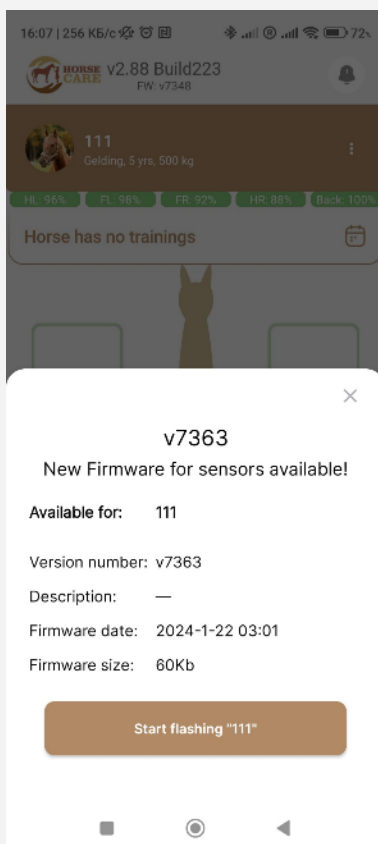
In order to bind the HRM sensor to the program, you need to activate the sensor according to the instructions for the sensor itself, and then click on the *“Set up HRM Sensor”* button. After this, the program scans active sensors and, if detected, displays the found sensor on the screen. you need to select the sensor and press the *“Select”* button.



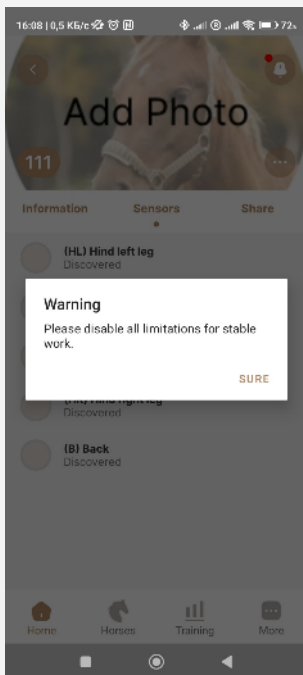
3.6 Sensor firmware update



If a new version of sensor firmware is detected on the system server, the mobile application will issue a warning about the need to update the sensor firmware.



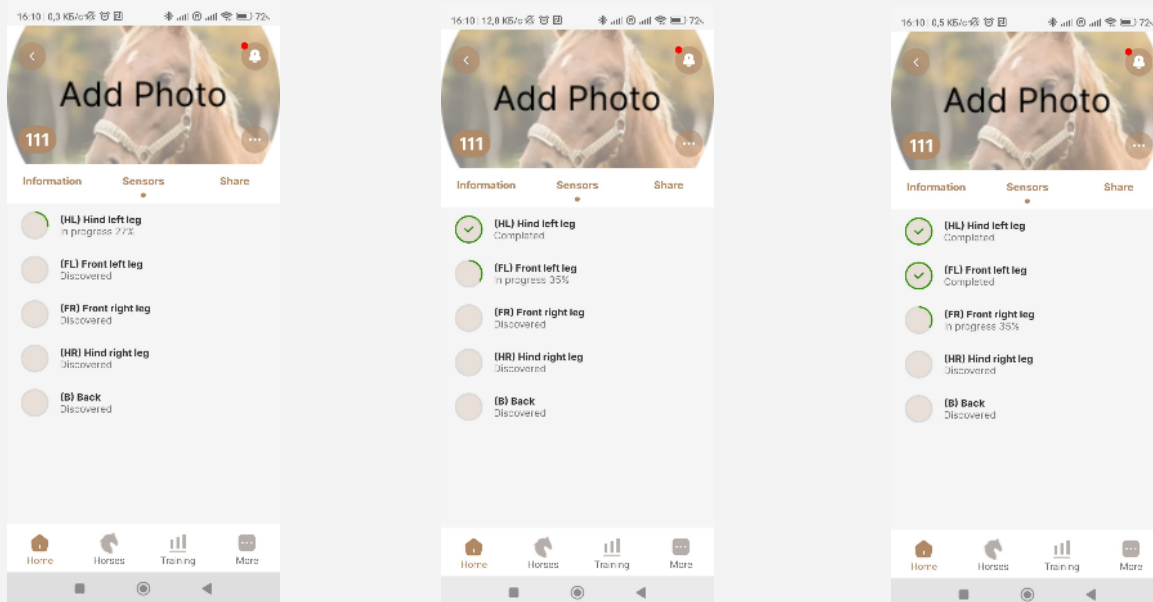
In case user presses the button *“Start flashing”* then the mobile application will first ask the user for permission to work without restrictions (in order to avoid the application going into sleep mode, unloading from memory, and so on).



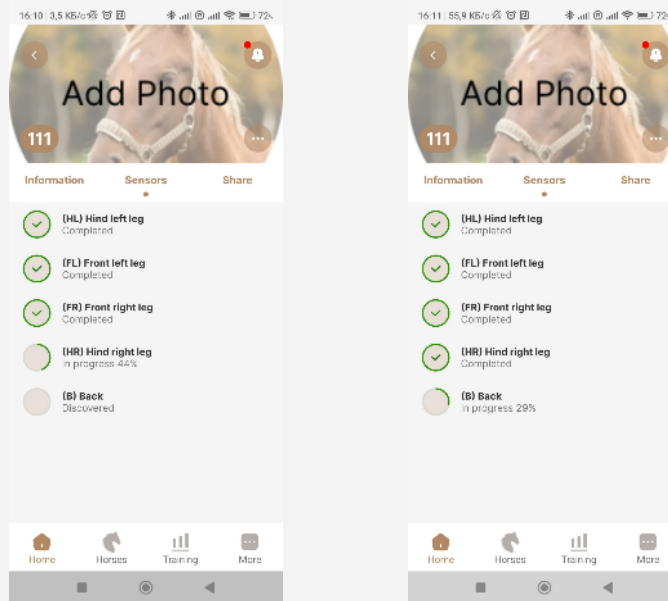
After the user gives the application maximum priority for energy saving,

The application will first download the current version of the sensor firmware from the server to the phone memory. /After the current version is saved to the phone,

the



application will begin sequential firmware updates on all sensors. The progress of the firmware update is displayed on the screen.



4 Installing sensors on a horse

4.1 Installation of sensors on the legs and back

The delivery set includes directly the sensors installed in the cradle and a set of special belts. The belt has a latch for the sensor. Includes a total of four snap straps and one additional back clip. The user must remove the sensors from the cradle and secure them in the appropriate latches on the straps and the back latch.

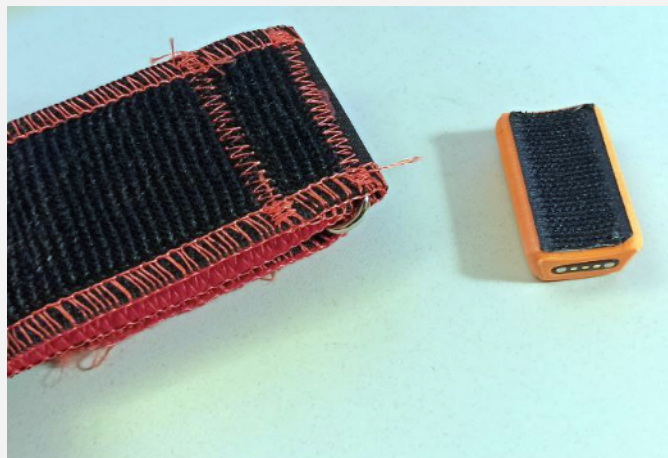


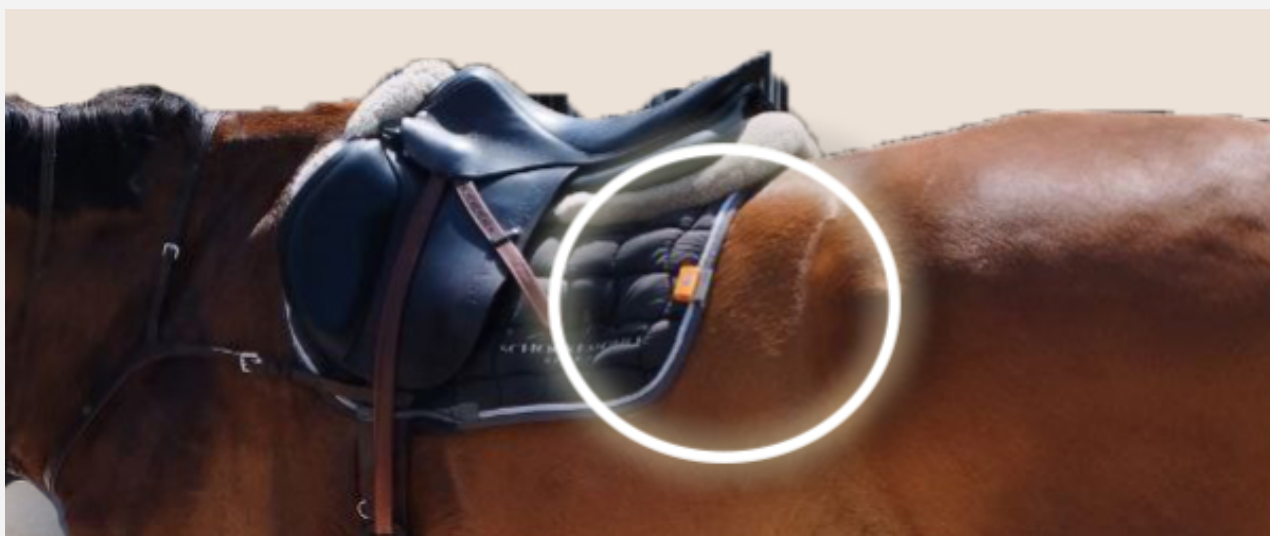


Once the sensors are securely attached to the latches, the user should tie the straps to the horse's legs according to the markings on the sensors (HL, FL, FR, HR) and secure the fifth sensor latch (B) to the saddle pad.

The sensors can be attached arbitrarily, but on the legs they must be installed above the fetlock joint. They can be attached either to the bare leg of a horse (which is not scary, since the straps supplied in the kit have a special soft coating that is pleasant for the animal), or over boots, bandages and other protective elements of equipment.

The user can be supplied with another option for mounting the sensor - with plastic Velcro. This design of the sensor also securely attaches the sensor housing to the belt.





The back sensor is attached to an arbitrary location on the voltrap, preferably as high as possible on the horse's back.

For mounting on a volt-rape, there is a plastic clip into which the sensor is inserted.



4.2 Installation of the HRM heart rate sensor

The heart rate sensor is installed on the girth, the electrodes are attached to the side of the girth at the point of maximum contact with the horse's body.





For more reliable contact between the electrodes and the horse's skin, it is necessary to use a special medical electrically conductive gel (an example sample is shown in the figure).





This is what a complete set of sensors looks like on a horse.

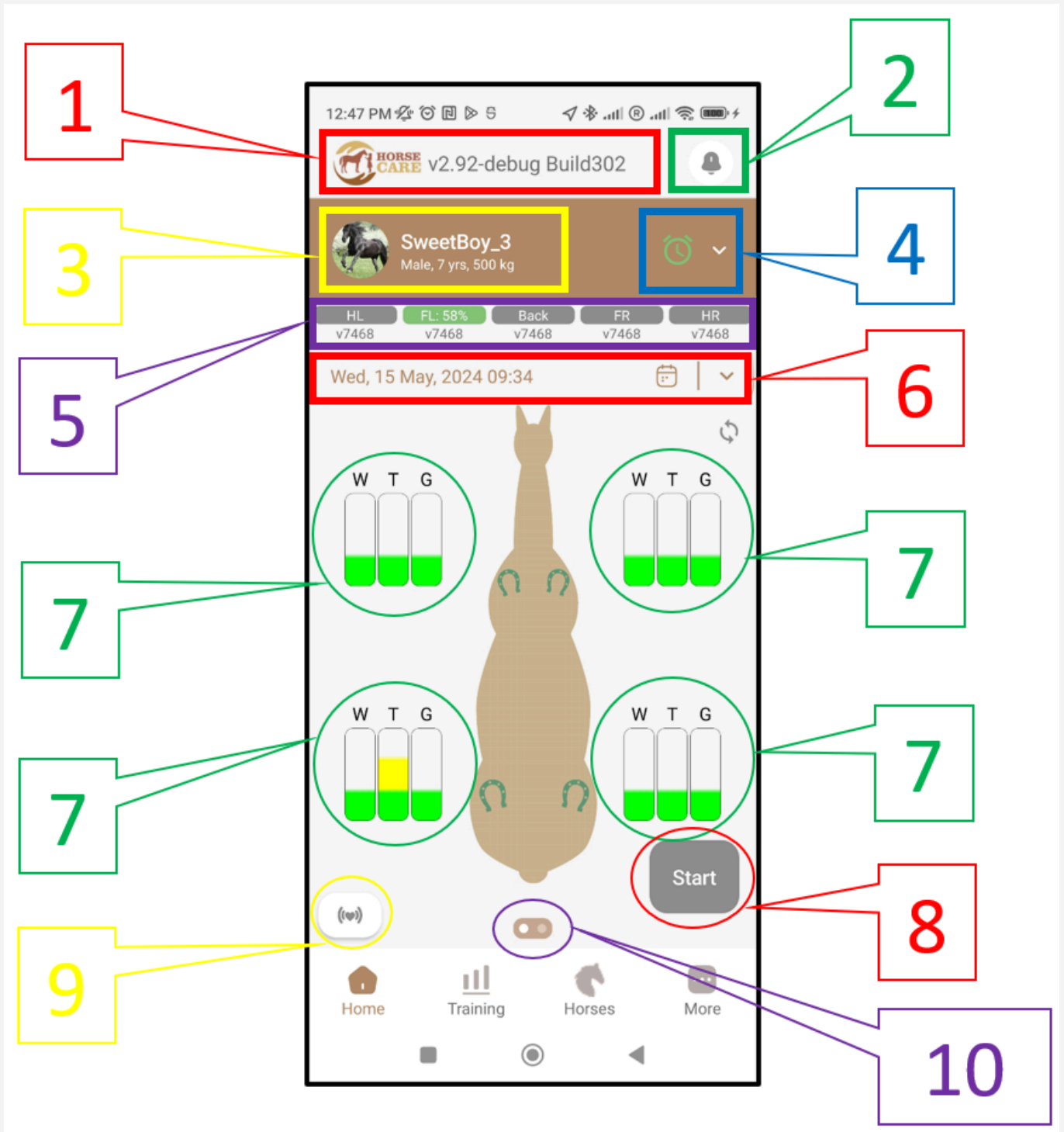
It is recommended to place the rider sensor in the rider's pocket or attach it to his equipment in such a way that it is rigidly connected to the rider and repeats all his movements. For this purpose, a clip is provided, similar to the clip for attaching the sensor to a voltage pad.



5 Training

5.1 Main Workout Screen

When you start the application, the main window is displayed on the screen. The window shows the main elements with which you can quickly obtain information about the past training and proceed to the analysis of the last or several previous trainings.



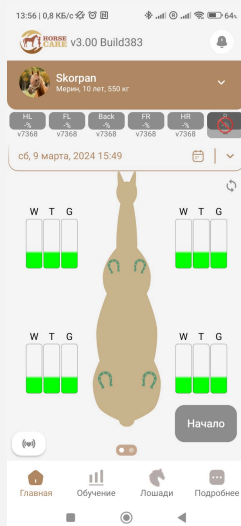
1 - the current version of the application is indicated;

2 - program notification button;

- 3 - the horse's name and some of its parameters (gender, age, weight);
- 4 - button to call up the subscription menu and display the status of the current subscription;
- 5 - field in which the statuses of the sensors are displayed. For each sensor its name and software version are shown. The color indicates the battery charge level of the sensor;
- 6 - date and time of the last training session. When you click on the "down" arrow, a list of workouts for the selected day is shown and provides the opportunity to select the workout of interest;
- 7 - information for each of the sensors. Explanation of information is given in paragraph 6.2;
- 8 - "START" button that starts the workout;
- 9 - a symbol that shows the horse's heart rate during training;
- 10 is a switch that provides access to detailed training analysis. A description and explanation of the detailed analysis is given in section 7.

5.2 Checking sensor connections

Before starting a workout, the user must ensure that the sensors are active and connected to the application. To do this, you need to switch to the main section "**Home**". The screen should display a silhouette of the selected horse around which the sensor symbols are placed. The color shows the analysis of the detected changes compared to previous training sessions.



The letters indicate the horse's gaits that the program can recognize:

W – Walk (step)

T – Trot (lynx)

G – Galop

The color shows the analysis of changes in the horse's gait:

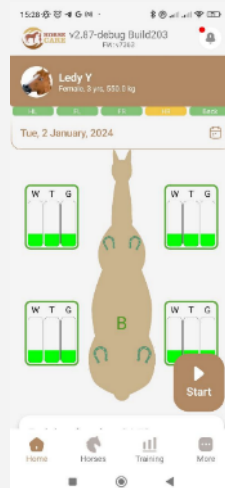
GREEN – indicates no changes in gait;

YELLOW – indicates small non-critical deviations from the norm in the horse's gait;

RED – indicates serious changes in gait and may be a signal to contact a trainer and veterinarian.

While the sensors are not connected to the application - the "*Start*» is not active and cannot be pressed.

The user must wait until the green frame around the sensors begins to flash and the "B" symbol on the horse's back begins to flash.

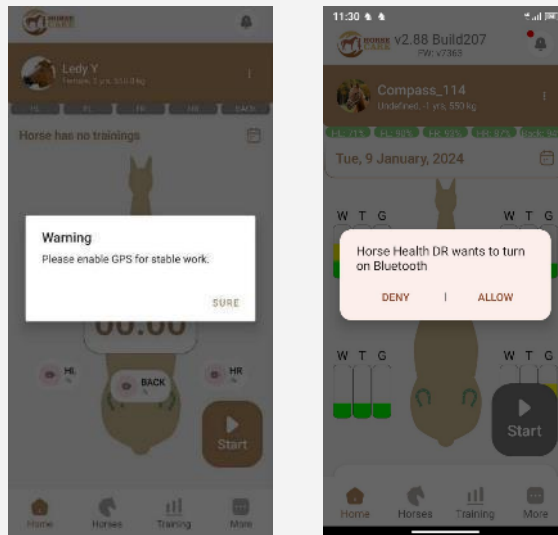


After this, the button "*Start*».

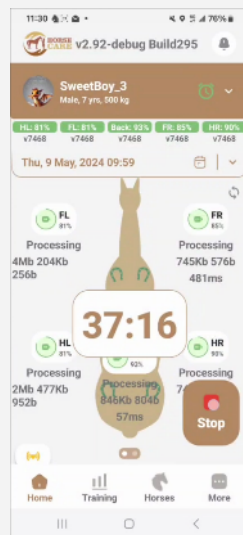
5.3 Start of training

To start the workout, the user must press the "*Start*».

The application will once again check that Bluetooth and GPS are turned on. If the user forgot to turn them on on his phone, the application will remind him to turn them on.



After the start of the workout, the application screen displays the workout time timer and service information from the sensors.



The program checks the connection of each sensor and signals this as follows:

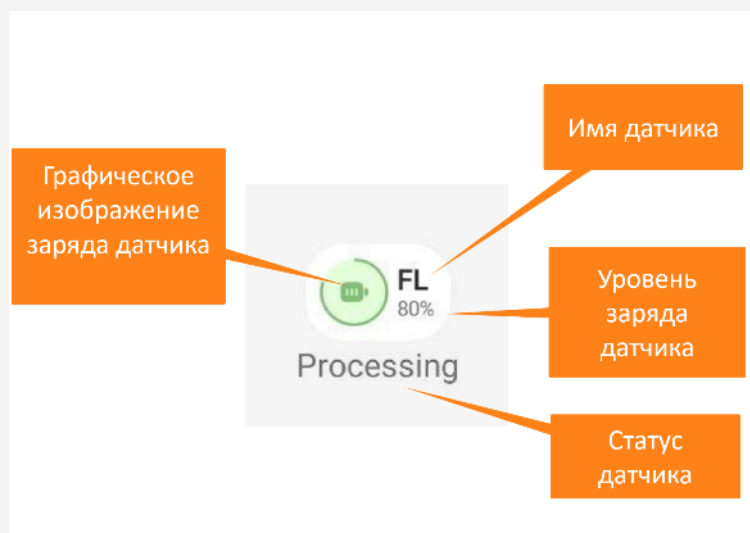
Connection status – Processing/Disconnect – sensor connected/disconnected;

GREEN – charge level is approximately 40%-100%, should be enough for about a week in standby mode;

YELLOW – charge level is approximately 20%-39%, should be enough for one workout;

RED – charge level is approximately 0%-19%, the sensor needs to be charged immediately;

GREY – no data on charge level.

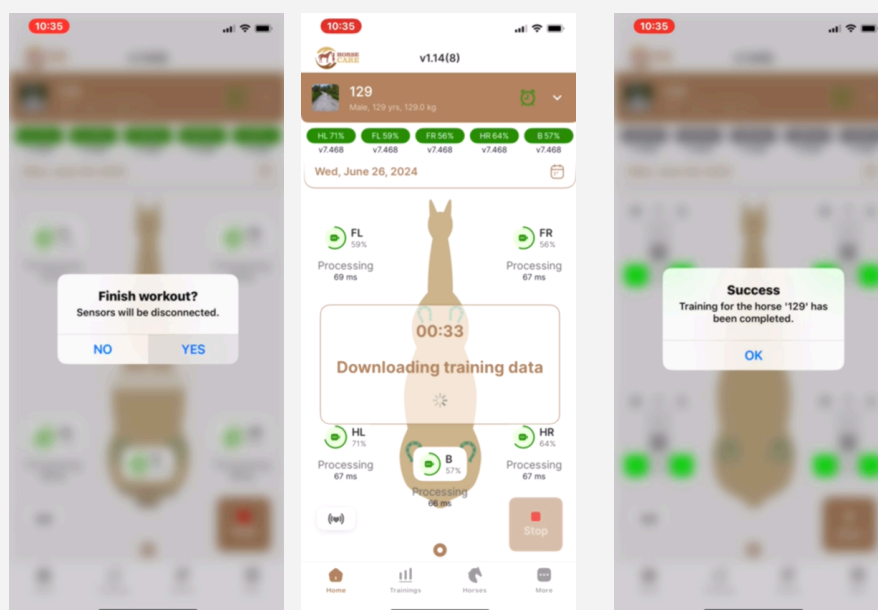


While the training is in progress, the user can keep the phone in a locked state. During training, the phone can be near the sensors in the rider's pocket, or it can be left anywhere (for example, in the locker room, in the car, etc.)

During the workout, all data is saved in the internal memory of each sensor and at the end of the workout, after the sensors are connected to the application again, all data will be automatically transferred to the application.

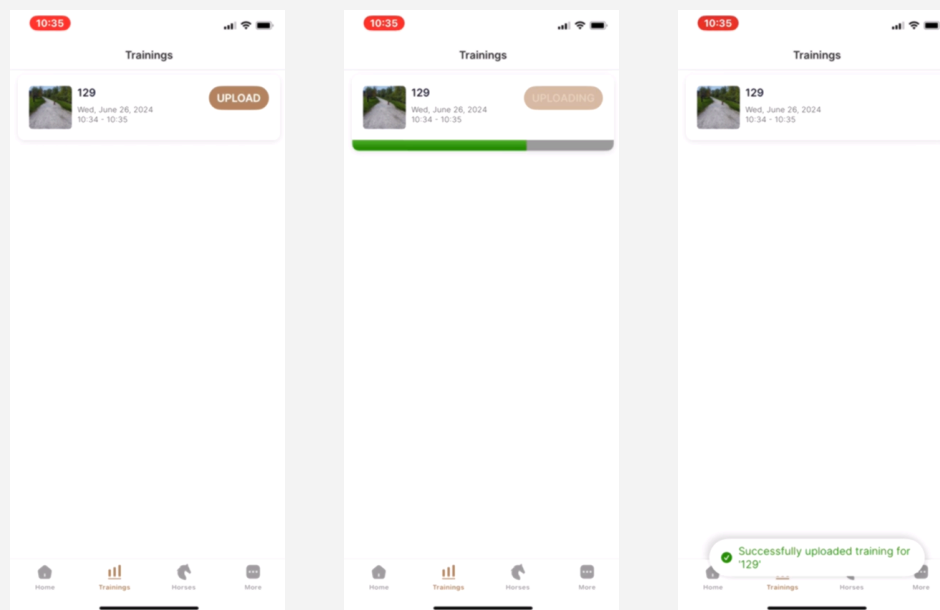
5.4 End of training

To end the workout, the user must click on the "Stop". The program provides protection against accidental presses, so if the user is absolutely sure that he wants to complete the workout, he must confirm by pressing again.



After re-confirmation, the application commands to complete data collection on the sensors and downloads complete statistics of the completed training from the

sensors to the mobile phone. The training ends with the formation of a complete training dataset in the application. For the convenience of the user and for the purpose of saving data, the program provides a manual choice of uploading training datasets to the server. Transferring data to the server takes some time, this is due to the fact that the application needs to transfer a fairly large amount of data. Transfer time may depend on the performance of the phone, the amount of data in the training, and the quality of the communication channel with the server. To start uploading data to the server, you need to go to the program section “*Training*” and press the button “**UPLOAD**”.



The process of uploading data to the server is displayed on the screen and if the upload is successful, the user is given a corresponding message.

The uploaded data is saved on the server and can be used for subsequent analysis and provision of training analysis results to all interested parties.

6 Training analysis

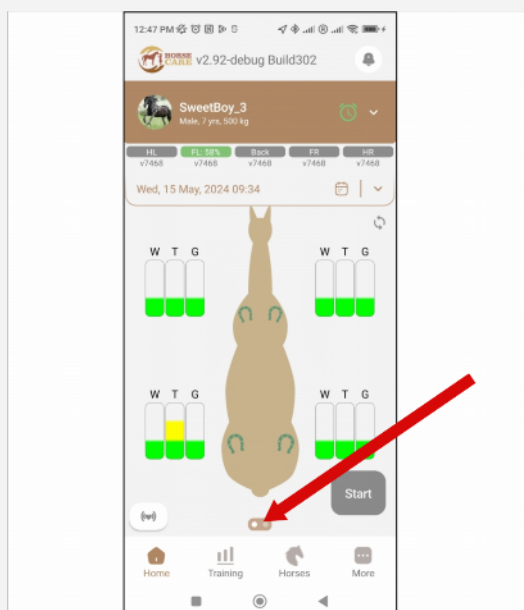
6.1 Analysis of the last training session

In the mobile application, the user can view only basic, abbreviated workout results. Mobile analysis should attract the user's attention and, if any problems are diagnosed, prompt the user to take a more detailed look.

A detailed analysis of training is much more convenient to carry out not on a phone, but on a personal computer with a large screen and a much larger number of analyzed parameters.

Access to detailed analysis is provided in your personal account on the resource <https://account.horsecare.si/>

In the mobile application, the results of the last workout are displayed on the main screen of the application "**Home**". The results are presented on two screens: the first main screen shows brief analysis results, the second screen, accessed using a switch at the bottom of the screen, shows more detailed and visual training results.



On the main screen, the lameness detection of the selected horse is shown in color (color interpretation is described earlier in paragraph 6.3). If yellow or red color is found among the detection parameters, then the user should pay close attention to this horse and contact a trainer or veterinarian.

6.2 Detailed training analysis

On the second screen, the user can view the main visual quantitative parameters of the training.

The parameters are grouped into two large sections:

- the first section contains statistics of the past training in numerical form;

- the second section contains statistics of the past training in the form of pie charts;






app title on workout screen

field with numerical training parameters

field with graphical training parameters

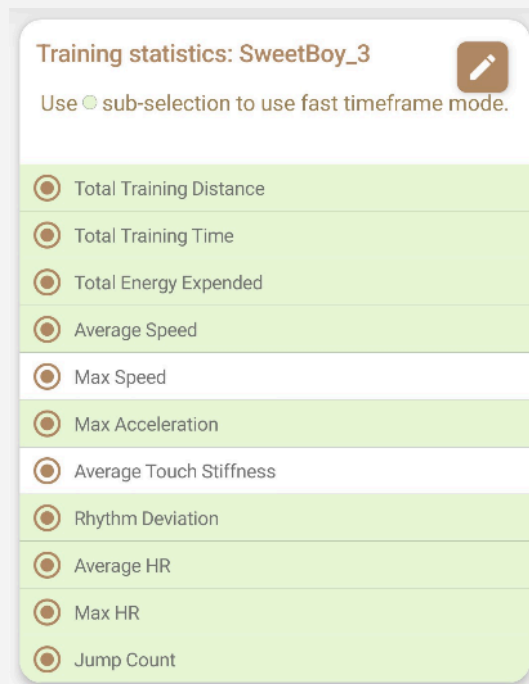
6.3 Numerical training parameters

Numeric parameters are located at the top of the screen and are represented by lines with values indicated opposite them.

<p>Training statistics: SweetBoy_3 </p> <p>Use <input type="radio"/> sub-selection to use fast timeframe mode.</p>	<p>Parameter header (with a button to edit the list of displayed parameters)</p>
<p>Total Training Distance 4476m</p>	<p>total distance traveled</p>
<p>Total Training Time 33:02</p>	<p>total training time</p>
<p>Total Energy Expended 2295.76kJ</p>	<p>total energy expended</p>
<p>Average Speed 2.26m/sec</p>	<p>average movement speed</p>
<p>Max Speed 7.04m/sec</p>	<p>maximum movement speed</p>
<p>Max Acceleration 8.24m/sec²</p>	<p>maximum acceleration</p>
<p>Average Touch Stiffness 79.87</p>	<p>medium touch hardness</p>
<p>Rhythm Deviation –</p>	<p>deviations from the rhythm</p>
<p>Average HR  83 GPS</p>	<p>average heart rate</p>
<p>Max HR  196</p>	<p>maximum heart rate</p>
<p>Jump Count 11</p>	<p>number of jumps</p>
<p>Open in time frame</p>	<p>open a diagram of several workouts</p>

In order not to clutter the screen with a lot of information, the user can hide parameters that are not of interest to him.

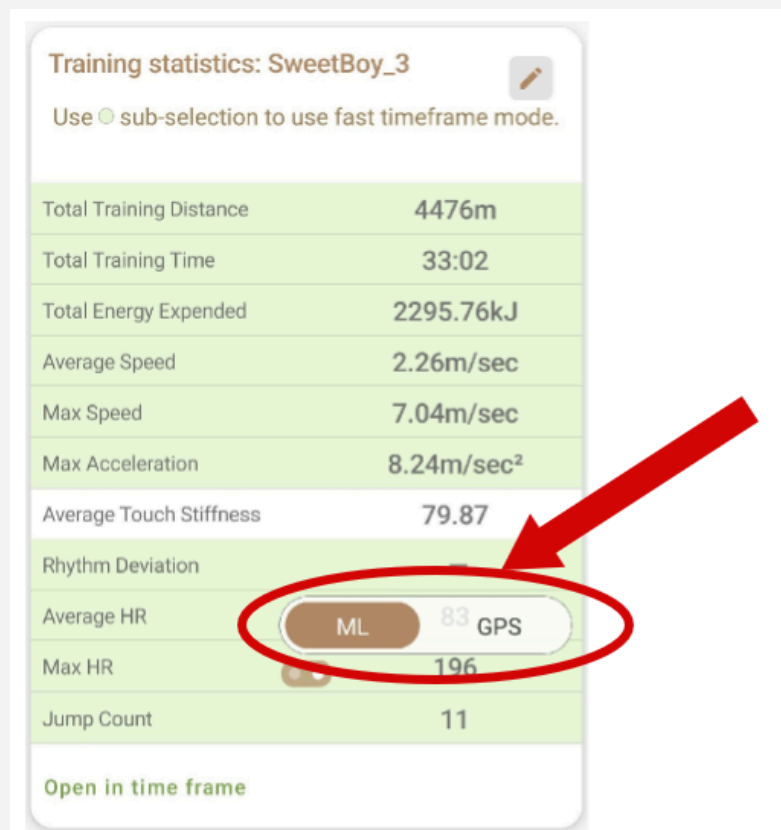
To do this, click on the pencil image and select the positions that should be displayed on the screen.



The user can choose one of two methods for calculating parameters:

ML - based on the analysis of the gyroscope and accelerometer in each of the sensors;

GPS - based on the analysis of data from GPS satellites/

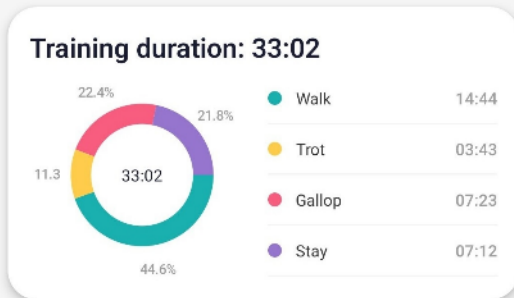


6.4 Graphical workout options

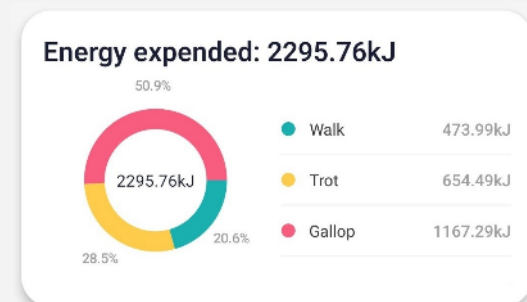
The graphical parameters are located below the numerical ones and represent several pie charts.

The pie chart allows you to more quickly and clearly evaluate your training session.

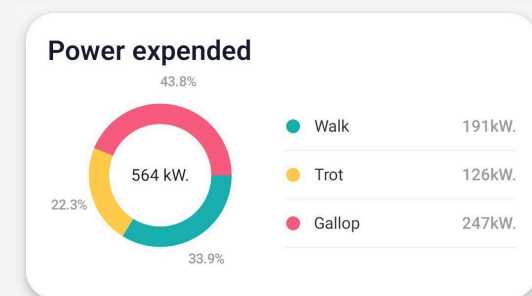
Graphic options include:



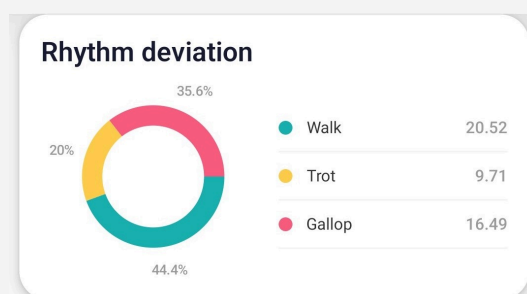
«*Training duration*» - duration of training. Shows the total duration of training in minutes and the proportional division of the total training time between the three gaits: walk, trot and canter and rest.



«*Energy expended*» - energy expended. Shows the total energy expenditure of the horse during the last training and the proportional division of energy expenditure between the three gaits: walk, trot and canter.

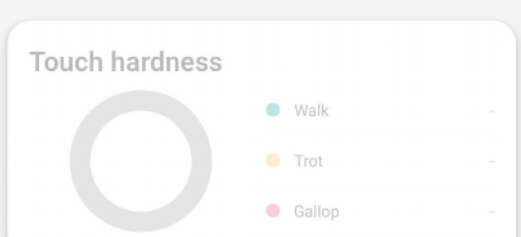


«*Power expended*» - power expended in the last workout. Shows the total power expenditure in the last workout and the proportional division between the three standard gaits: walk, trot and canter.



«*Rhythm deviation*» - rhythm deviations for each of the defined gaits.

Estimated in conventional units. The lower the number, the more stable the rhythm when moving with a certain gait.



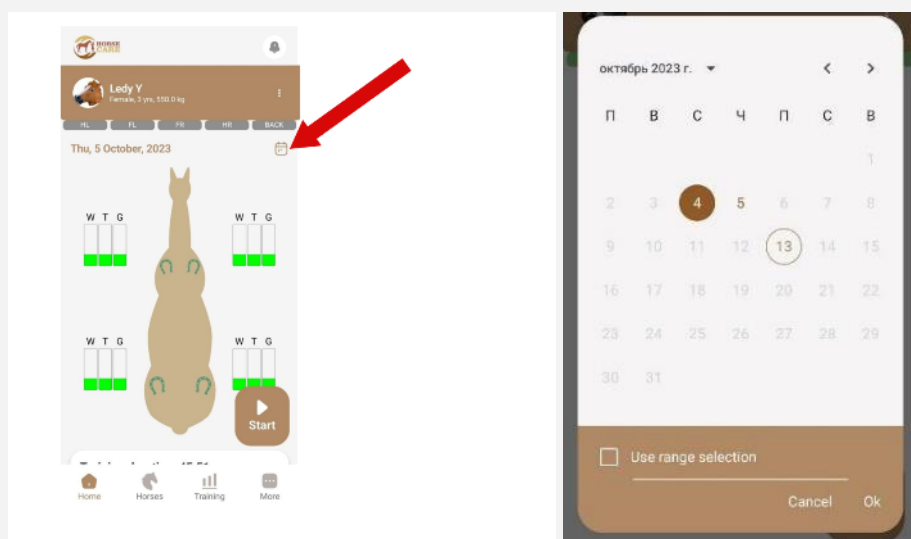
«*Touch hardness*» - Touch hardness. Determined in conventional units at the moment the horse lands.

UNDER DEVELOPMENT

6.5 Selecting a training date and choosing a horse

The user can view the analysis of not only the last workout, but also the analysis of any workout that is saved on the system server.

To do this, click on the calendar icon to the right of the training date display.

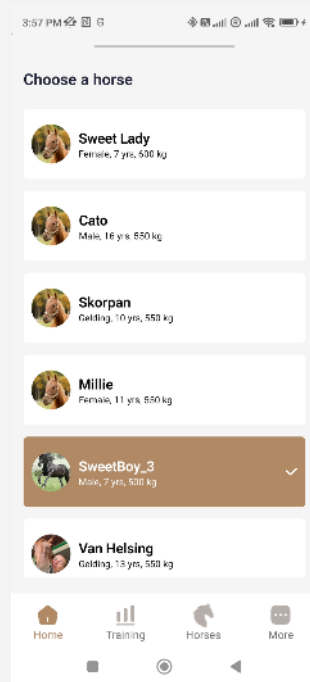


After this, a calendar image will appear on which you can select the training date you are interested in.

The current date in the calendar is indicated by a transparent circle, the dates on which the server has information about training sessions are indicated in bolder font and highlighted in font color. The date that the user selects for analysis is highlighted with a filled circle.

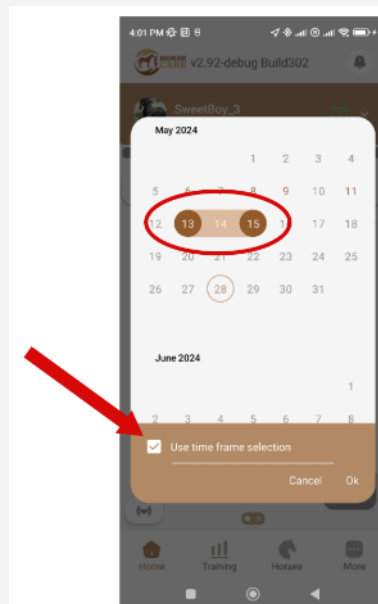
After the user has selected the date he is interested in, he must confirm the choice by pressing “*OK*” After this, the training data is downloaded from the server to the application memory and displayed on the screen.

If several horses are registered in the application, the user can select the horse whose training he wants to view. To do this, the user must click on the horse's name at the top of the main screen and use the scroll to select the horse of interest.



6.6 Analyzing multiple workouts

The mobile application allows you to provide the user with a visual image of how the horse's loads changed over several training sessions. To do this, the user needs to open the calendar and put a checkbox in the field for selecting several workouts *"Use time frame selection"*, then select the start date of the workout, then select the end date of the workout and press the *"buttonOK"*.



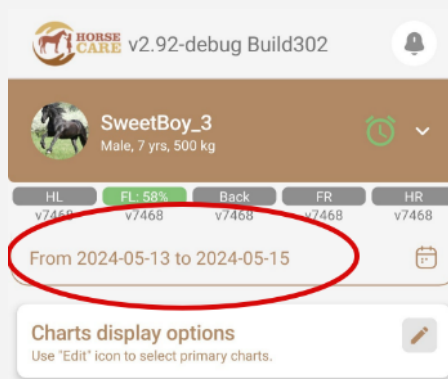
After this, several diagrams are generated that can be viewed by scrolling the screen.

The application header displays for which time interval the charts were generated. If there were several training sessions on the selected dates, they all appear on the charts.

Along the horizontal X axis - the date and time of the workout are displayed. If there were several workouts on any day, they are all displayed on the horizontal axis.

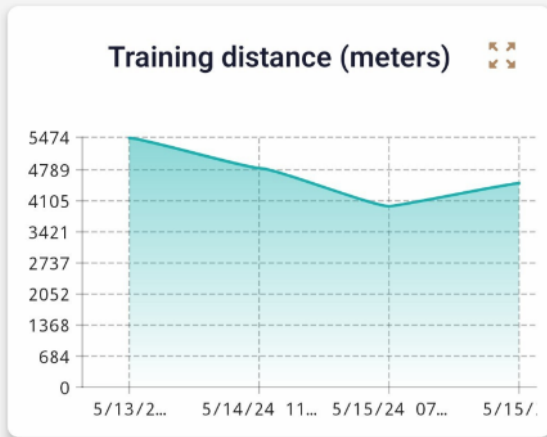
Along the vertical Y axis - the numerical values of the parameter for which the diagram was generated are displayed.

Each of the graphs can be expanded to full screen; in full-screen mode it is much more convenient to analyze the chart.

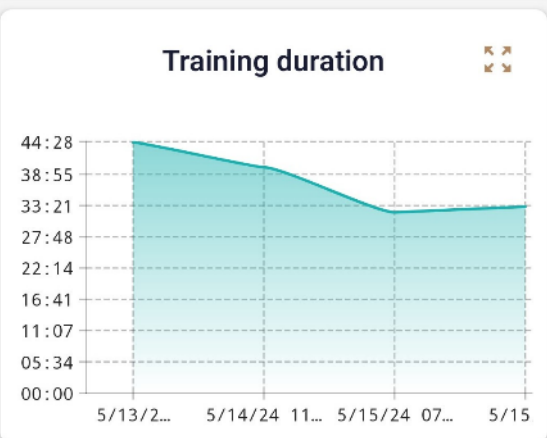


List of displayed charts:

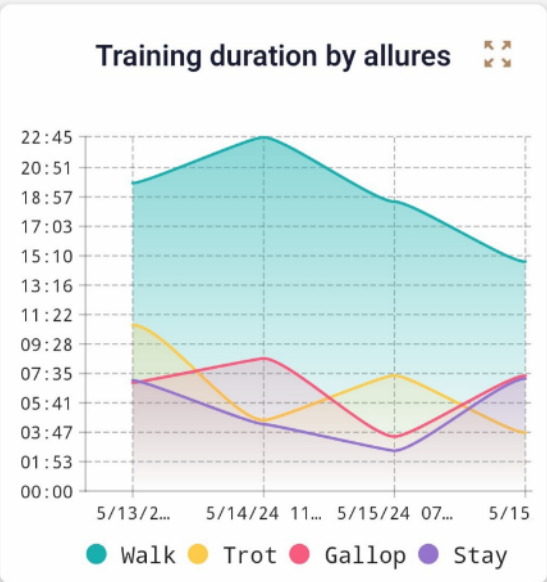
«*Training distance (meters)*» - the total distance covered by the horse during training.



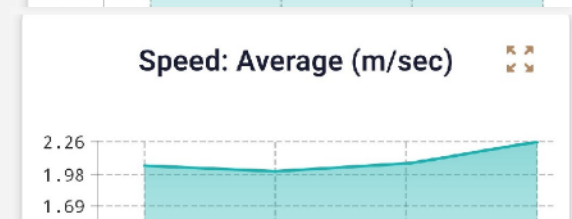
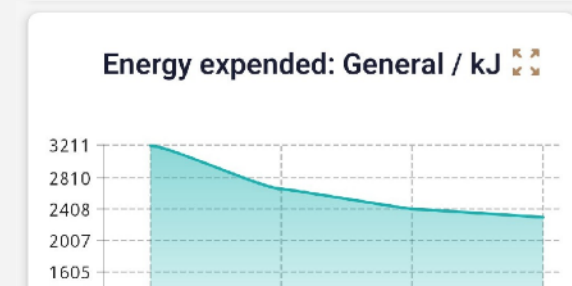
«*Training duration*» - total training time in minutes. This graph does not differentiate between gaits during training.



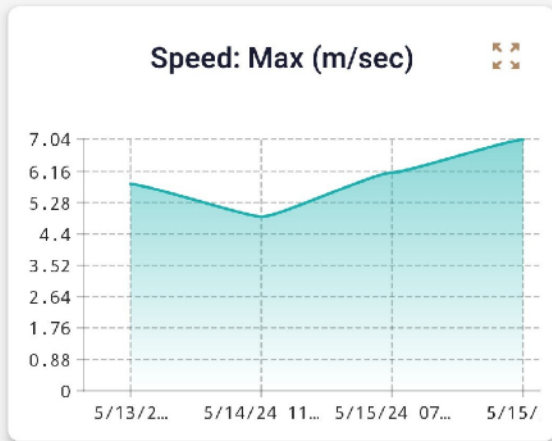
«*Training duration by allures*» - total training time in minutes, divided into gaits. The names of the gaits are highlighted in different colors and shown in the caption to the diagram.



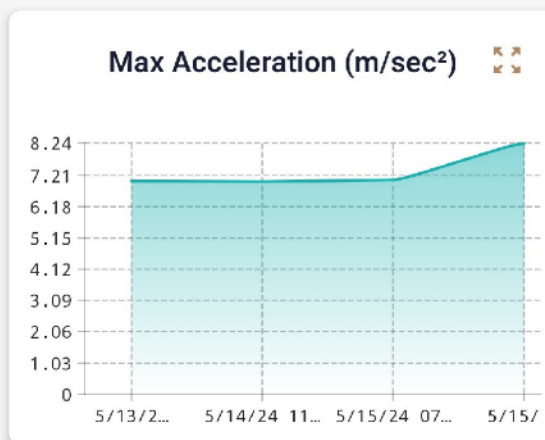
«*Energy expended: General / kJ*» - total energy expenditure during training in kiloJoules.



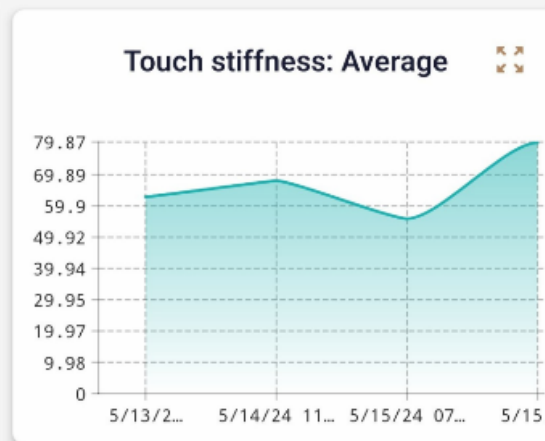
«Speed: Average (m/sec)» - average speed of the horse during training in m/sec.



«Speed: Max (m/sec)» - the maximum speed during training that the horse managed to achieve in m/sec.



«Max Acceleration (m/sec²)» - maximum acceleration during training that the horse managed to achieve in m/sec².

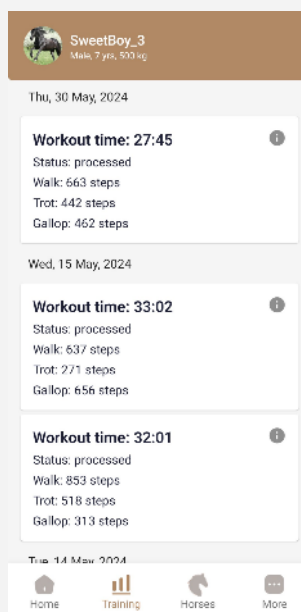


«Touch stiffness: Average» - the average parameter of the rigidity of a horse's landings. is calculated using a special method and characterizes the magnitude of impacts on the ground during landing.

7 Statistics of training sessions

In the application section **"Training»** contains summary information about the training performed for each horse. By switching to this section, the user can see the dates of training; in the case of several training sessions on this date, the training will be grouped.

For each workout, the total time, status (completed successfully/unsuccessfully), and the number of steps for each of the gaits that the application can recognize are displayed. Additionally, to the right of each workout there is a button for calling additional information about the workout.

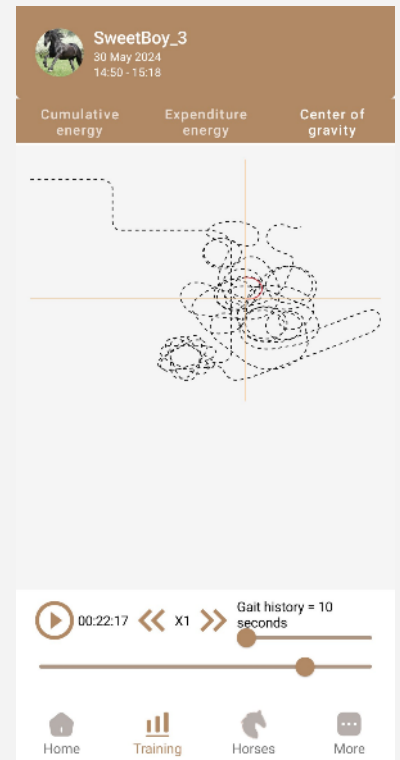
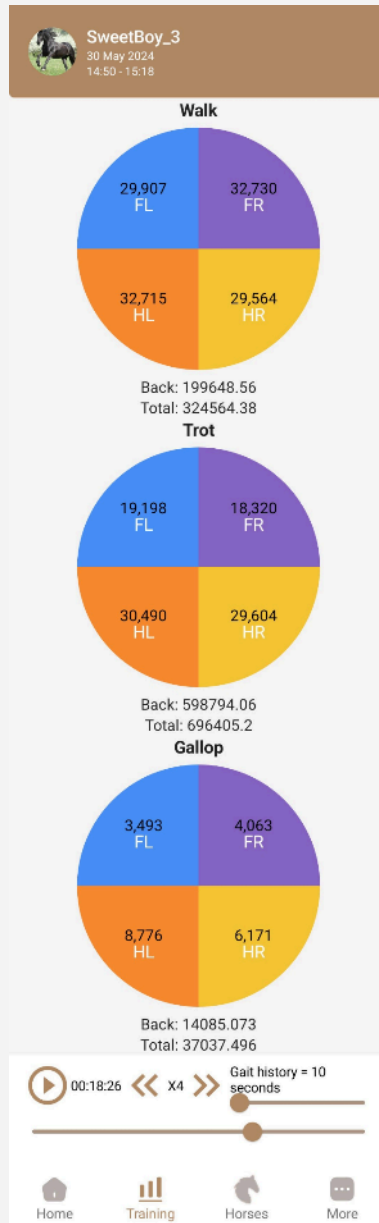


When you press the button **"I"** Several tabs with statistical information about the training are displayed on the screen.

«Cumulative energy» - a tab displaying the trajectory of the instantaneous total power released by the horse.

«Expenditure energy» - a tab displaying energy consumption for each of the gaits and for each of the sensors. which are installed on the horse's legs..

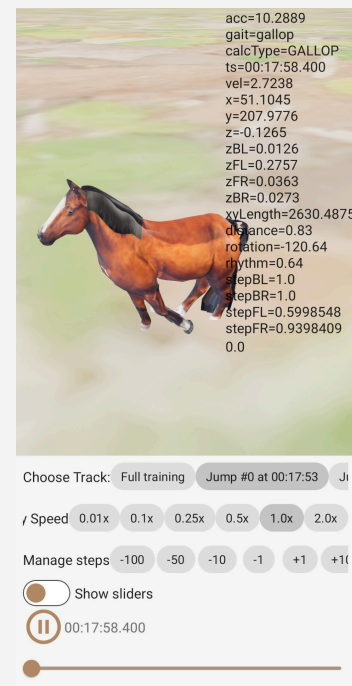
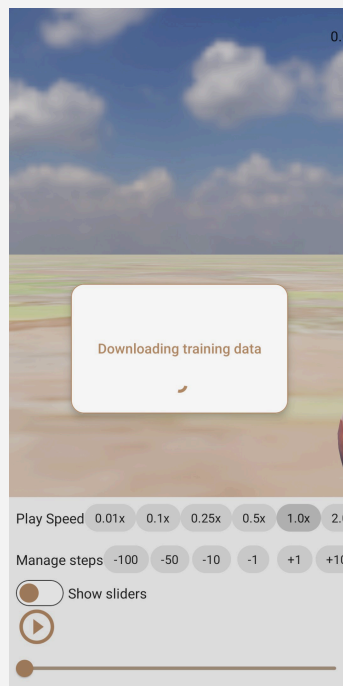
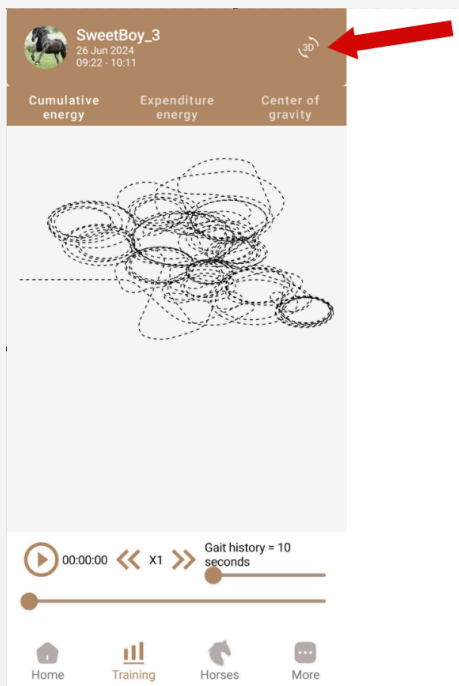
«Center of gravity» - a tab showing the movement of the horse's center of gravity in space.



On bookmarks «*Cumulative energy*» And «*Center of gravity*» it is possible to view the change in the position in space of a parameter during training.

For convenience, the user can change the viewing acceleration factor and move the training moment of interest on the time scale

For additional user convenience, the program also provides the ability to visually display the completed workout in the form of a cartoon. To do this, in the upper right corner you need to click on the “3D” button. The application will begin downloading data for this training and, based on this data, simulate the behavior of the horse in training in the form of an animated cartoon.



If desired, the user can change the playback speed of the animation video and select individual moments (jumps that are recognized by the visualization algorithm).

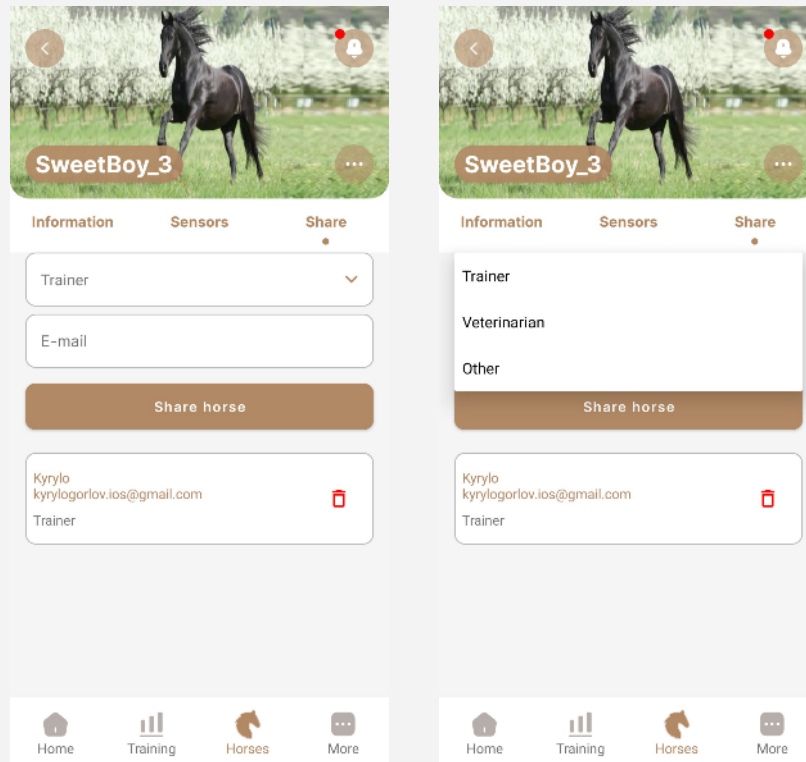
8 Sharing workout data

An app user can share their horse's training data with other registered app users.

8.1 Sharing

In order to provide access to your horse's training data to anyone, you need to go to the "**Horses**", then select the card of the horse whose training you want to provide to another user, and go to the "**Share**". Next, in the drop-down list, you need to select the role of the person who is supposed to be given access to the horse (the roles available are "**Trainer**", "**Veterinarian**", "**Other**". After selecting a role, enter the email of the person you would like to give the opportunity to have access to the training of the selected horse.

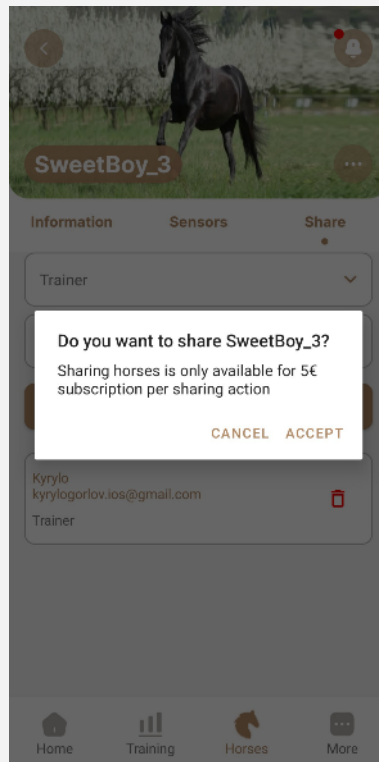
As a rule, this can be a trainer, a veterinarian, or someone close to you who is not indifferent to information about the physical condition of the horse.



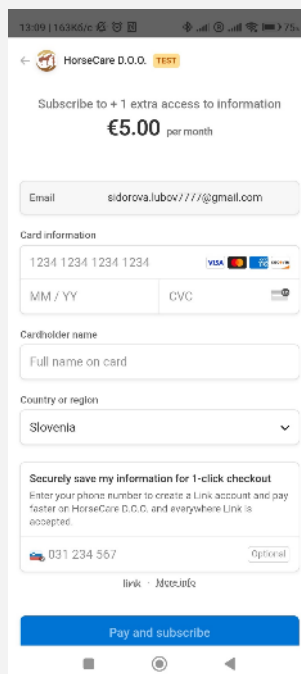
After the user has entered the person's contacts, you need to click on the "*Share horse*".

ATTENTION !!! The service of providing access to horse training is PAID!!!

Adding EACH horse is paid according to the price list of additional services.

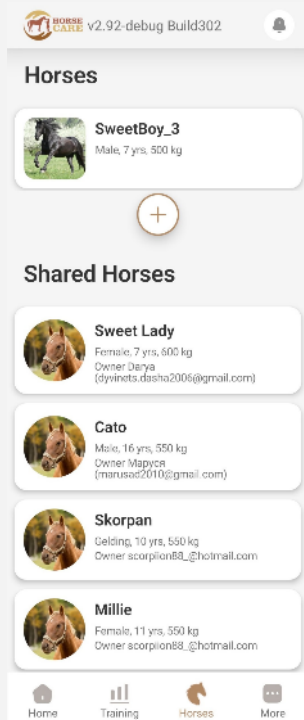


If the user agrees that the service needs to be paid, he must click on the “ACCEPT” after which it will be transferred to the bank card payment interface.



After successful payment, the selected horse will appear in the list of those available in the application interface for the person whose address you specified at the time of registering data sharing.

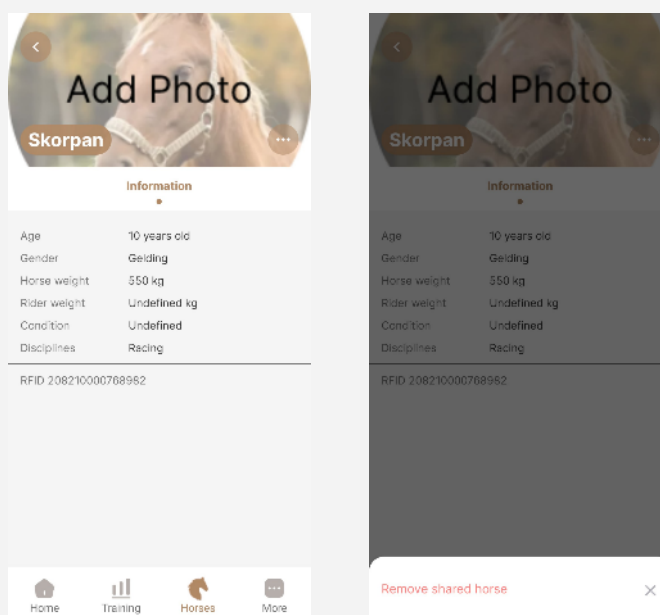
As an example, the figure shows the horses that the user has access to.



8.2 Stop sharing

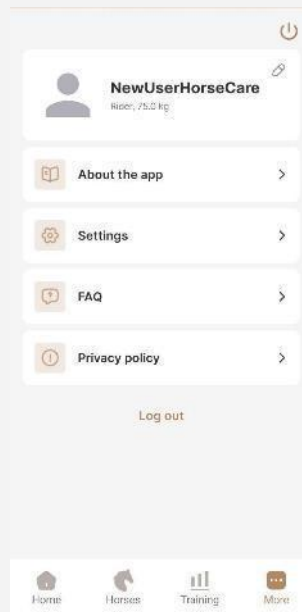
If desired, the user can stop sharing the selected horse's training analysis. To do this, on the tab “Share” you must select a horse that you want to refuse sharing access to.

After selecting a horse, you need to click on the three dots to the right of the horse’s image. You will then be prompted to delete the sharing.



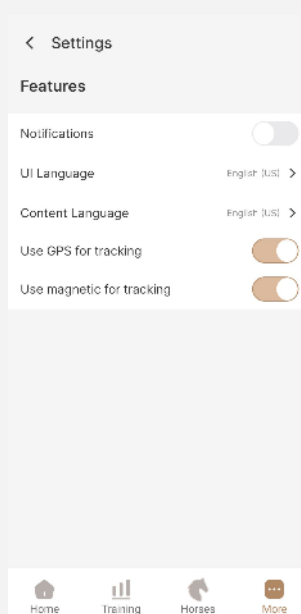
9 Service information and application settings

In the section “**More**” provides service information and the settings of the mobile application.



“**About the app**” - clicking on this link will take the user to the site horsecare.si to the page where you can read about how the project is structured, what are the features and differences between the project and its analogues.

“**Settings**” - This part contains options for selecting the application language and a switch to turn on/off application notifications.



“Notifications” - a switch that allows you to enable or disable notifications.

A sample list of notifications is as follows (the list of notifications is continually being developed and the current list may differ from that described in this section):

- workout notifications: *“Your training has successfully started”*, *“The training is completed. Data sent to server”*;
- sensor status notifications: *“The back sensor is discharged. Battery charge: 15%. Requires charging”*;
- notifications about sensor binding: *“Front right leg sensor successfully bound”*, *“Successful binding of a set of sensors. Are you ready to train?”*;
- notifications about settings and privacy: *“Please update your security settings”*, *“Read our privacy policy”*;
- system update notifications: *“Application update available. Please install it”*;
- notifications about recommendations and advice: *“Tip of the day: remember to hydrate your horse during hot weather”*, *“It is recommended to increase the duration of training”*;
- notifications about problems and their solutions: *“An error occurred while loading data. Please check your internet connection”*, *“Problem with data synchronization. Please restart the application”*;
- notifications about special promotions and events: *“20% discount on extended data package. Valid until October 31”*;
- General notifications and reminders: *“We remind you about the daily training at 15:00”*, *“New version of the application is available for download”*.

“UI Language”, *“Content Language”* - select the application interface language and message language (currently under development).

“Use GPS for tracking” - use data from the phone’s GPS sensor to plot the horse’s trajectory. on which the mobile application is installed. To obtain correct results, the mobile phone must be with the rider during training.

“Use magnetic for tracking” - use a magnetometric sensor to plot the horse’s trajectory. This type of sensor is found on the latest horse leg sensors.

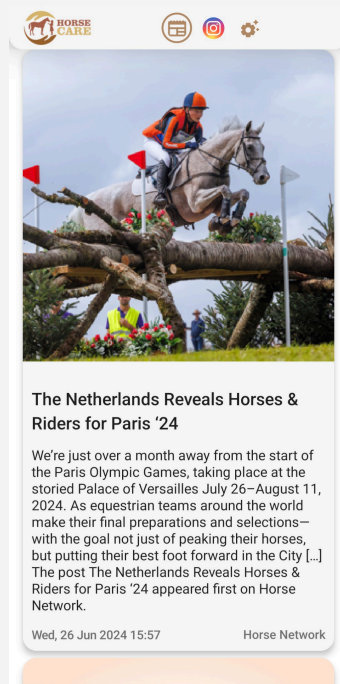
“**FAQ**” - a link that leads to the section of the site with the most frequently asked questions.

“**Privacy policy**” - a link that leads to the section of the site with the privacy policy. The policy states what data we collect about the user. Why do we collect them and how do we use them.

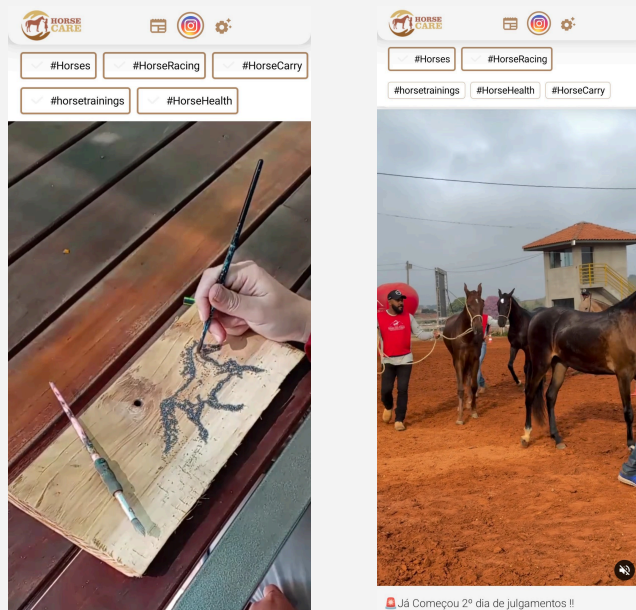
10 News Feed

In addition to tasks related to monitoring horse training, the application is also a bridge to the community of amateur and professional horse riding. In order to interest people and provide them with new and interesting information, the mobile application provides a news feed. To access the feed, the user must go to the main screen of the application “**Home**” and swipe from top to bottom on the main screen.

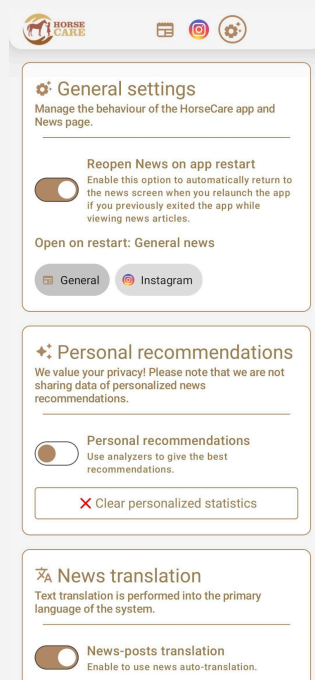
The news feed is presented in two tabs. The first tab displays articles that are collected from several news resources.



The second tab displays news collected from the Instagram network. In order to display news taking into account the interests of a particular user, several permanent tags are provided that can be turned on or off.



The third tab hides the settings for news display modes.



“General settings” - a switch that allows you to choose whether or not to save the return to the news section when you restart the application (if you were viewing the news when you unloaded the application). You can also choose which section you want to return to: general news or the Instagram network.

“Personal recommendations” - a switch that allows you to use search engine analysis to provide news that the user is most interested in.

“News translation” - a switch that allows you to display news received from other sites in the main language of the system (UNDER DEVELOPMENT).

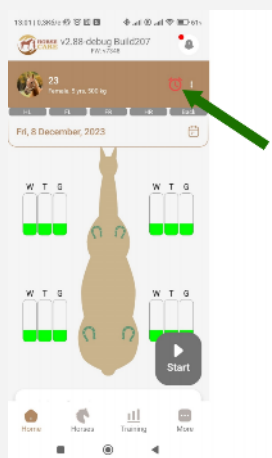
11 Paid options

After installing the application, the user is provided with all the functionality of the mobile application and the capabilities provided on the site. In this trial mode, the application can work for 3 months.

After 3 months have passed, the user must decide what functions he needs and choose one of the payment options:

- **basic;**
- **extended;**
- **PRO;**
- **PRO+.**

Access to the menu for selecting paid subscriptions is available in the “section **Home**” on the right side of the active horse screen. The appearance of the subscription indicator indicates the approximate period until the end of the subscription: if there are 30 days or more before the end of the subscription, then the indicator does not attract the user’s attention. The fewer days left until the subscription ends, the more contrasting and noticeable the indicator becomes.



When you click on the indicator, the user is taken to a menu for selecting paid subscriptions and selecting the desired options.

<input type="checkbox"/>	Basic	€6.00
<hr/>		
<input type="checkbox"/>	(?) Extended	€10.00
<input type="checkbox"/>	(?) Analytics of the parameters above linked to the track	€1.00
<input type="checkbox"/>	Ground contact hardness analysis	€1.00
<input type="checkbox"/>	Center of gravity position (simple dynamics without track)	€1.00
<input type="checkbox"/>	Energy expended (all types of analysis)	€1.00
<hr/>		
<input type="checkbox"/>	(?) PRO	€14.00
<input type="checkbox"/>	(?) Plotting changes in available parameters	€2.00
<input type="checkbox"/>	(?) Advanced trajectory analysis	€2.00
<hr/>		
<input type="checkbox"/>	(?) PRO+	€18.00
<input type="checkbox"/>	(?) Depth movement analysis (jumping)	€2.00
<input type="checkbox"/>	(?) Tracking the movement of each leg (dressage)	€2.00

“**Basic**” is a standard subscription. The minimum option available to the user. To continue using the program and basic basic functions, the user is required to pay for such a subscription. As part of this subscription, the user is provided with the ability to detect lameness, display basic training parameters, such as total duration, duration for each gait, number of steps within the training. The user can also share his one horse and access the portal horsecare.si

“**Extended**” - extended subscription. Includes the capabilities of the standard “basic” subscription as well as additional features: display of energy costs of training, the position of the center of gravity, analysis of the hardness of the ground touch, recording and analytics of the track of the horse’s movement during training.

“**PRO**” - a subscription aimed at real professionals. In addition to the capabilities of the “Extended” subscription, the following features are provided: advanced analysis of the trajectory of the training track (both in horizontal and vertical planes), construction of graphs of changes in available parameters on a scale of several days, weeks, months.

“PRO+” - a subscription that provides maximum opportunities. Differences from the “PRO” subscription include the provision of spatial tracking of the movement of each horse’s leg (especially useful for those involved in dressage), a deeper and more detailed analysis of movement divided by gaits (especially useful for those involved in show jumping).