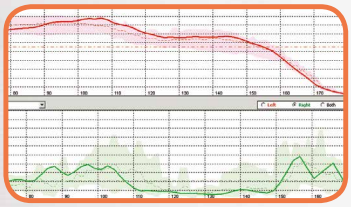
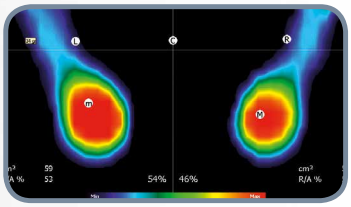
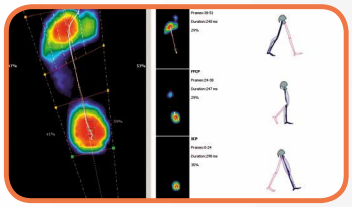
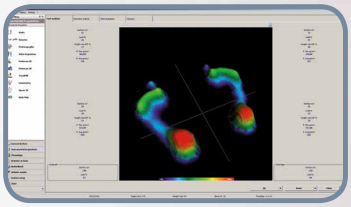
freeStep

USER'S MANUAL









THE COMPLETE SOLUTION FOR THE ANALYSIS
BAROPODOMETRIC, BIOMECCANICS AND POSTURAL

Index

1 Software for the biomechanical foot analysis

Congratulations on your purchase of a Sensor Medica system.

freestep® is an innovative state-of-the-art software for the biomechanical investigation of posture and movement, that integrates all required functions to support the clinical investigation of the patient.

freestep® allows full storage, management, sharing and printing of all static, dynamic, stabilometric, videographic, radiographic and podoscopic pressure investigations.

Through an intuitive interface, the user can activate all functions extremely quickly, optimizing examination time.

Furthermore, its full compatibility with multiple baropodometric platforms, camcorders, surface electromygraphs, 2D and 3D optical scanners, makes of it a unique all-in-one instrument.

This manual will guide you step-by-step in learning all the program features.

1.1 Compatibility and minimum requirements

The freeStep® program is compatible with most personal computers and notebooks with the following minimum requirements:

- IBM compatible Personal Computer
- AMD or INTEL processor
- Hard drive with at least 250 MB available
- 512 MB RAM memory
- CD or DVD player
- Video card with 256Mb memory (also shared)
- Operating system Microsoft Windows XP, Vista, Windows 7, Windows 8/8.1, Windows 10, both 32 and 64 bit
- DirectX 9.0c
- B/w or colour printer
- Internet connection * (see paragraph LiveUpdate)

FreeStep® is also fully compatible with the last generation AppleMac® computers using a Windows® emulator (for example Parallel®) or in dual boot mode installing a Microsoft ® operating system.

Should you experience any incompatibility between the software and the personal computer it is still possible, in most cases, solve the problem using the advanced settings of your video card and decreasing the default hardware acceleration.

For each decrease of hardware acceleration, freeStep® software should be tested in order to check its proper functioning.

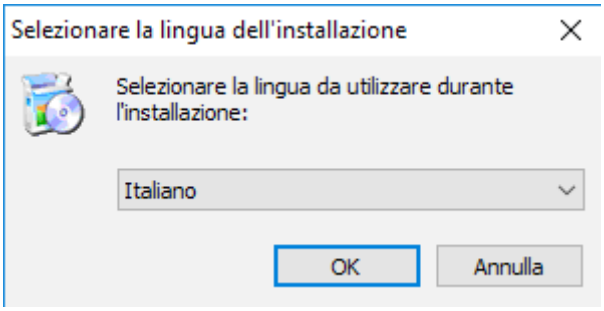
1.2 Installing the program

To launch the freeStep® installer, just double-click SetupfreeStep.exe in the CD-ROM main directory. To access this folder, you can use Windows Explorer or My Computer.

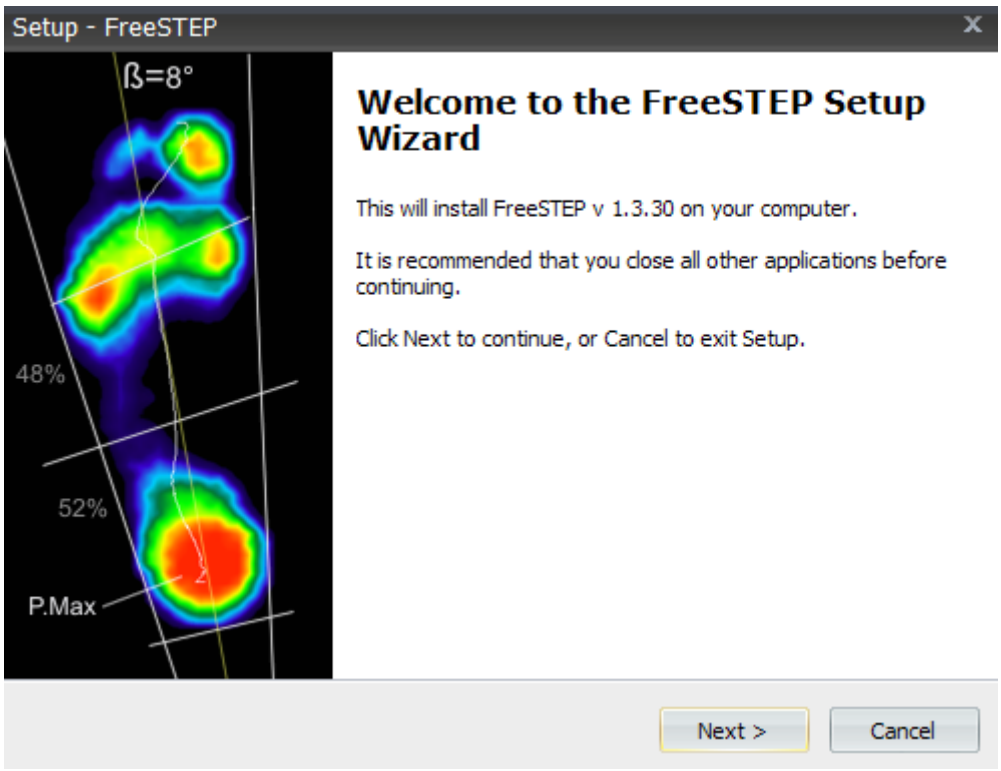
NOTE:

For the operating systems Windows 7, Windows 8, Windows 10 and above, it is recommended to start the installation as administrator in order to properly install the program. To run a program as administrator, right click on the file SetupfreeStep. exe and click "Run as administrator".

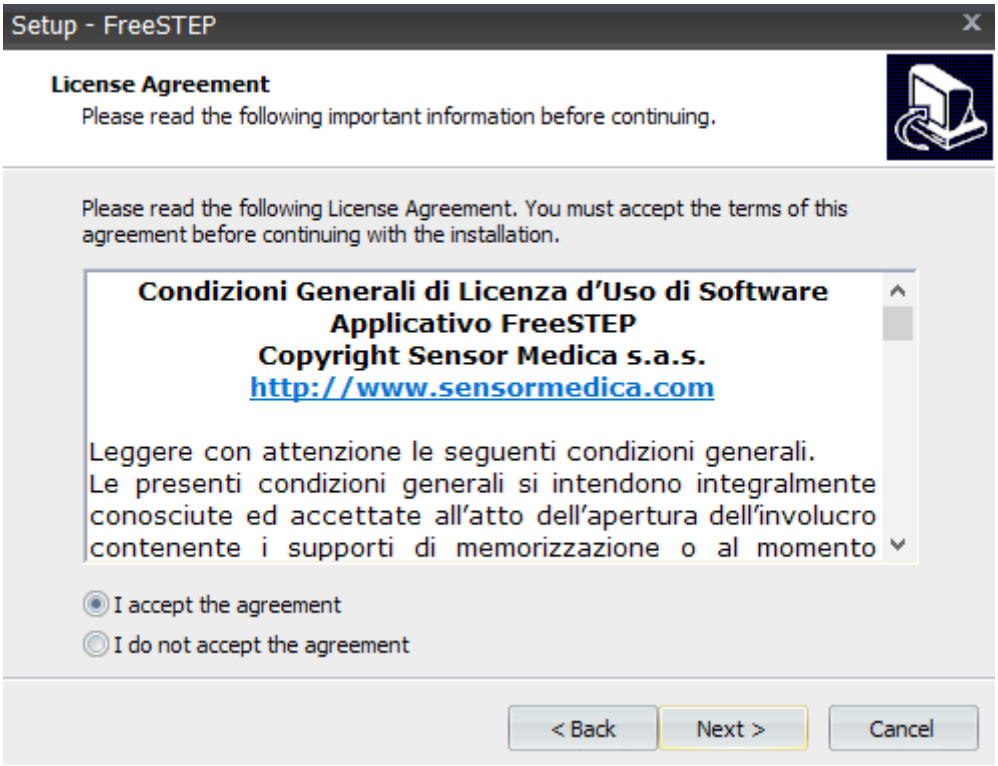
Once started the installation, you will see a dialog box suggesting the installation language. Choose your language and click "OK" to continue.



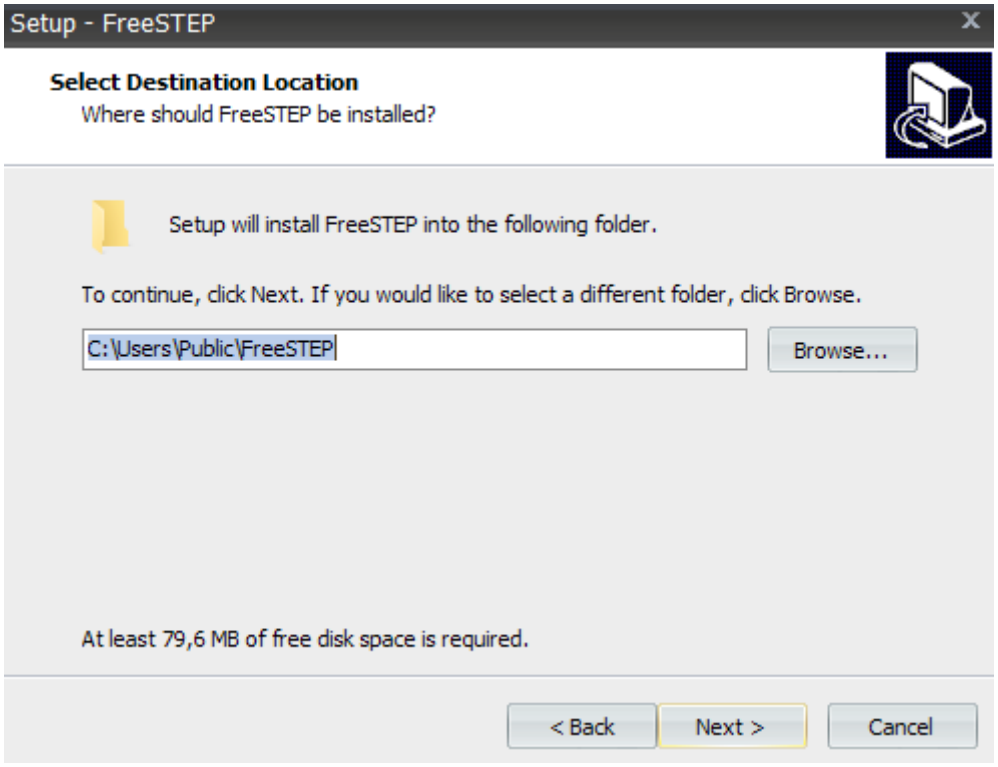
By carefully reading the installation options instructions, the automatic installation process will take you step-by-step throughout the product installation. The first screen is a welcome one where you can safely click Next.



Then a screen will appear, indicating the General License Terms of Use. Only after a careful reading, select the appropriate choice and click Next. If you select "I do not accept" the software installation process will terminate.



In the following dialog box you can specify the installation path.



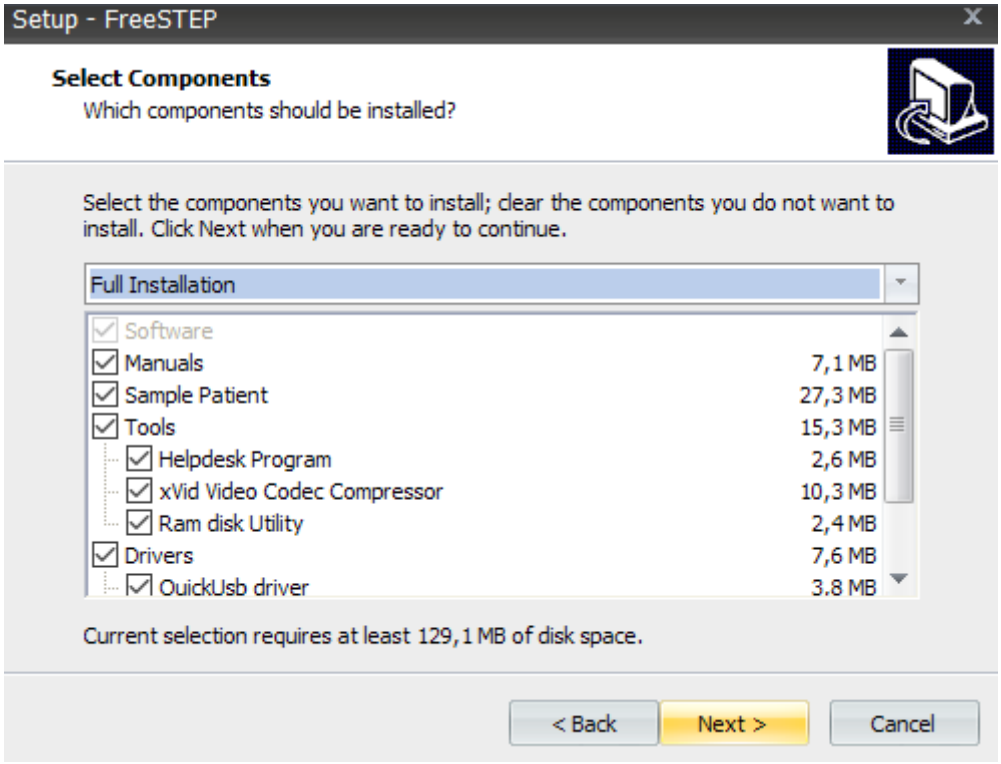
NOTE:

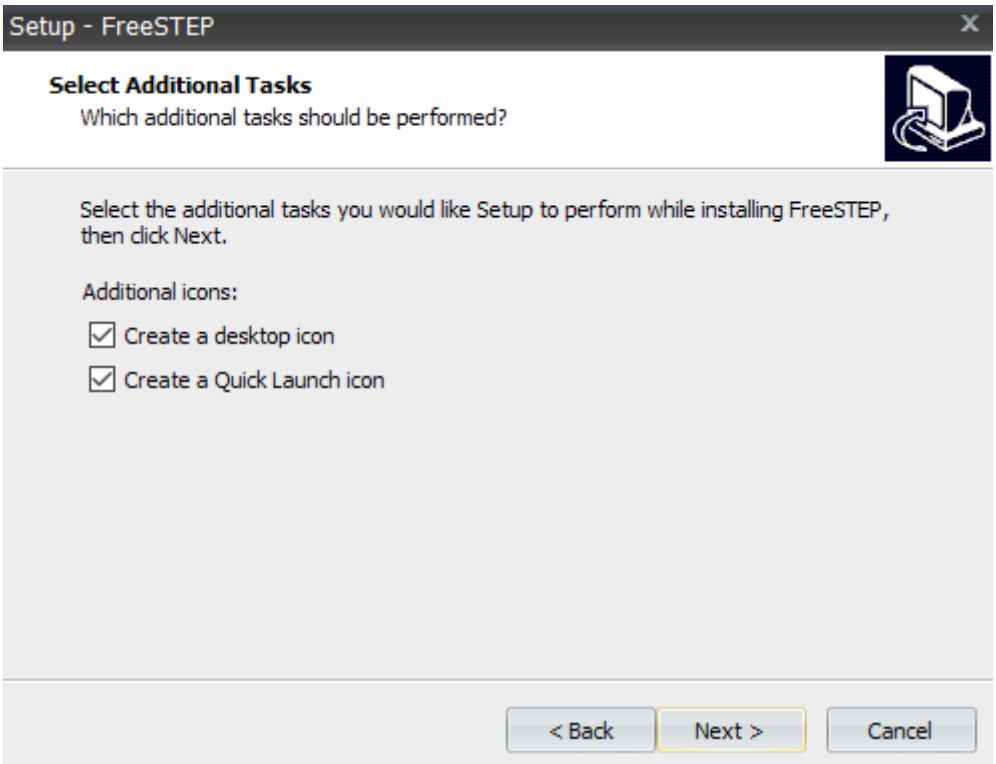
For the operating systems Windows 7, Windows 8, Windows 10 and above, it is recommended to install freeStep in your user directory. Typically the user directory is located under:

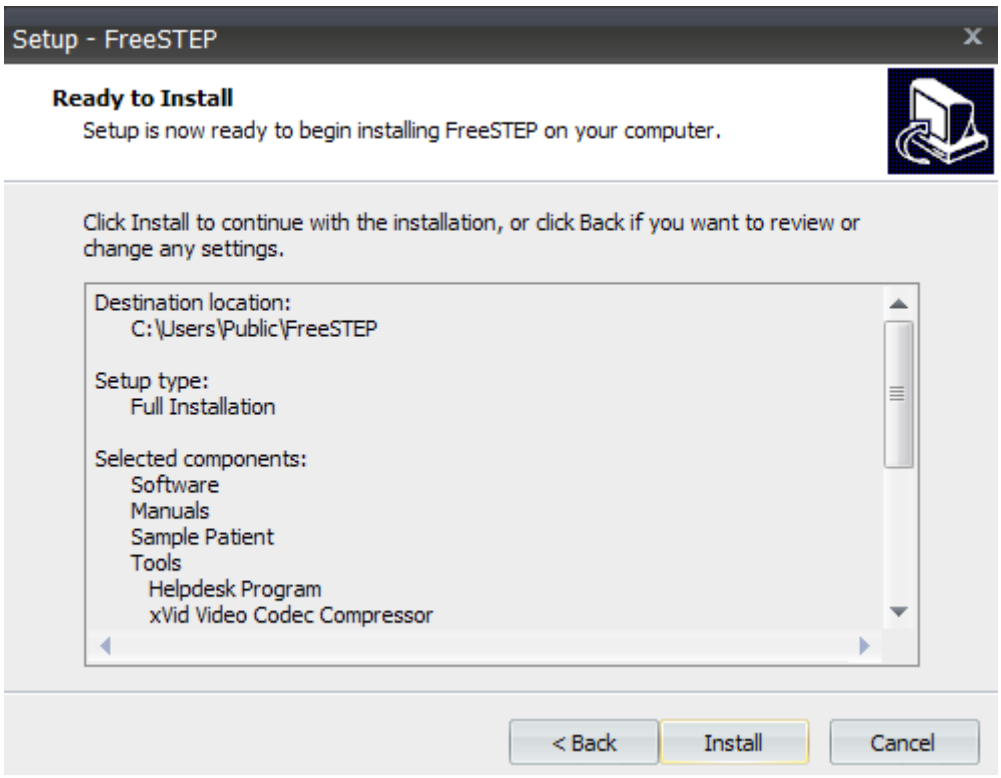
C:\Users\<User_Name>\freeStep

This solves many problems associated with permissions that may arise with the new versions of Windows, that are extremely restrictive.

By clicking again on “Next”, all selectable options are displayed. Unless you have specific needs, it is recommended to install all options because the various components are necessary for the proper functioning of the software.







Clicking "Next" the installation is performed.

Depending on the speed of your system, this operation can last from one to several minutes.

After installation, you may have to restart the computer, an option that, if necessary, will be displayed automatically by the system.

After installation is complete, you can run the program directly from the freeStep® icon, automatically installed on your computer Desktop or discoverable within the Windows programs.

NOTE: Should you experience problems when starting the program, it is recommended to check your anti-virus settings, putting freeStep® in the exclusions list. Many anti-virus systems wrongly recognize the software as a "false positive", interfering with the proper running of the software itself.

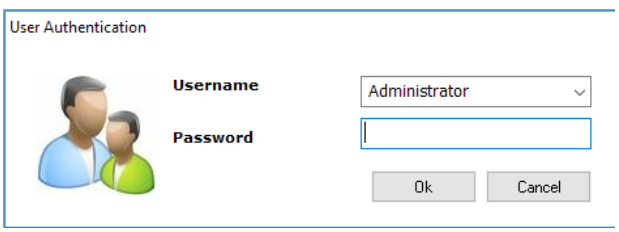
1.3 First run of the program

At the first run of the program, if you have an internet connection, regardless of the freeStep® version installed, the system will check if new versions are available (see paragraph “LiveUpdate” chap. 1.5).

After verification or new version installation, the software can be started and it will start in demo mode.

As soon as the software is started, a dialog box will appear. The dialog box will ask which user to start the software with (for more details on the topic you may refer to the chapter 3.4).

If it is the first time you start the software, simply click the “OK” button, because the Administrator user at the beginning is a user who does not possess any password.



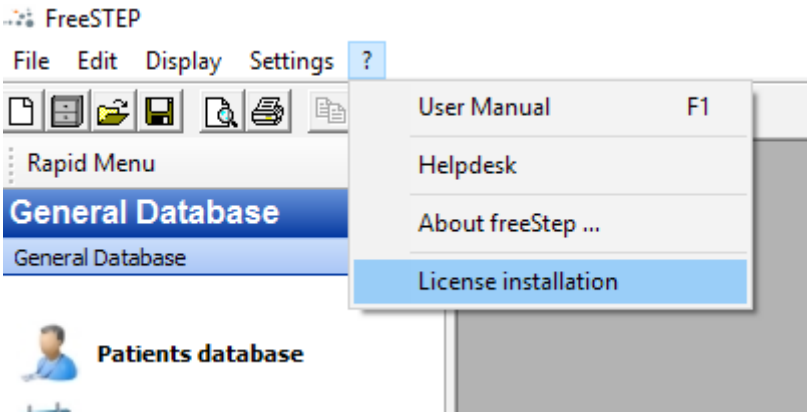
1.4 Register the product

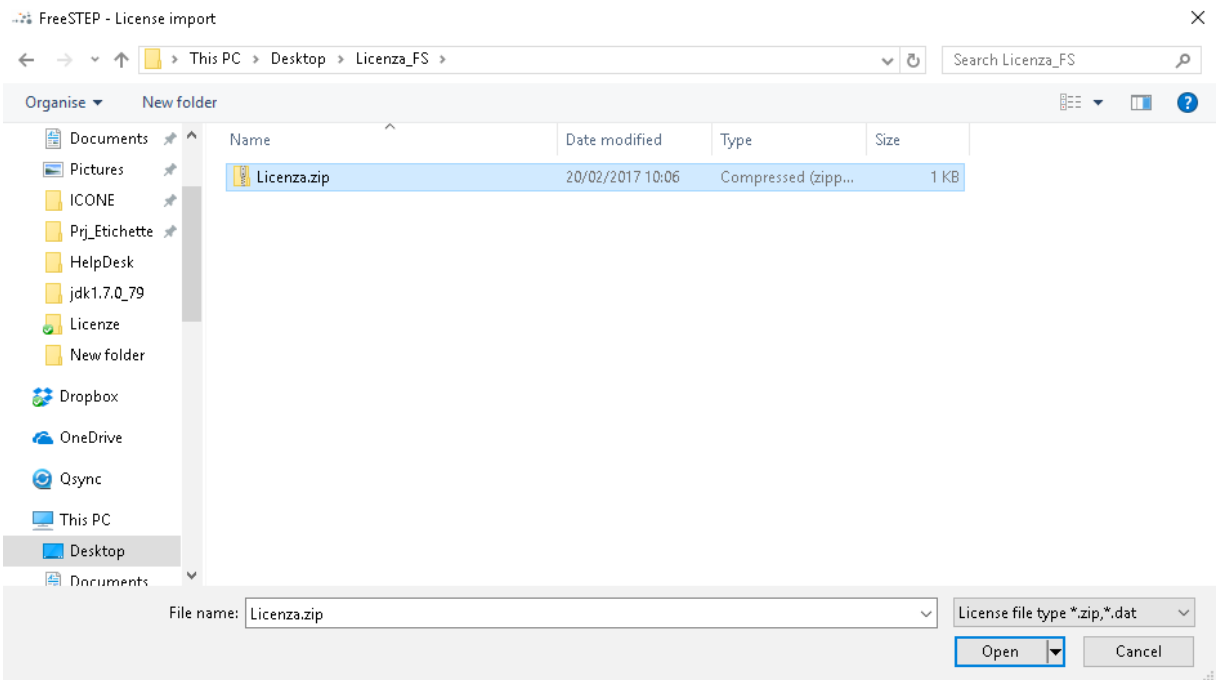
NOTE:

In demo mode, the software has no limitations. The only restriction of the software in demo mode is connected to the number of users. The maximum number of users in demo mode is 5.

To use all the functionalities of the software you must install a new license. In order to obtain a valid license please contact your product vendor.

The license is a ".dat" file, but you can also find it as a ".zip" file. Once downloaded and saved the file, you must start freeStep® and install the license within the software. To do that you have to open the software and click on "?" And select "Install license".





Select the license and click “Open”. By closing and opening the software, an activation code will be required.

To obtain this code, please report the displayed codes in a mail addressed to together with your contact details, company data and the model of the platform to activate. It will be care of the producer to send as soon as possible the activation counter code.

Your license is valid only for one computer.

Subsequent running of the program will not require the activation code.

After starting the program, you will see the user authentication screen.

The first start can be made by choosing the user “Administrator”: at the beginning this user has no password, then simply click “OK”. For this reason it is recommended to immediately set a password or to create a user profile (user name and password) in order to ensure a safe data management.

For creating or editing a user profile, please refer to the **User Management** section of this manual and see chapter 3.4.

Before proceeding with any further activities within the software, please refer to the section Application Setup.

NOTE:

A new license is required for each platform. In particular cases it is possible to use the same license, solely to allow the “display” of the data on a support notebook.

You can not use the same license for two PCs with two different platforms.

1.5 LiveUpdate

The LiveUpdate mechanism, i.e. the real time automatic update, makes the product reliable and always in line with all the new developments and innovative features of the software. This ensures you always get the most from your freeStep® and never need to contact the technical support centre to get the latest program version.

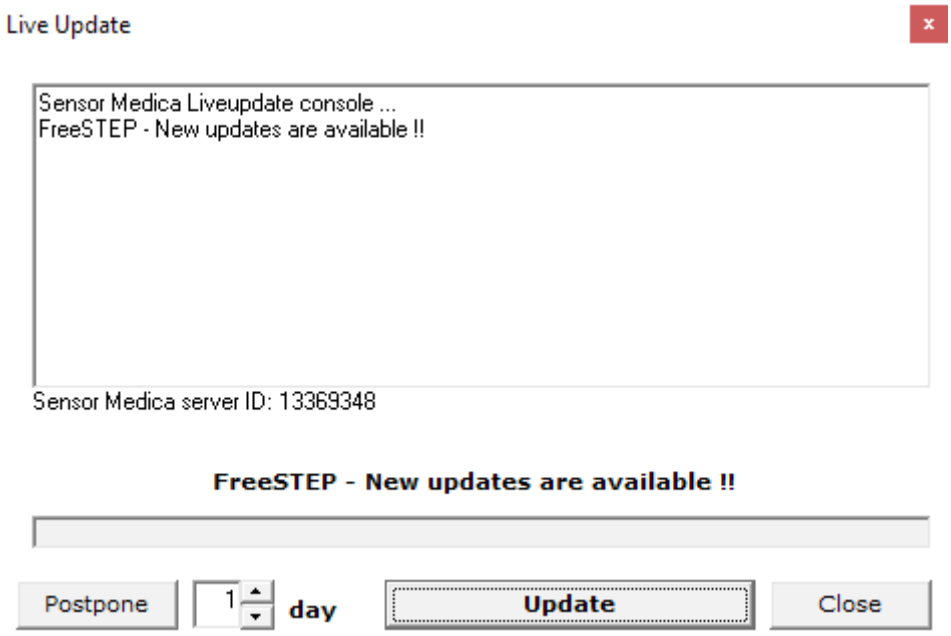
LiveUpdate runs automatically every time you run the program, sending only the license number to check for new versions of the software. To ensure proper functioning it is essential to check your system settings in order for the program to run in system

administrator mode.

It is also essential to check your firewall and anti-virus configuration to ensure its proper functioning.

If necessary, create exception rules in both the firewall and the anti-virus , allowing Liveupdate and freeStep® to directly access the internet and in particular, where required, on ports 80 and 21 (TCI/IP Protocol). For more details on configuring firewall and anti-virus, please refer to the manuals of the respective software houses.

When Liveupdate detects a new available version of the software, it will notify the user with a simple dialog box.



By clicking on the “Update” option, the system will start the download of the new program that will be automatically installed, without any user intervention. This may take several minutes, depending on the size of the update and the speed of your internet connection.

Do not turn off the computer or interrupt the download process during the upgrading, it may cause a malfunction of the whole application.

During the upgrade process, however, backup copies of the previous software version are created. If necessary, these copies can be quickly restored.

After the update, freeStep® will be automatically restarted and a summary screen will show all the new features introduced in the newly installed version. It is recommended to print these notes prior to saving, this will allow you to check the new product features in the future.

2 Software - freeStep®

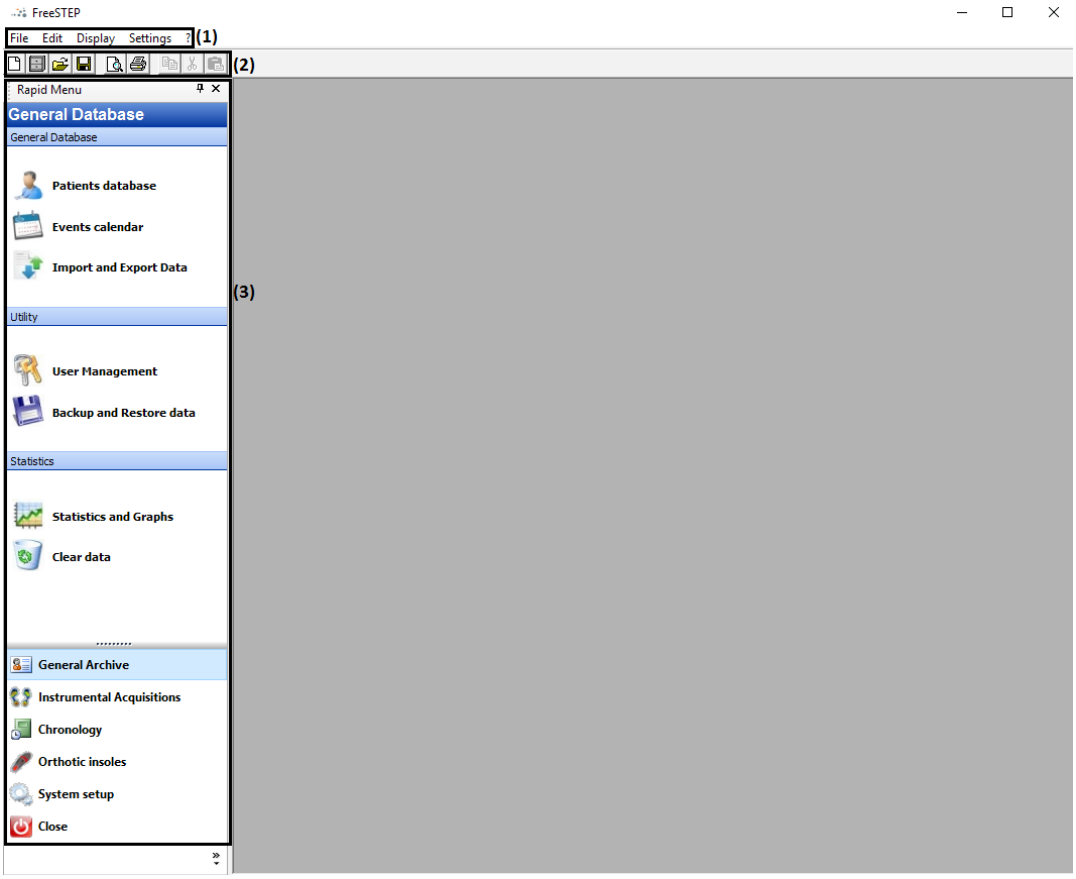
Freestep® is a software application for the complete biomechanical and postural analysis of the human body.

It currently represents the maximum technological expression for comprehensiveness, flexibility and reliability.

Freestep® is an all-in-one tool that can collect and manage numerous kinds of evaluations that until now were only possible through different devices and applications.

2.1 Program menu

The FreeStep ® software is equipped with three operating menus:



(1) The text based menu, on the top of the program

(2) The graphic optional menu, under the text based menu

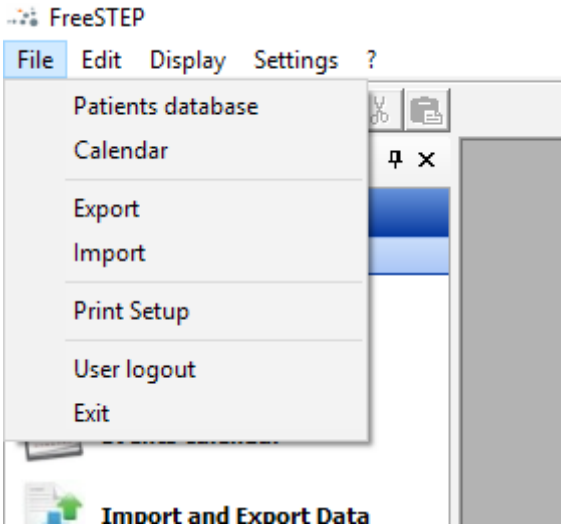
(3) The rapid menu, on the left side of the screen.

2.1.1 The text based menu

The text based menu, placed on the top of the screen, allows to enable and disable the main functions of the program. The menu items are, from left to right:

- **File**
- **Edit**
- **Display**
- **Settings**
- **"?"**

2.1.1.1 File

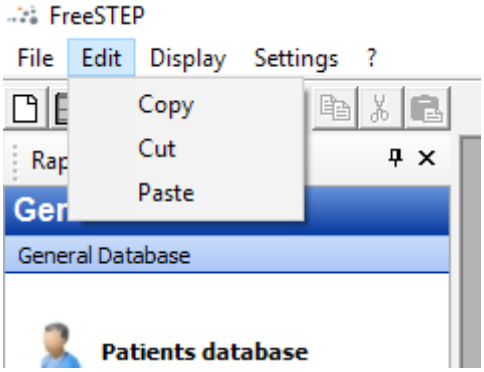


The sub-menu below "File" is:

- **Patients Database**: Quick access to the general patient database
- **Calendar**: Displays the events calendar
- **Import and export**: Immediate access to data transfer function to other PCs
- **Printer Setup**: Allows you to change your default printer
- **User Logout**: freezes the program at the password required screen

- **Exit**: Quick closure of the software.

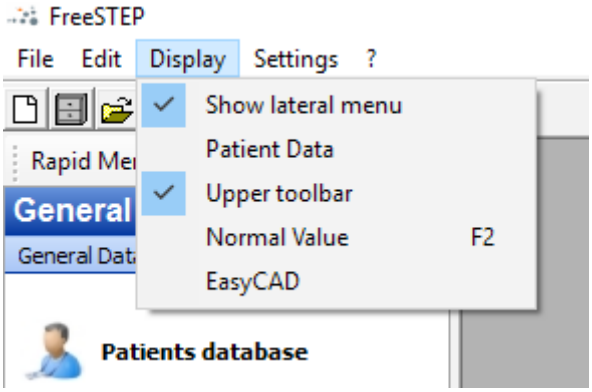
2.1.1.2 Edit



The sub-menus under the command "Edit", in line with all programs for Windows systems, let you manage the clipboard memory.

- **Copy**: Copies in the memory the contents of a text field or a picture
- **Cut**: Cuts the contents of a text field
- **Paste**: Pastes text or images stored in the memory.

2.1.1.3 Display



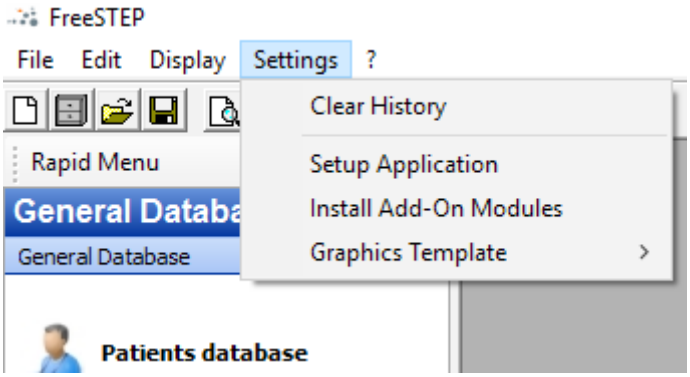
The sub-menu of the command "Display" is:

- **Show lateral menu**: shows and hides the rapid menu
- **Patient Data**: Displays the personal record of the patient
- **Upper toolbar**: shows and hides the upper command toolbar
- **Normal Value**: pressing this command or F2, the normal values of the exam under

consideration are displayed

- **EasyCAD Insole®**: start the program and process the exam in easyCAD Insole®.

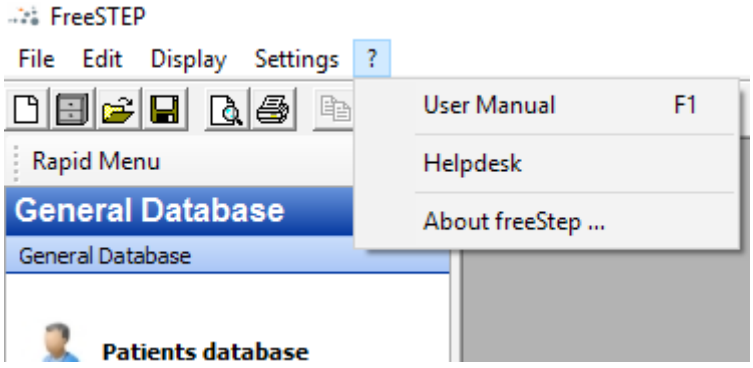
2.1.1.4 Settings



The sub-menu under the command “Settings” is:

- **Clear history**: Clears the history contents
- **Setup Application**: Access the software configuration menu
- **Install Add-On Modules**: Allows you to install additional devices
- **Graphics Template**: Allows you to change the visual appearance of the software.

2.1.1.5 “?”

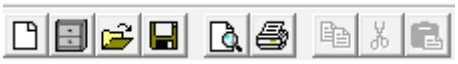


The sub-menu under the command “?” is:

- User Manual: by pressing this command, or F1, the DM manual will be open
- Helpdesk: allows you to connect your PC to remote assistance

- About freeStep: displays the software summary screen, containing the product version number and license.

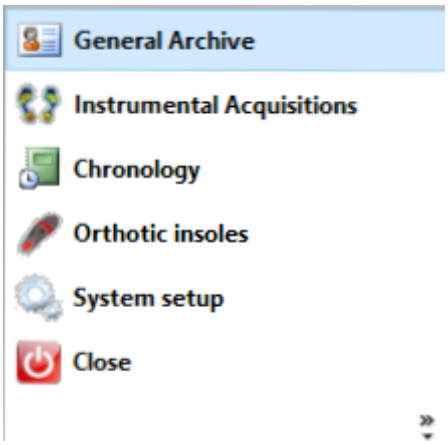
2.1.2 The Optional Menu



The optional menu, deactivated from the textual menu, carries some of the most common and used commands:

- New
- Database
- Open
- Save
- Preview
- Print
- Copy
- Cut
- Paste

2.1.3 The Rapid Menu



The rapid menu graphic interface makes the program operation easy and quick.

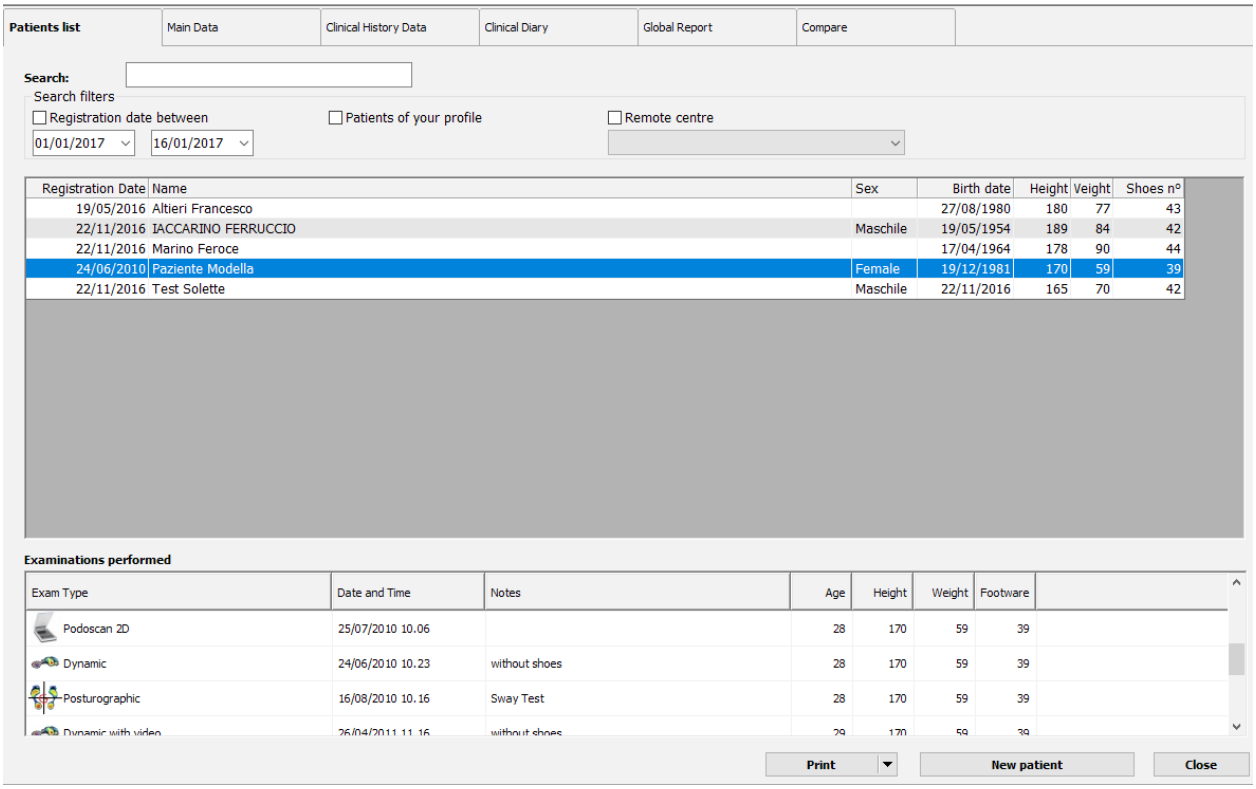
After a few minutes of use, even the less experienced user manages to navigate through

the main features of the product, even without the help of the operating manual.

The program functions, grouped by categories, can be activated with a simple mouse click.

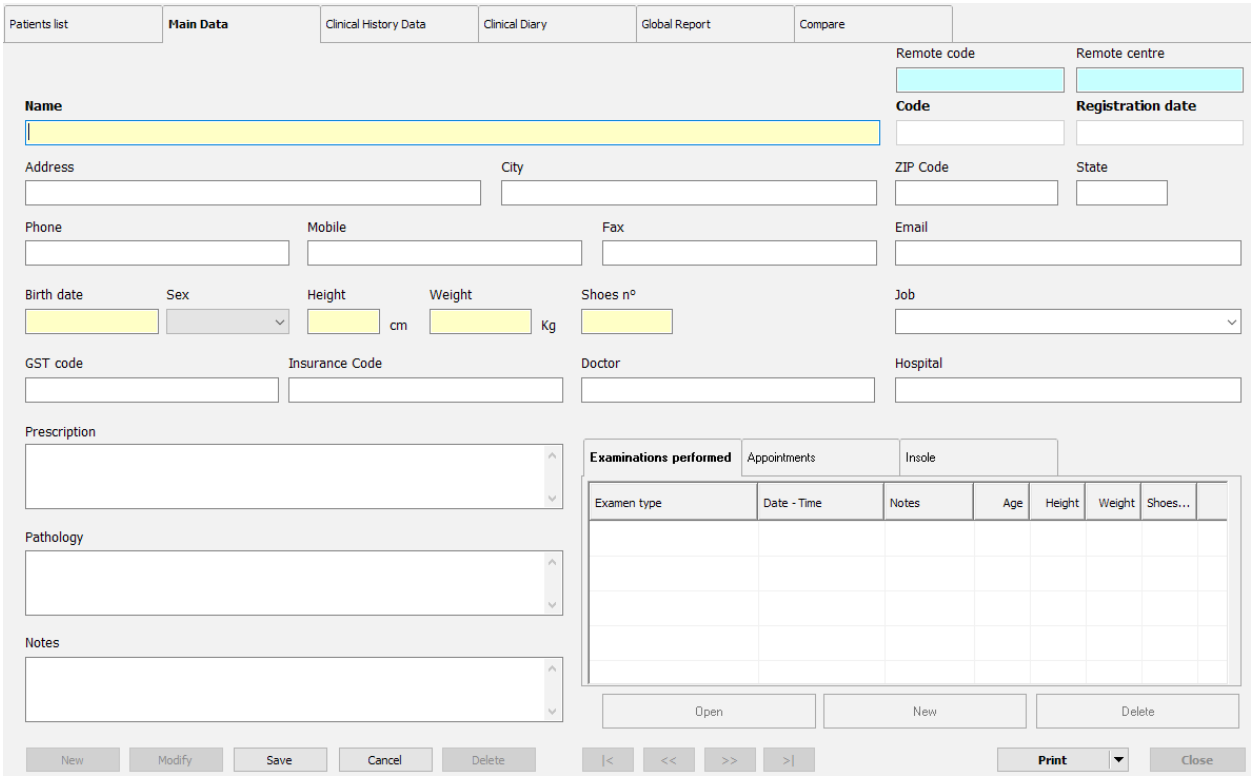
3 Main features

3.1 Patients Database



By accessing the Patients Database the complete list of the patient in the program is displayed. The list of the patients can be organised by registration date, name, date of birth, etc. simply by clicking on the headers of the list itself. The search engine allows you to filter the list by registration date, operator, or centre of origin.

To insert a new patient, just click on the button “New Patient”.



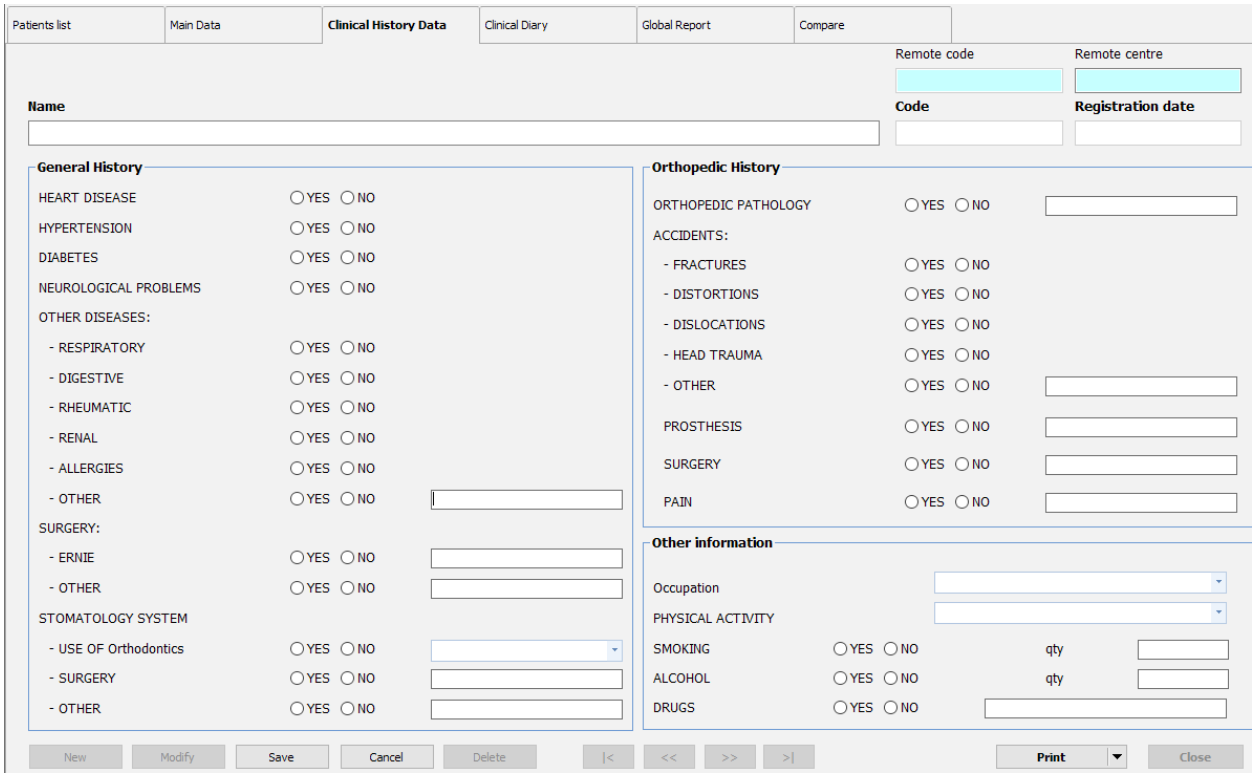
The system will automatically display the personal record of the patient. It is not necessary to fill all fields: the mandatory ones are highlighted in yellow.

After filling in the fields, by clicking on “Save”, the data are entered in the Database.

On the right side of the screen the list of performed exams is shown and, at the bottom, the commands “Open”, “New” and “Delete”.

To run a new instrumental acquisition click “New”. To view a previously made analysis, select the wanted record from the list and click the “Open” button. Repeat the last operation, but clicking the “Delete” button to delete a specific Analysis.

In addition to the list of the Examinations Performed, the list of the patient’s Appointments is available. While viewing the list of Appointments, using the appropriate buttons “Open”, “New” and “Delete” you will have access to the respective operations.

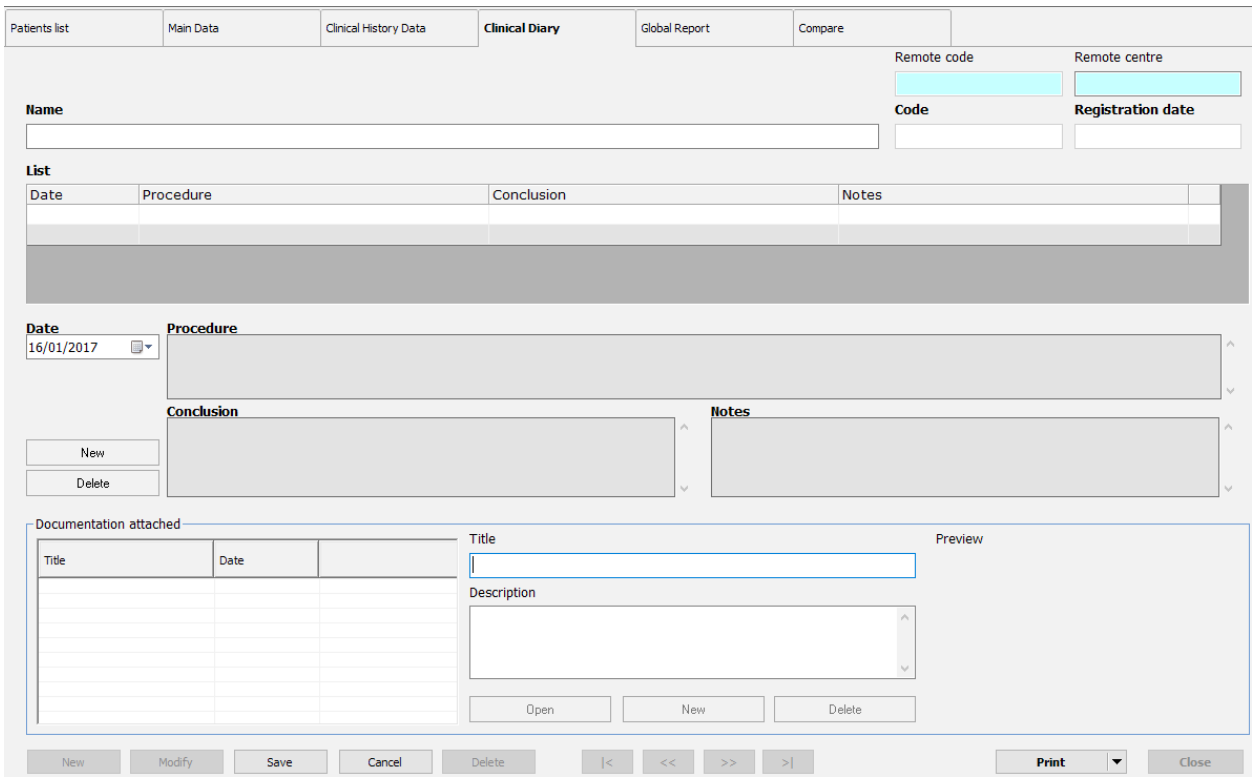


In addition to the basic information about the patient, you can still fill in the clinical history evaluation sheet and the clinical diary.

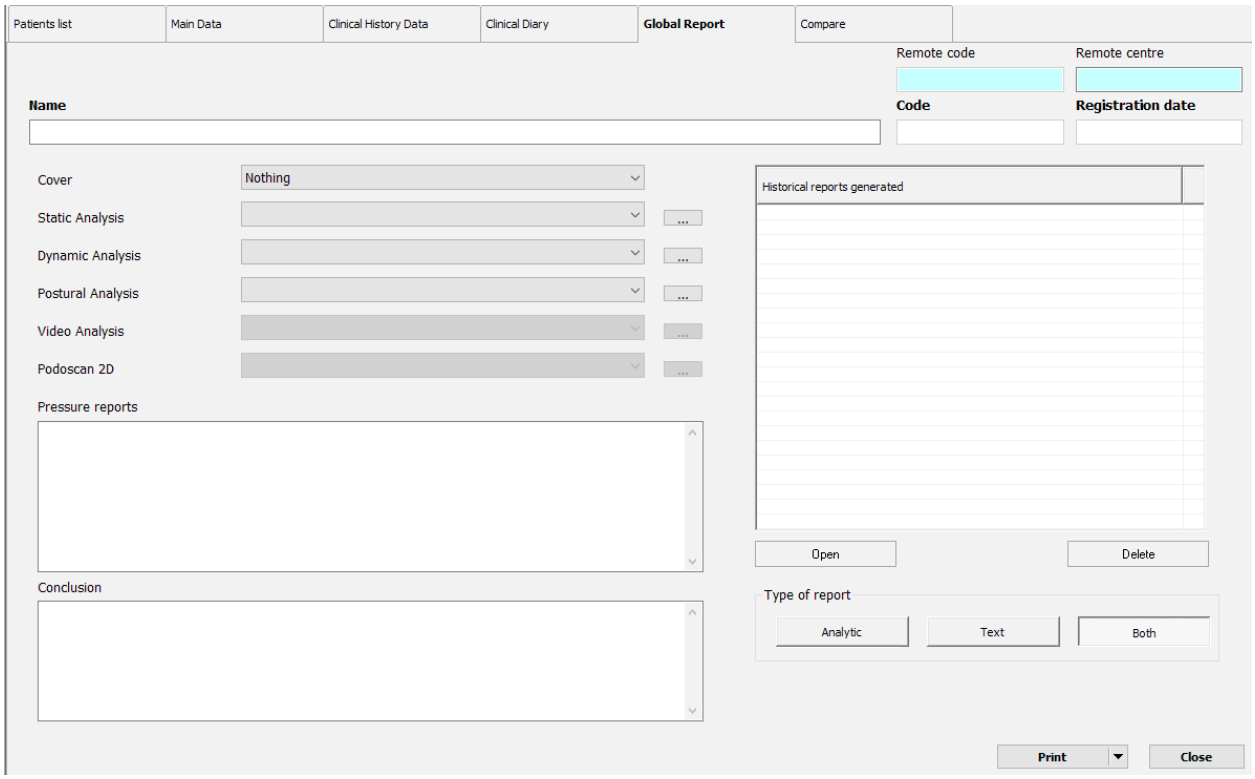
After clicking the “Save” button, all until now editable fields will be locked to prevent accidental changes. To reactivate the feature of the fields and therefore the possibility of altering or adding their content, you will need to click the “Modify” button.

After input, use the “Save” button again, or the “Cancel” button, to validate or cancel the changes entered.

To permanently delete a patient, select from the list the name you want to delete, enter into the personal record and check carefully that you have selected the correct name, now click on the “Delete” button. The program will ask you twice the confirmation of cancellation. Please use extra caution during this procedure, since it is irreversible.



In the clinical diary, in addition to the possibility to insert a history of the activities carried out by the patient, in the lower part of the screen you can add and associate attachments of any kind (images, texts, videos, prescriptions, etc.).

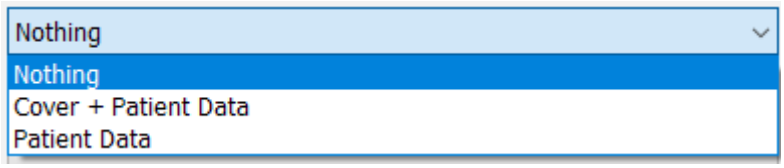


Inside the general archive, after selecting a patient, you can access the page Global Report.

In this section you can print a summary report containing the key data of the baropodometric analysis.

From the first drop-down menu, select the type of cover page to print; the available options are:

- Nothing
- Cover + Patient Data
- Patient Data.



From the second drop-down menu, select, if available, the static analysis of the patient whose data you want to print.

Also select, if available, the dynamic analysis and finally the postural analysis.

In the text field below, the automatic (or changed) medical reports of the selected exams are transcribed.

If necessary, add some text conclusions and select the type of report you wish to print.

The available options are:

- Analytic
- Text
- Both.

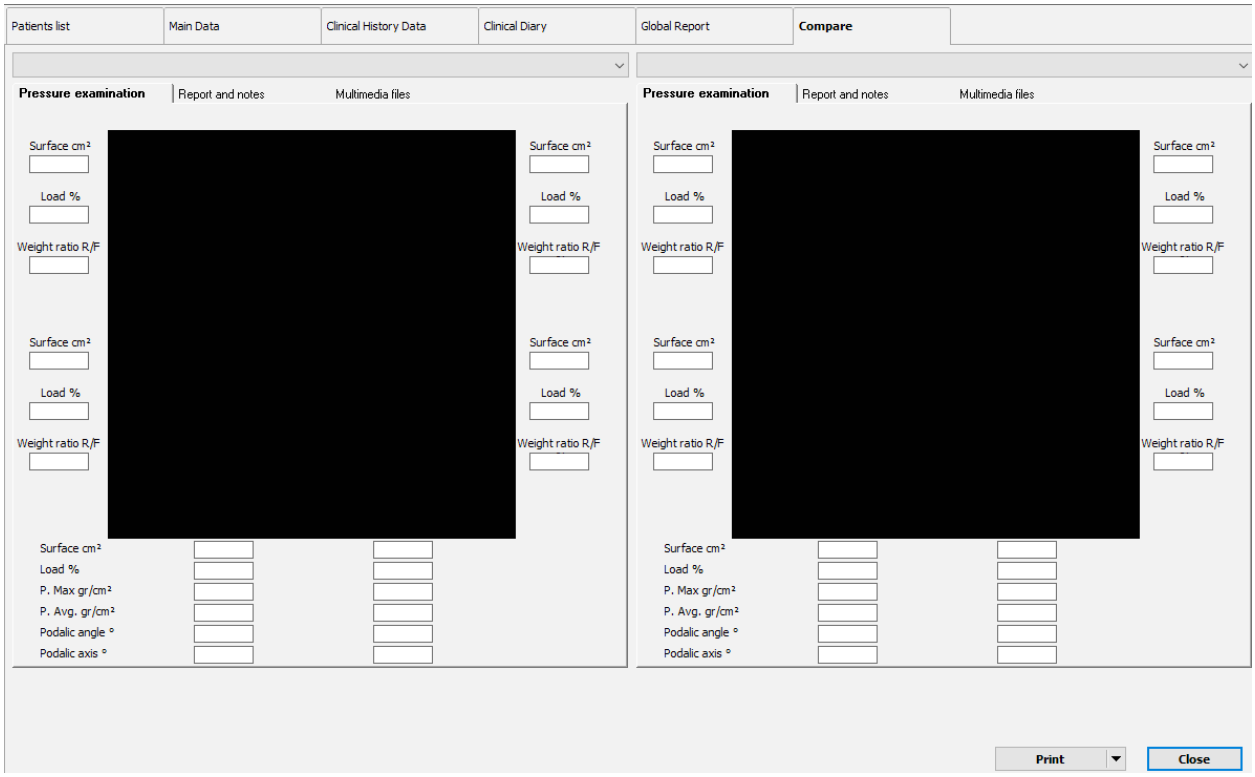
By clicking the “print” button a global report will be saved and automatically printed, containing all the selected informations.

The analytic report, showing numerous numerical information related to the exams, will be accompanied by a normality table and related tolerance ranges.

All normality values are indicative only, drawn from important scientific works, carried out on pressure platform systems. Should you find inconsistencies, it is

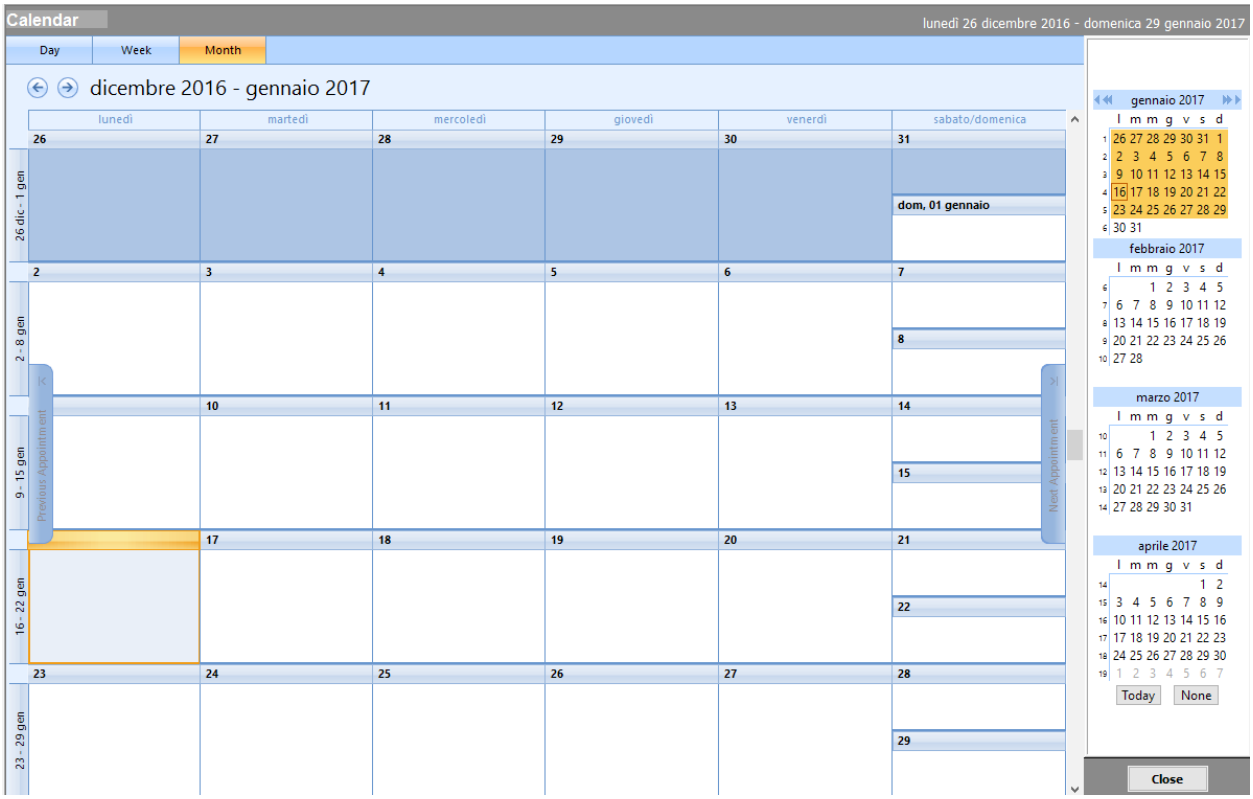
your right not to use the feature and inform us about your observations, in order to optimize the software product.

Also, there is the possibility to compare two exams to evaluate the patient's progress. By clicking on the two drop-down menus at the top, it is possible to choose the acquisitions you wish to compare: you will see in parallel the two pressure footprints, reports, notes and multi-medial files, if any.



3.2 Events Calendar

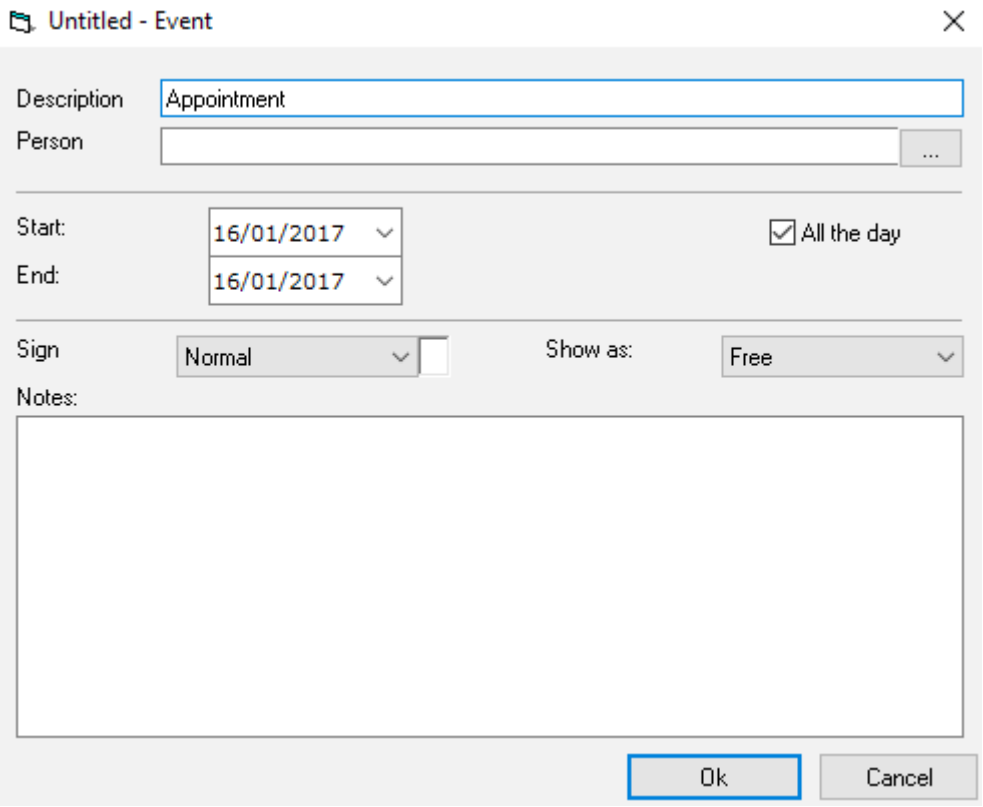
By clicking on “Events Calendar” on the main menu on the left, or through the Appointment list placed inside the personal record of each patient, the graphic calendar will be activated.



Inside the calendar it is possible to select the preferred view by clicking on “Day”, “Week”, or “Month”, on the top of the calendar itself.

Through the scroll arrows or by direct selection on the perpetual panel (right side of the screen), you can easily browse between days and months until you find the dates of your interest.

Both to enlist and to edit an appointment, simply double click on the date or on the appointment itself. A selection window will appear and allow you to quickly manage the parameters of the appointment.



To edit the date or the duration of an appointment, simply drag it directly from the old to the new day in the calendar. The change will be automatically stored in the main archive and in the patient's record too.

3.3 Import and Export Data

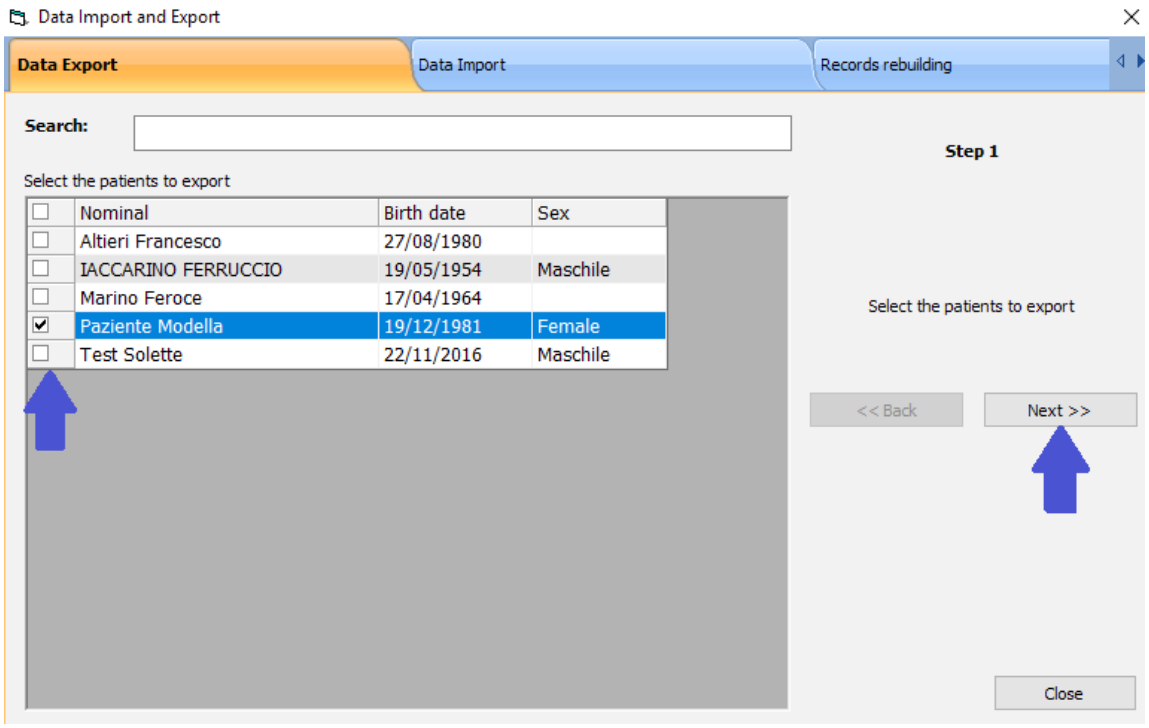
The "Import/export data" function allows you to extract data from the freeStep® software and to save them in a protected and compressed archive. Then, these data can be sent to other computers. This feature makes data saving easier. Furthermore, it is a powerful tool for sharing information with other specialists.

Each patient, whether imported or exported, in order to maintain its identity, brings the entire set of information that identifies the originating center of the specialist who sent the file (traceability).

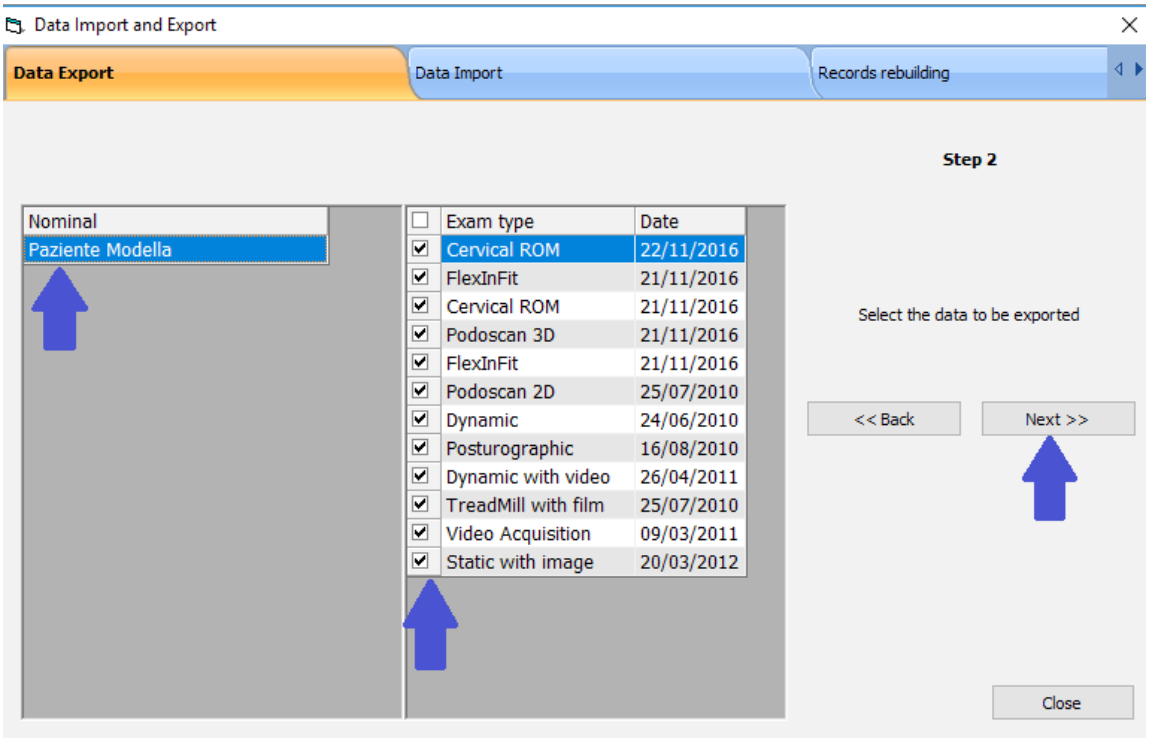
3.3.1 Export

The export feature is a wizard consisting of three steps:

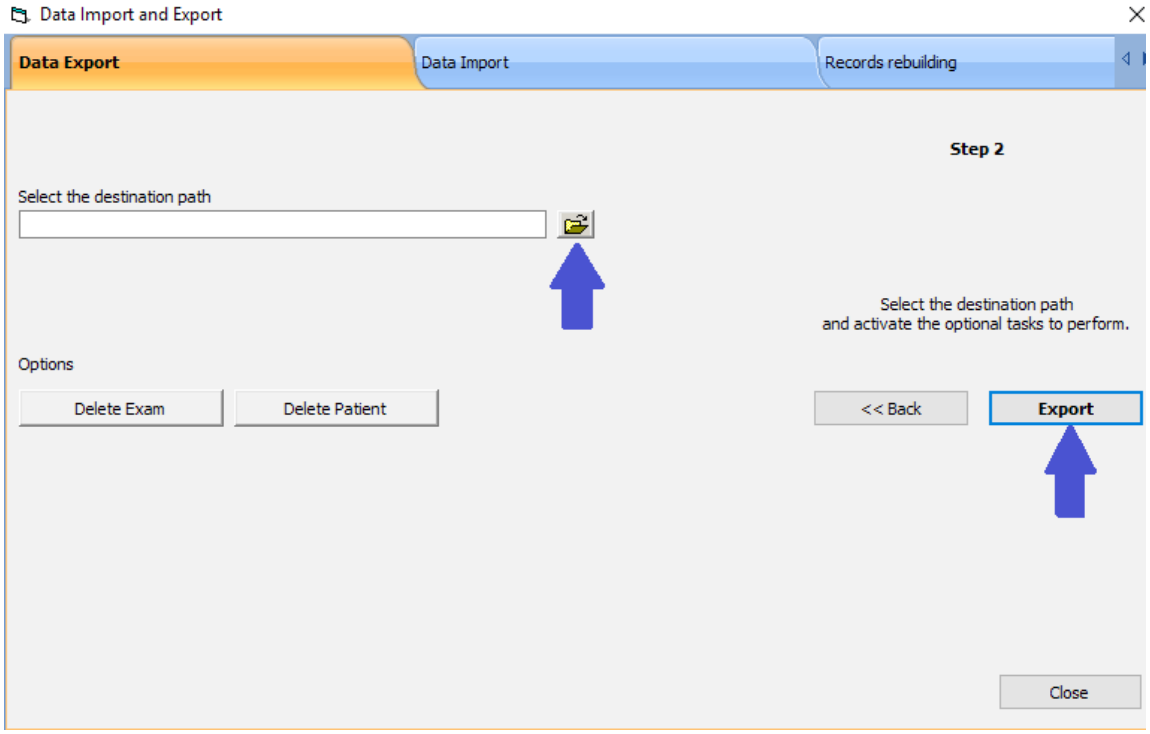
1. Select the patient to export



2. Select the exam for each patient

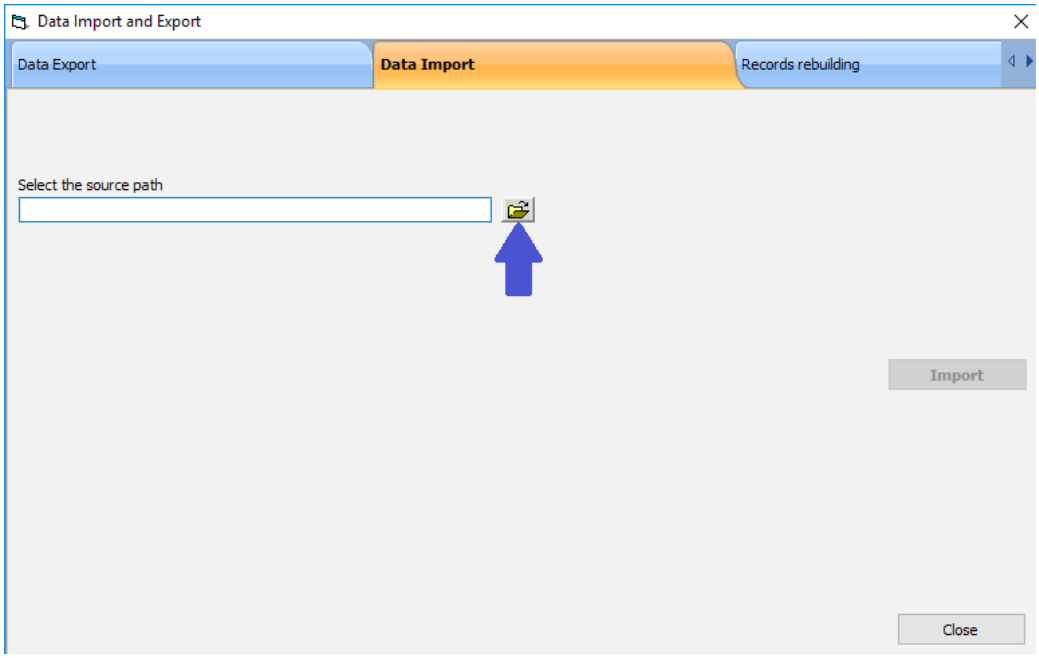


3. Select the destination where you will copy the data.



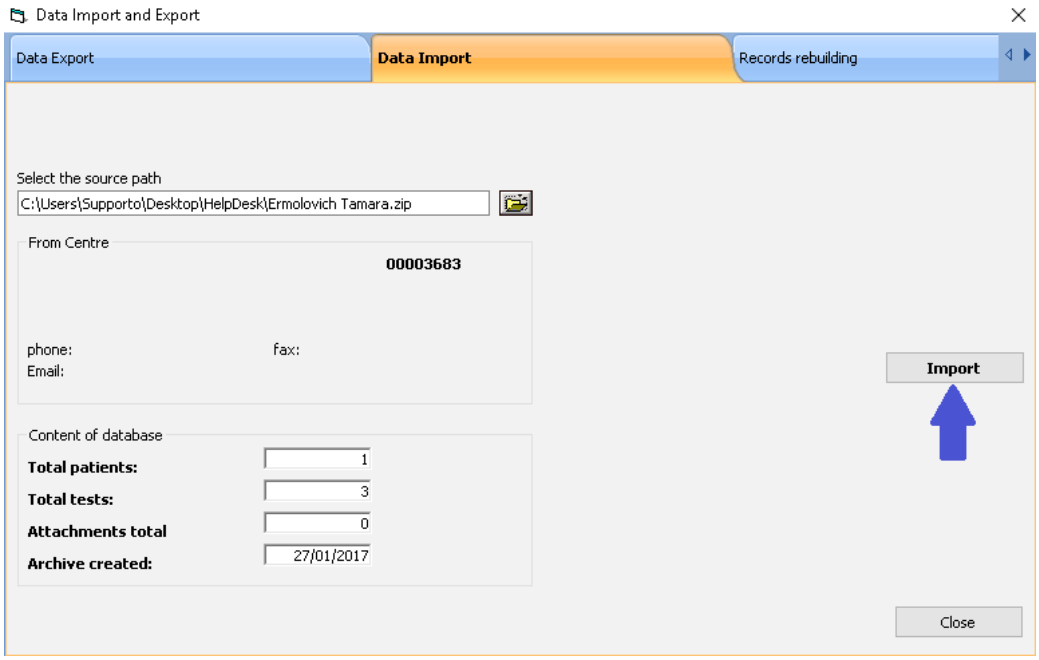
At the end of the procedure a single compressed file will be produced, that can later be sent to the target computer and can only be opened by importing it into another freeStep.

3.3.2 Import



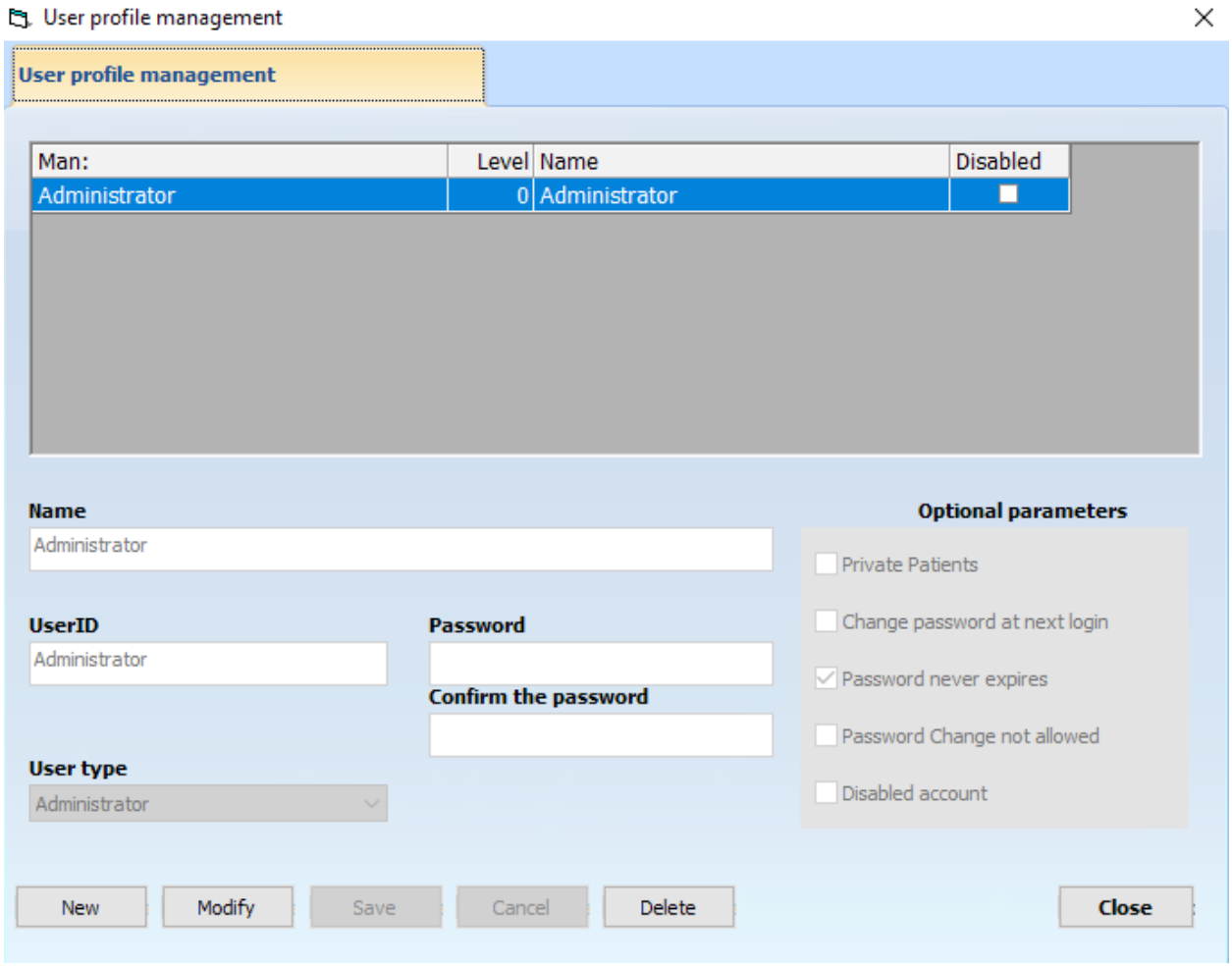
The import procedure is extremely simple. It let us select a zipped file coming from another freeStep® application.

After selecting, a data summary will be displayed (originating center, included exams, patients).



By clicking on “Import” the whole compressed file will be copied in your database, including traceability information.

3.4 Users Management



User Management lets you configure freeStep® as an all-in-one software platform, while letting you customize it for each user accessing the system.

Separate management of users, with their own identities and password, allows maximum patients’ privacy and extreme flexibility in the use of the program.

Each user can be inserted by the system Administrator (user with the highest level of access and features) and can privately handle or share their patients.

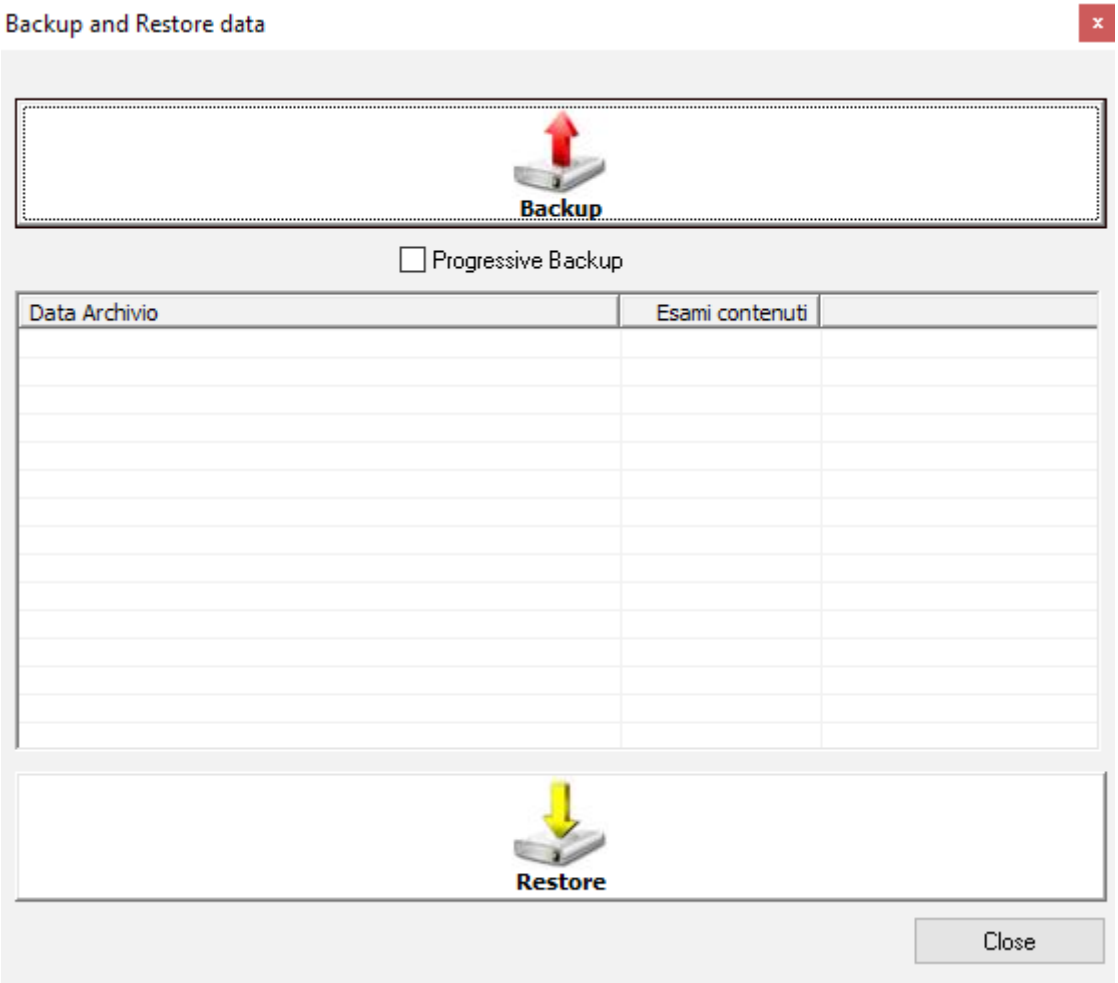
Depending on the access level set by the Administrator, each user may not be able to access some areas of the program as for example the System Setup, the data Backup area, etc.

To enter, edit or delete software users, you will have to directly operate on the function bar showing the commands “New”, “Modify”, “Save”, “Cancel”, “Delete”.

It is recommended, for obvious security reasons, to set each user with a different password and, in any case, with an access level lower than the Administrator’s.

3.5 Backup and Restore Data

The page about data Backup and Restore automatically runs a backup of all the database and of all the instrumental exams it contains.



A frequent and correct use of the Backup tool secures your data against possible malfunctioning of the personal computer.

Sensor Medica is not responsible for data maintenance and conservation. For this reason it is strongly recommended to back up all software on a daily basis, using the

appropriate feature within the freeStep® software.

To run a backup, after you have correctly configured the target drive in the System Setup, it is sufficient to click on the “Backup” button. This operation may take several minutes depending on the amount of data to be copied and the speed of your computer. When finished, you will see a new entry in the backup list, showing the date and time of the backup and the data it contains.

To restore a previously saved archive, select the desired data set from the list and click on “Restore”.

Please pay full attention during the Restore procedure because it is an irreversible one and may result in data loss. Always perform a precautionary backup before attempting to restore to a previous situation. During the Restore process, do not turn off your computer until the complete execution of the procedure.

3.6 Instrumental Acquisitions

Being the “Instrumental Acquisitions” a broad topic, they will be discussed with more detail in a dedicated chapter (chap. 4).

3.7 Chronology

The chronology menu simply lists the last ten executed or displayed exams. Using the chronology menu allows to quickly switch from one view to the other, keeping memory of our activities and making search operations easier.

To clear your chronology, from the upper textual menu, click on Settings - Clear History.

3.8 Statistics and data

Being “Statistics and Data” a broad topic, it will be discussed with more detail in a dedicated chapter (chap. 6).

3.9 Orthotic insoles

Being “orthotic insoles” a broad topic, it will be discussed with more detail in a dedicated chapter (chap. 7).

3.10 System Setup

Being “System Setup” a broad topic, it will be discussed with more detail in a dedicated chapter (chap. 8).

4 Instrumental Acquisitions

In this section, you will explore the core of software: the instrumental acquisitions.

You will be shown how to use the platform to perform static, dynamic and posturographic surveys and scans using 2D/3D scanner. You will be shown how to do videographic analysis and how to access them, at a later moment, for a full analysis of the patient.

NOTE:

It is very important to highlight that the acquisitions made with the platform are qualitative and not quantitative. In fact every indications of pressure, kilograms, mass, etc. is an illustrative measurement, which varies according to the calibration of the sensor. The “unit of measure” is expressed only for ease of reading.

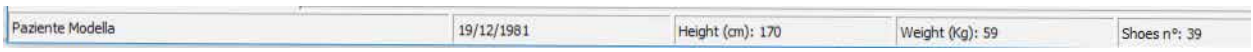
The professional user has the duty to verify the quantitative data and the diagnostic overview according to clinical knowledge. He/she cannot establish its decisions solely on the basis of the results issued from the platform.

4.1 Static Analysis

Through the quick menu on the left side of the screen, in the section instrumental acquisitions, after selecting or creating a new patient, you can enable the “Static” pressure acquisition with a baropodometric platform by clicking the appropriate menu item.

To check the patient you selected is correct, look at the status bar at the bottom of the screen: from left to right you will see in real time the main data of the selected patient:

- Name
- Date of birth
- Height
- Weight
- Shoe size.



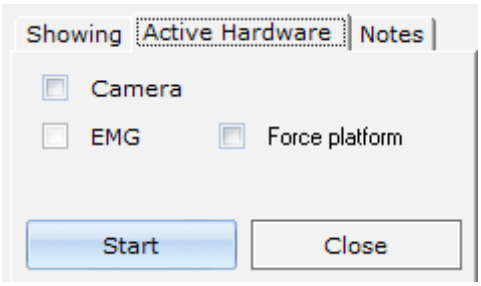
At the opening of the static acquisition screen, the acquisition device selected in the Application Setup will be immediately enabled.

Ask the patient to stand in bipodalic support in the acquisition area.

Some multiple modules pressure platforms, during static acquisition, have only one fixed module enabled, while other systems allow to select the active module to your liking, always using the Setup Panel (see section 8.5).

At this stage it is important to properly configure the active module sense of rotation. For a correct acquisition the patient's footprint must show the heels at the bottom of the screen and they should be aligned as much as possible between them. Two horizontal indicators at the center of the screen will help in the alignment.

If you have the necessary components (such as video camcorders or web-cams) it is possible, at this stage, to enable the image capture device to get a photo of the patient together with the static acquisition (see paragraph 8.7). In the command menu in the lower right of the screen, in the section "Active Hardware" select Camera.



In the black preview box will also appear the camcorder picture.

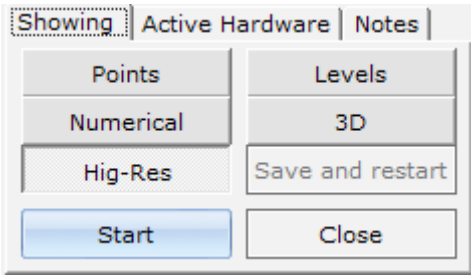
During the preview phase, which precedes the actual acquisition of the data, you can monitor the numerical information in real time, see the numeric values table at the top right of the screen.

Through the command menu selection, it is also possible to select the display mode:

- **Points**: dots of different dimension and color depending on the pressure applied on the sensors
- **Numerical**: expressed as a percentage, where the point of maximum load is the 100%
- **Levels**: simplified color palette with just 3 colors that represent the points of

maximum load in red, the load average points in green and the mild load intensity in blue

- **Hig-Res**: high resolution dotted graphic transformation
- **3D**: three-dimensional reconstruction of the foot pressure.



After carefully checking the patient's position, depending on your working protocol, clock on "Start" to proceed with the data acquisition.

During the following five seconds the software will sample at regular intervals the pressure information of the patient. At this time an intermittent message of "Acquisition" will appear.

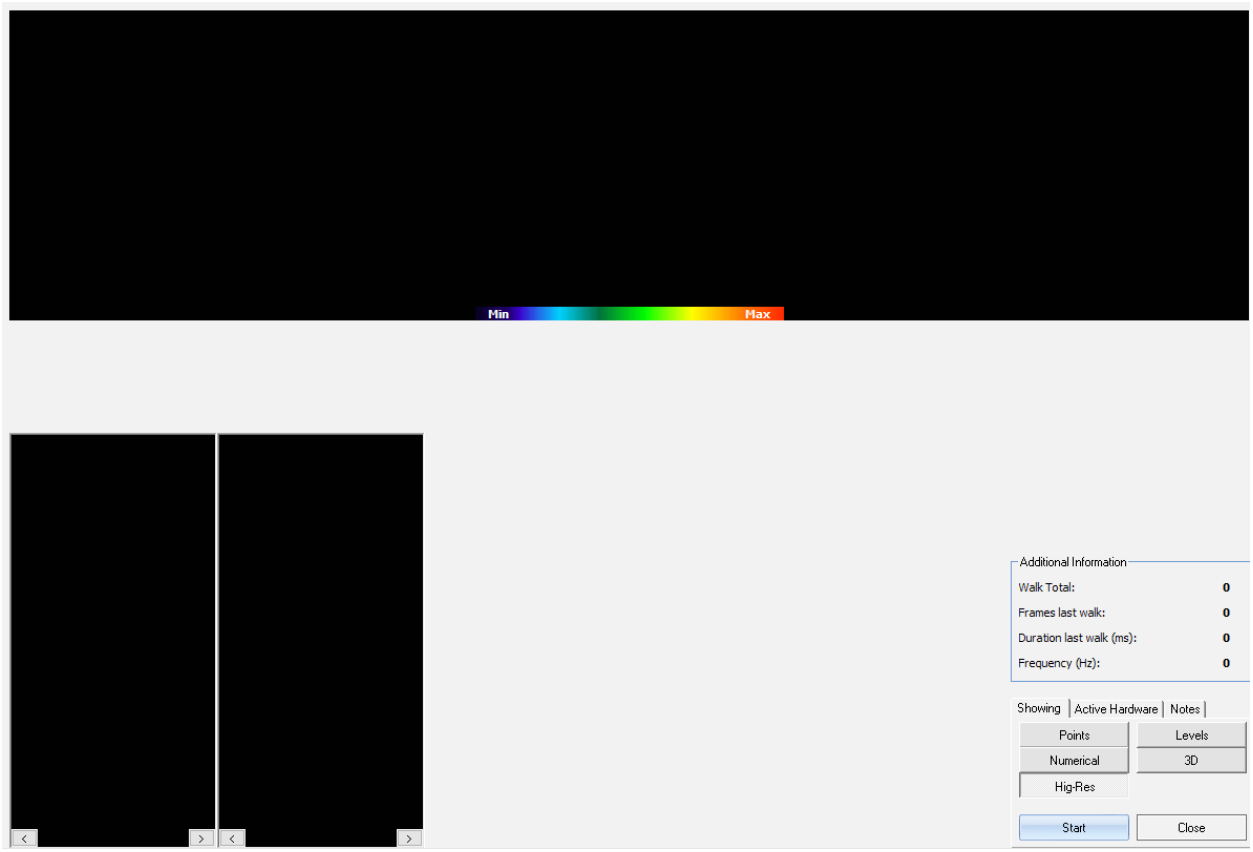
Once the preset time has expired, the message will become fixed and will say "Acquisition Complete".

The image displayed will be an average of all the data acquired during the acquisition time.

Should it become necessary to reactivate the preview pane, in particular to repeat the acquisition just performed, click the "Reset" button to return to the real time display, and then "Start" again to repeat the acquisition.

By clicking on the "Close" button, if an acquisition has been made, the data will be automatically saved and associated with the patient.

4.2 Dynamic Analysis



Through the quick menu on the left side of the screen, in the section instrumental acquisitions, after selecting or creating a new patient, you can enable the “Dynamic” pressure acquisition with a baropodometric platform by clicking the appropriate menu item.

Regardless of the type of device configured in the system, the dynamic acquisition window will be adapted and the entire sensitive area of the baropodometric platform will be displayed.

Through the command menu, as for the static analysis, you can change the kind of view and/or enable hardware accessories such as camcorders and/or surface electromygraphs. All enabled devices will perform independent and synchronized recordings.

In this case too, the program will wait for the “Start” command to begin the recording of the patient’s gait.

It is recommended to start recording only after the patient has repeatedly walked on

the pressure platform, to avoid the outpatient phenomenon, i.e. an emotional reaction that does not allow a spontaneous walk, in which the presence of the tool influences the measurement. The naturalness of movement must not be disturbed.

Both during the preview stage and during recording, it is possible to ask the patient to continuously walk in both directions. Just please be careful that, between the back and the forth stage, the patient completely gets off from the system for at least one second . During this interval, in fact, the software temporarily suspends the recording, calculates the detected footprints and prepares itself for a new acquisition.

The summary panel will update the acquisition statistics at each passage providing us with meaningful data on the quantity and quality of the acquired information.

If a PC has poor calculation power, the acquired data may be of low quality since, for example, the system will be able to obtain an acquisition frequency below 20Hz, or unclear pressure footprints and extremely small supporting surfaces.

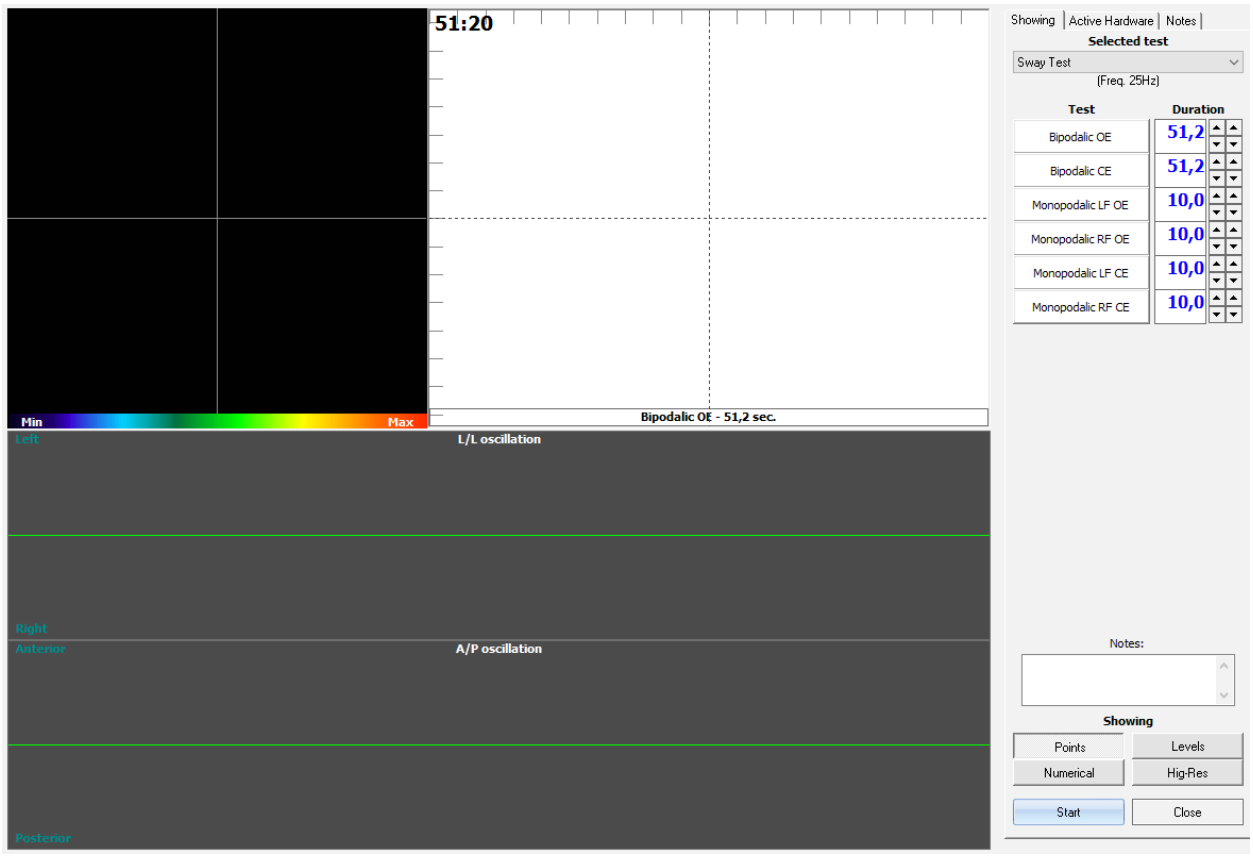
Although there is no real limit to the number of recordable passages, it is recommended not to exceed 20 acquisitions per exam, in order to avoid an excessively long processing time.

When acquisition is finished, click “Stop” and then “Close”.

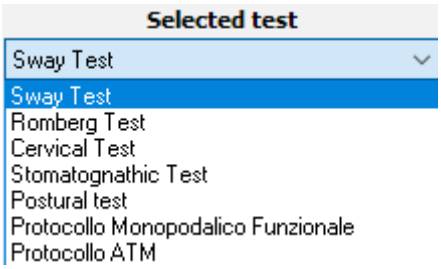
The program will automatically save and compress the data in the archive, which will be immediately ready to be viewed and printed.

4.3 Postural or Stabilometric Analysis

The third option of the instrumental acquisitions menu brings us to the panel of the postural or stabilometric investigation.



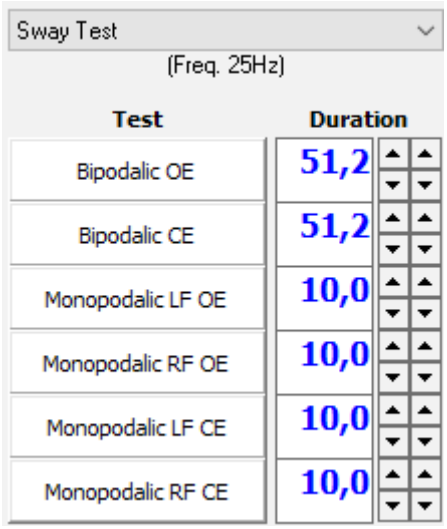
Despite the different postural acquisition methods (protocols) available, when passing through the context menu the system automatically selects the most complete, i.e. the SwayTest.



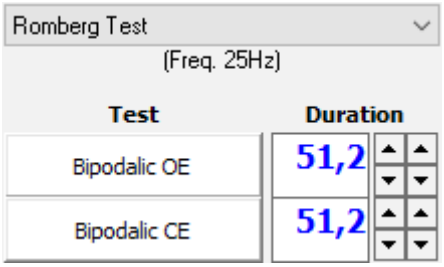
The SwayTest, as well as other methods of postural acquisition consists of several stages. In the upper right are listed the tests that will be carried out and the related

acquisition time.

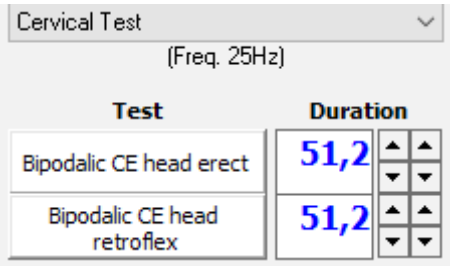
- The “Sway Test” consists of 6 tests: the first two lasting 51.2 seconds by placing both feet on the platform, first with open eyes and then with closed eyes. The other four are shorter (10 seconds) and are monopodalic tests (left and right) both with open and closed eyes.



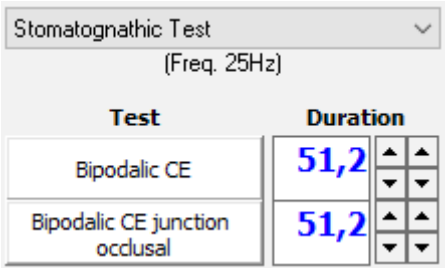
- In the “Romberg Test” we have two bipodalic acquisitions, first with open eyes and then with closed eyes, for a period of 51.2 seconds.



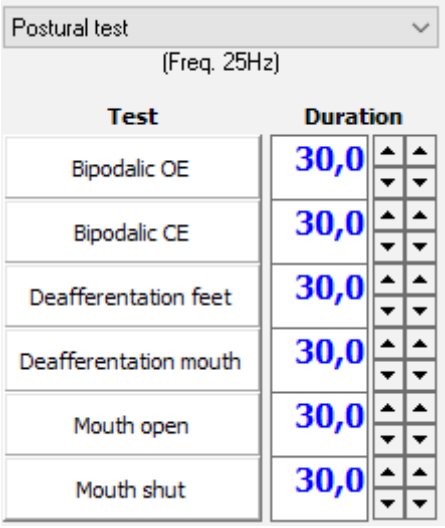
- In the “Cervical Interference” test, we have two bipodalic acquisitions with closed eyes, before with upright head and then with retroflex head, for a period of 51.2 seconds.



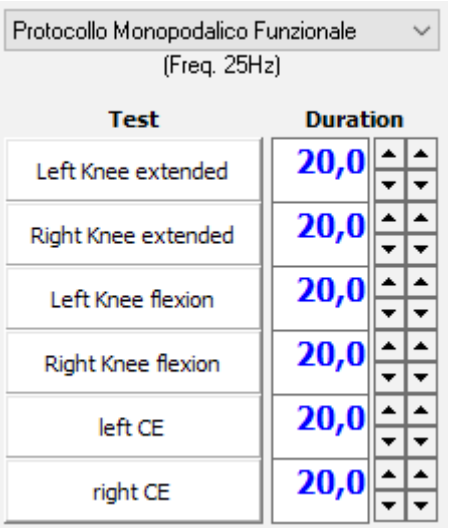
- In the “Stomatognathic Interference” test we have two bipodalic acquisitions with closed eyes of 51.2 seconds and in the second an occlusal junction is used, in order to prevent the patient’s normal dental occlusion.



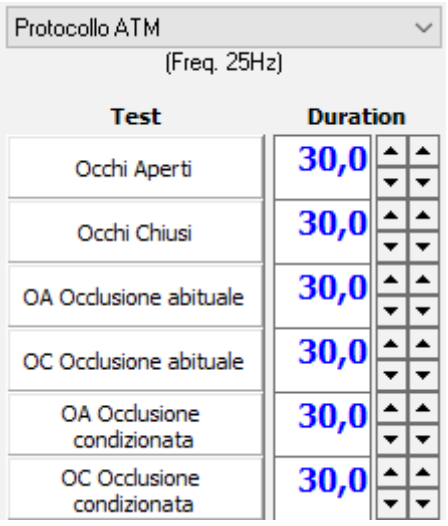
- In the “Postural Test” there are six bipodalic acquisitions of 30 seconds: with open eyes, with closed eyes, with feet deafferentation, with mouth deafferentation, with open mouth and with closed mouth.



- In the “Monopodalic Functional Protocol” six monopodalic acquisitions of 20 seconds are performed: with the left knee in full extension, then with the right, with the left knee flexed then with the right, on the left and on the right with closed eyes.



- In the “ATM Protocol” there are six tests of 30 seconds: with open eyes, with closed eyes, with habitual occlusion and open eyes, with habitual occlusion and closed eyes, with conditioned occlusion and open eyes and with conditioned occlusion and closed eyes.

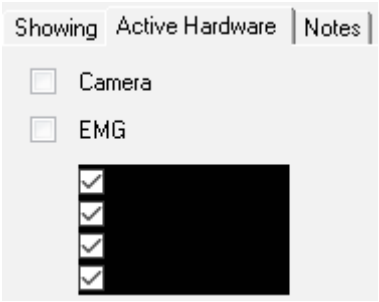


However, each test is customizable by setting each acquisition’s duration.

Below each test you will see the sampling rate configured in the setup. Not all PCs

have sufficient calculation power to support the selected frequencies. For this reason, before making full use of this feature, it is recommended to perform some tests, in order to evaluate the real limits of your system.

As in other acquisition screens, the software allows to enable hardware accessories, such as, for example, a surface electromygraph, for evaluating of the muscle activation during the stabilometric recording.



Ask the patient to position himself as suggested in the static exam, respecting your own working protocol.

Before clicking on "Start" check the acquisition type you are going to run, the acquisition duration and write your notes, if any, in the appropriate text field.

After clicking "Start", a countdown will appear which will provide information in real time on the remaining time to the test completion. When this time is elapsed, the test will be highlighted in green and the software will automatically indicate the next test to perform.

After at least one full registration you will still be able to break the selected cycle of acquisitions without losing the work done so far. In fact, when the acquisition page is closed, all completed tests are saved, even if part of a more complex protocol.

4.4 Video Acquisition

Always in the instrumental acquisitions menu, where your hardware and software equipment allows it, you can enable the Video Acquisition acquisition panel.

Video Acquisition is the recording of pictures or videos of the patient in specially studied positions, allowing us to perform qualitative surveys on the plans through geometric calculations, in order to produce an extremely reliable evaluation on the symmetry of the segmental superstructure of the patient himself.

It is possible to use up to 4 camcorders to get 4 different perspectives.

In the center of the acquisition pane the camera image will be shown in real time. By clicking on “Start”, one or more sequences of acquisition will be performed. On the right side of the screen, all captured images or scenes will appear in small size.

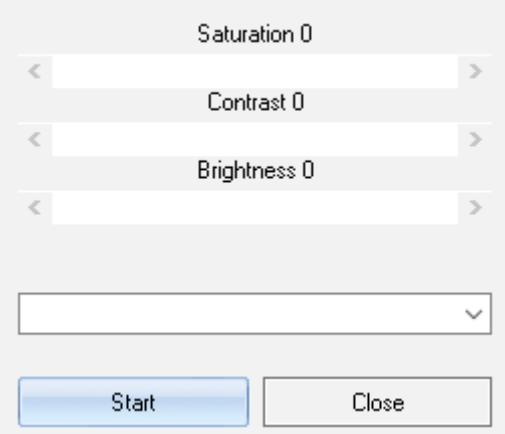
During the acquisition it is also possible to link to the exam images or videos recorded on a different kind of support, such as, for example, CD radiographs.

At the end of the sequence and closing the acquisition screen, all data will be compressed and linked to the patient under exam.

4.5 Podoscan 2D

Podoscopic digital acquisition, available for Podoscan 2D or similar tools users, captures the real image of the footprint through a digital scanner.

Ask the patient to stand on the device and click “Start”.



At the end of the acquisition the screen will display a preview of the scanned image.

It is recommended to run the scan in an environment with soft lighting and, in any case, to avoid any direct light interference.

Once the acquisition is complete, it will be possible to significantly change brightness, contrast and saturation of the image in order to get a good colour contrast between the footprint and the surroundings.

Closing the acquisition screen, the analysis will be automatically saved in the database.

4.6 Podoscan 3D

The Podoscan 3D is a powerful tool that can capture heights and image of the patient's feet. 3D and baropodometric acquisition provide a comprehensive analysis to improve the future orthotic insole, in fact you can export the analysis performed with the Podoscan 3D, along with platform performed analyses, directly to EasyCAD Insole®, our dedicated software to computer aided design of orthotic insole.

The Podoscan 3D acquisition consists in two parts:

1. Red light: a laser scan is run to detect the anatomy of the lower foot in 3D. It can measure up to 7 cm high.
2. White light: a scan is run to capture and save a foot picture. Hereafter, freeStep® will overlay this scan with the model obtained in the first scan.

To facilitate the positioning of the patient's foot, the Podoscan 3D has a laser pointer.

The product is also equipped with special accessories:

- An external camcorder
- A pedal to start the acquisition if the user is not at the computer.

The Podoscan 3D can also perform exams on phenolic foams, selecting the appropriate entry before clicking "Start".

4.6.1 Installation

To install the Podoscan 3D, you will need the help of a specialist. You can request it by writing an email to the address . Our specialists will answer as soon as possible.

It is recommended to create exclusion rules for Windows Firewall, Windows Defender and your anti-virus, since these processes can interfere with the proper functioning of the machine.

4.6.2 Acquisition

You can run an acquisition after selecting the patient and by clicking on the icon “Podoscan 3D” in the rapid menu.

First, the software checks the communication with the Podoscan 3D. If diagnostic communications do not succeed, please verify that the Podoscan 3D is turned on and/ or connected to the computer. Once in communication, the Podoscan 3D will beep and will be ready to run the acquisition, while the software will unlock the command “Start”.

Now you will need to select the right or left foot and ask the patient to place the foot on the scanner. The Podoscan 3D must not be placed under direct light.

After the scan, the picture will appear on your screen and freeStep® will automatically set up to the opposite foot, ready for the second acquisition.

4.6.3 Maintenance

In order to always obtain a clear acquisition you should clean and disinfect the Podoscan 3D. We recommend the use of ethyl alcohol, and later of products that leave no marks on transparent surfaces.

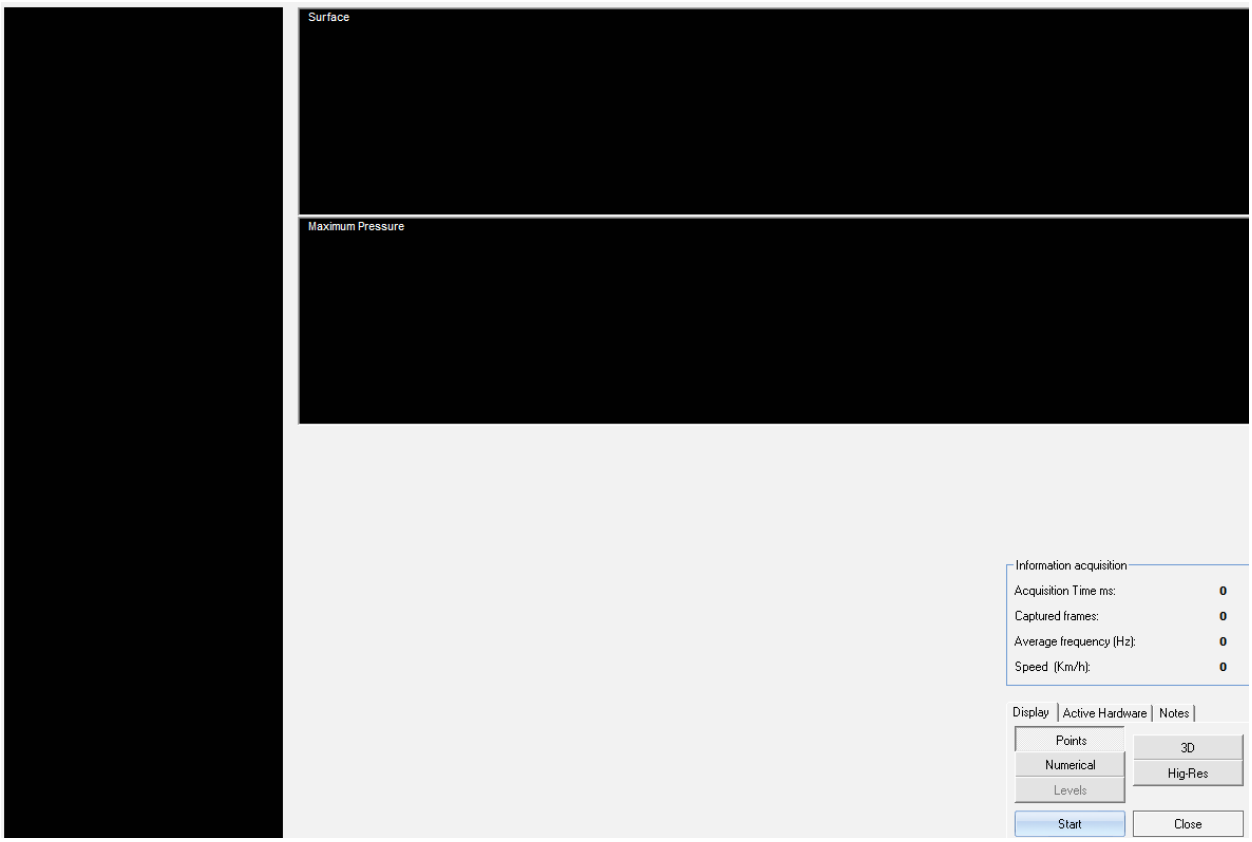
4.7 Treadmill

TreadMill analysis can capture the gait or the run of the patient.

You can directly set speed and inclination on the TreadMill.

We recommend not to perform acquisitions for more than 2 minutes. Since it might slow down the data processing.

To begin the acquisition, you must first select a patient from the database or create a new one.



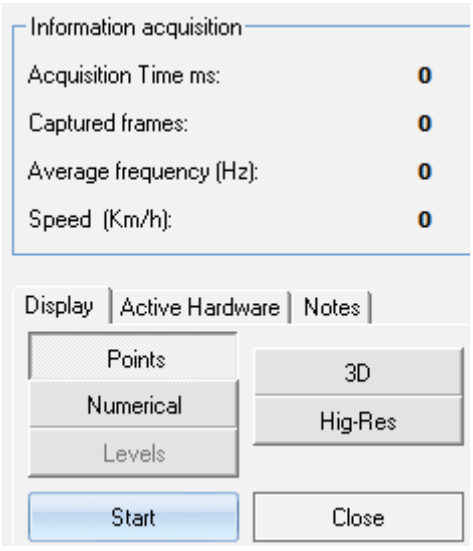
The screen that appears is composed of three parts:

- On the left you will find the podalic footprints (you can perform an exam both with and without shoes)
- On the top center you will find maximum surface and pressure values
- At the bottom right there are the acquisition informations: duration (ms), number of captured frames, average frequency (Hz) and speed (Km/h).

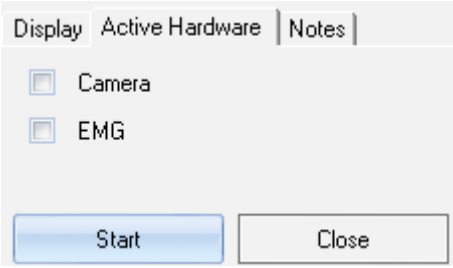
In the display section, you can choose how to view the podalic footprints between:

- Points
- Numerical
- Levels
- 3D
- Hires.

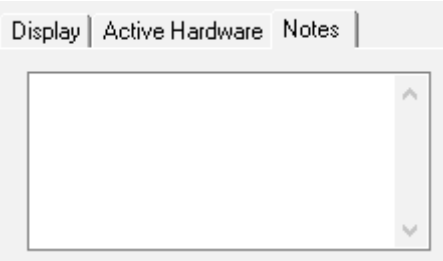
To start the acquisition, click “Start”, click “Stop” to finish it.



From the “Active Hardware” section you can enable the connected devices, if any, such as the camcorder and the EMG.



Furthermore, in the section “Notes” the specialist can write observations, if any, on the patient’s exam.



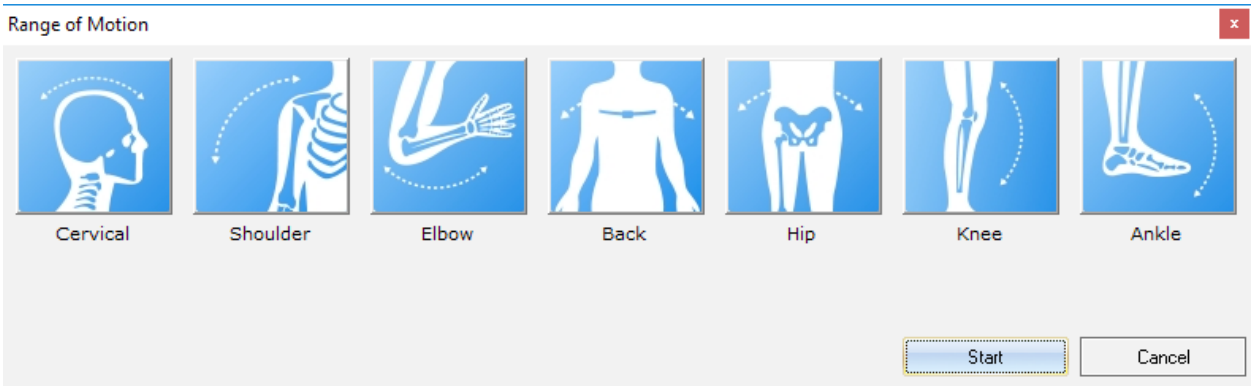
To view the saved acquisition, close the acquisition screen and in the patient’s personal record click on the concerned analysis.

4.8 Goniometry

To install the mOOver (Inertial Motion Sensor) please send an email to , installation specialists will reply as soon as possible.

With a mOOver you can run various types of acquisition.

Selecting “Goniometry” in the rapid menu the following window opens:



It will be possible to choose what to analyse between:

- Cervical
- Shoulder
- Elbow
- Dorsal
- Hip
- Knee
- Ankle.

In this case let’s consider cervical analysis: other acquisitions are performed alike.

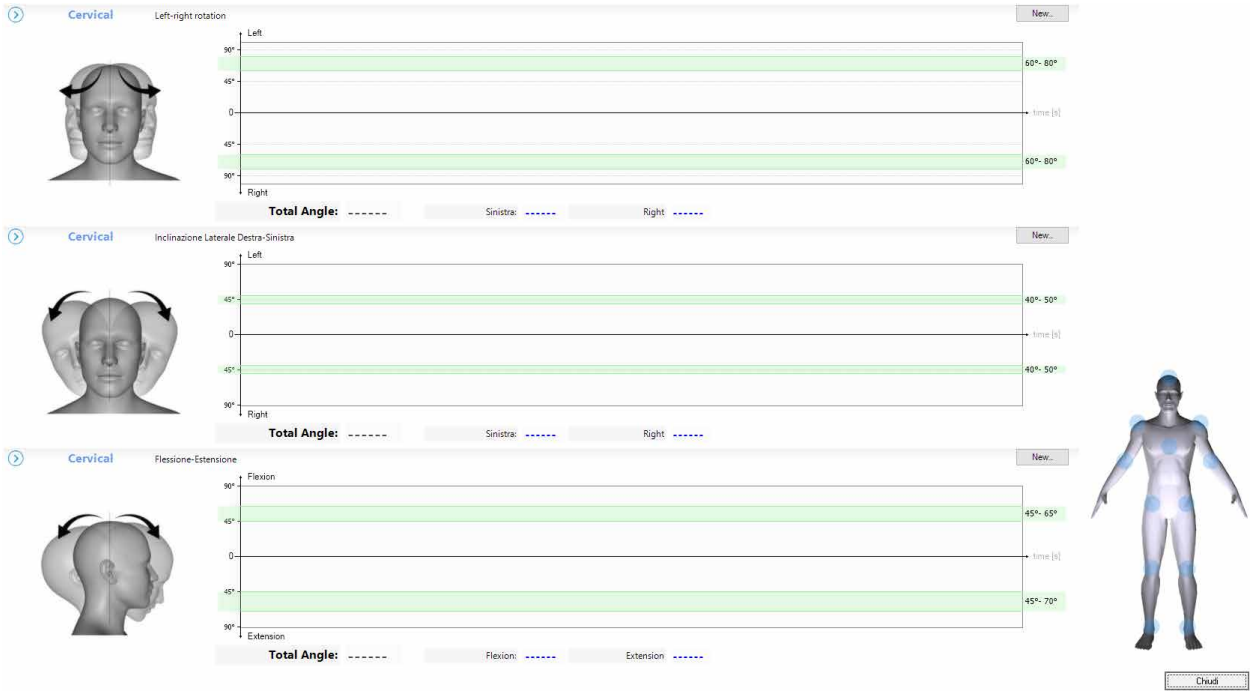
If you position the cursor over the picture, the correct position of the mOOver to wear will be displayed.

On the main screen of the analysis we see the images of three different acquisitions, with the related correct movements we're going to do:

- Right-left rotation
- Right-left lateral inclination
- Flexion-Extension.

To start the acquisition for each movement, click on "New".

What we will get will be the trend of the angular variation over time carried out during the test, expressed in degrees.



5 Viewing Exams

After the registration of a patient and after the related instrumental acquisitions, it is possible to access the data visualization and analysis.

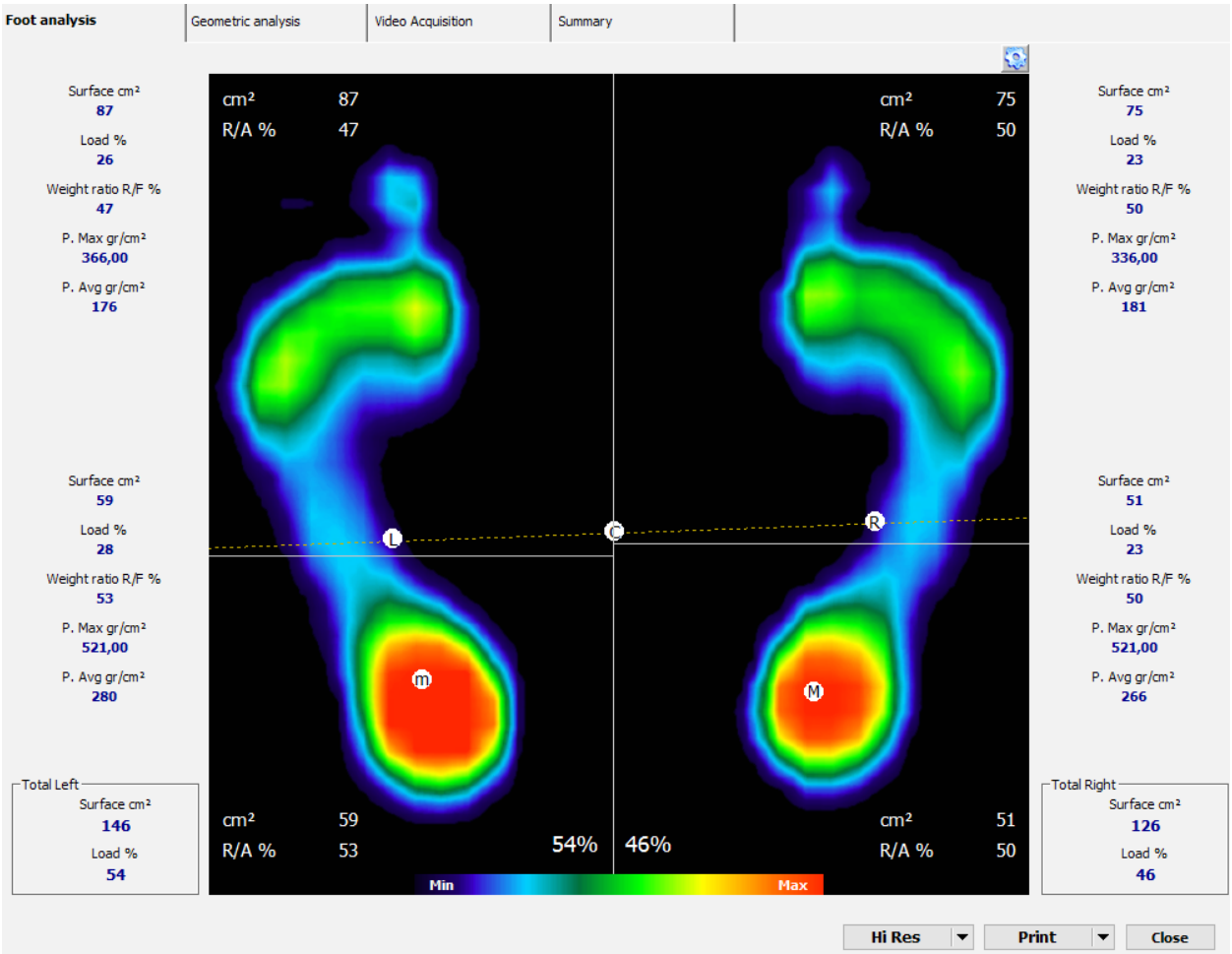
In the Patients' Database, select the patient to analyse. In the main data it is possible to view the list of the performed exams.

The exam list, in addition to describing the type of exam, indicates its date and time, patient's age, height, weight and shoe size when the test was performed.

By double clicking on the exam or, after selecting it, clicking on "Open", you will open the specific section of the investigation.

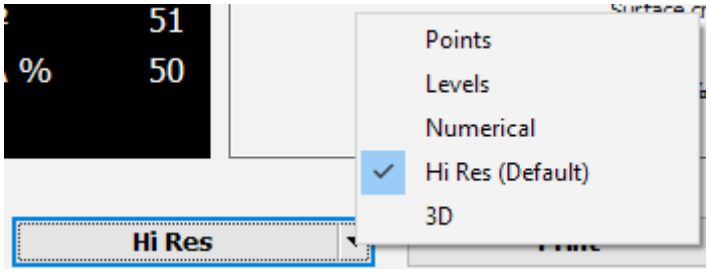
5.1 Viewing Static Analysis

5.1.1 Foot Analysis

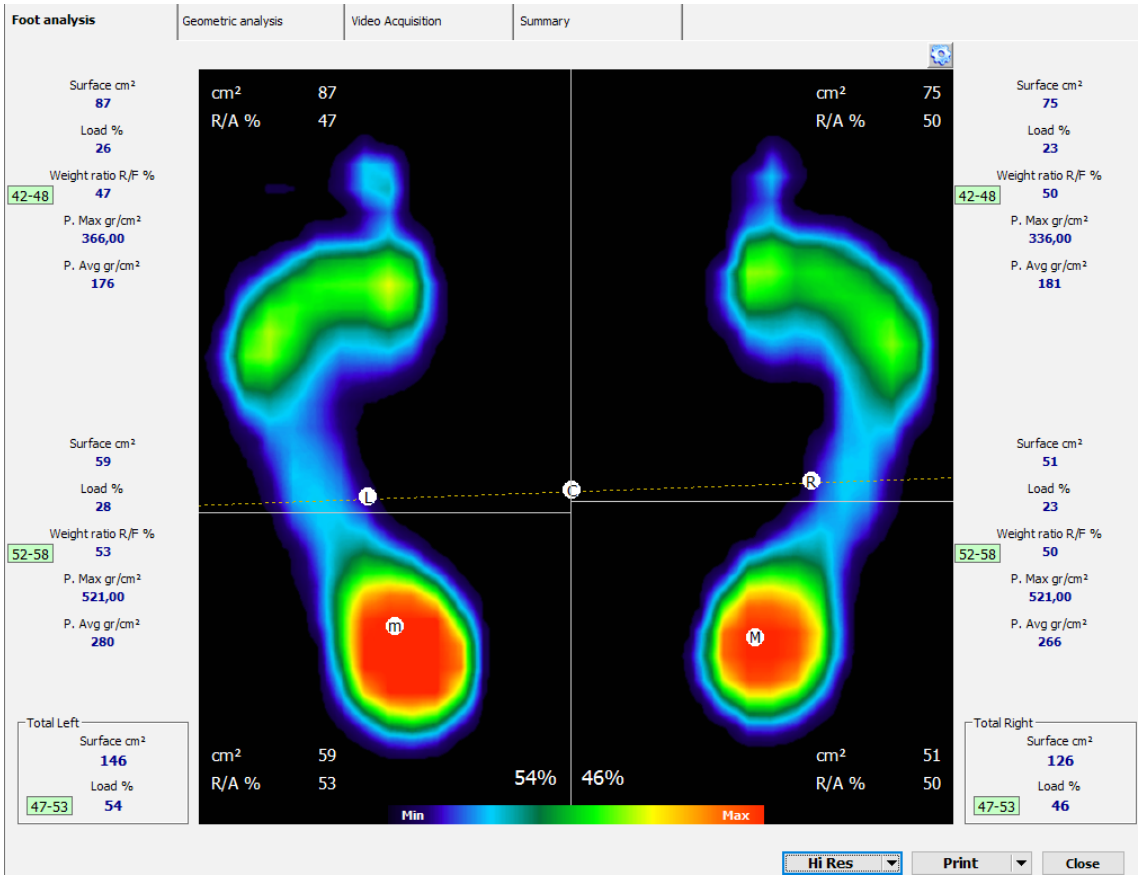


The first pane displayed represents the podalic support of the patient, with the numeric values of the four quarter that subdivide it (left and right antero-posterior values): surface (cm²), load%, maximum pressure (gr/cm²), average pressure (gr/cm²). The total area and load both for the right and the left foot are also indicated.

With the buttons “Points”, “Numerical”, “Hi Res”, “Levels” and “3D” you can change the display mode of the pressure footprint.

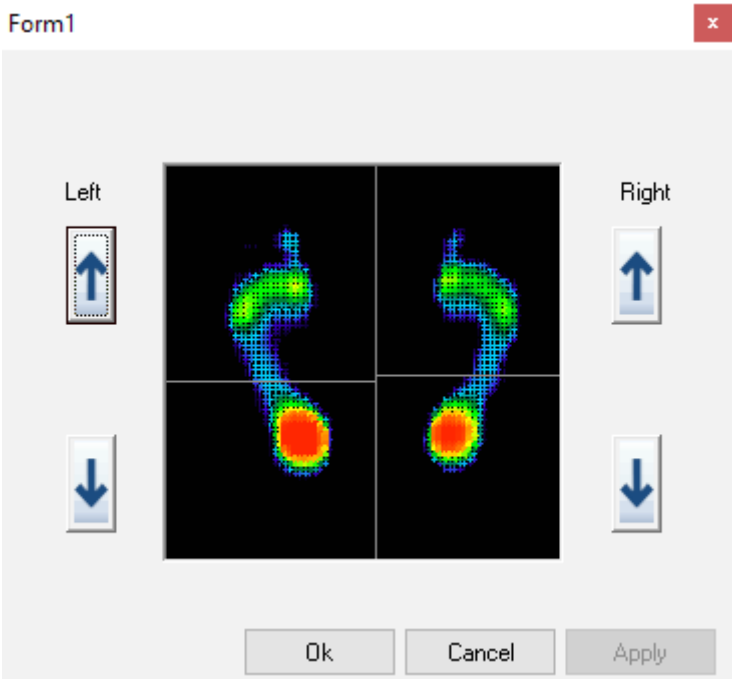


Panning with the mouse over the image it will be possible to see the weight, in grams, of every single support point. Pressing F2 we can observe and compare our measurements with normal values (in green).



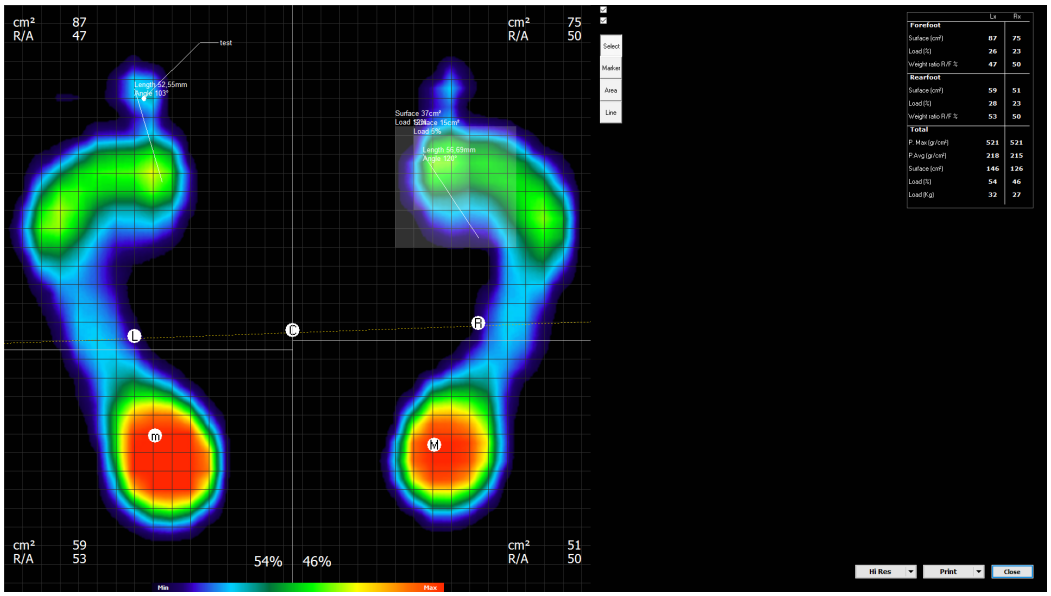
To print the picture and related displayed values, please refer to the chapter on the "Print" command.

Pressing the key  , at the top right you will see a screen where you can align the podalic footprints with the specific arrows.

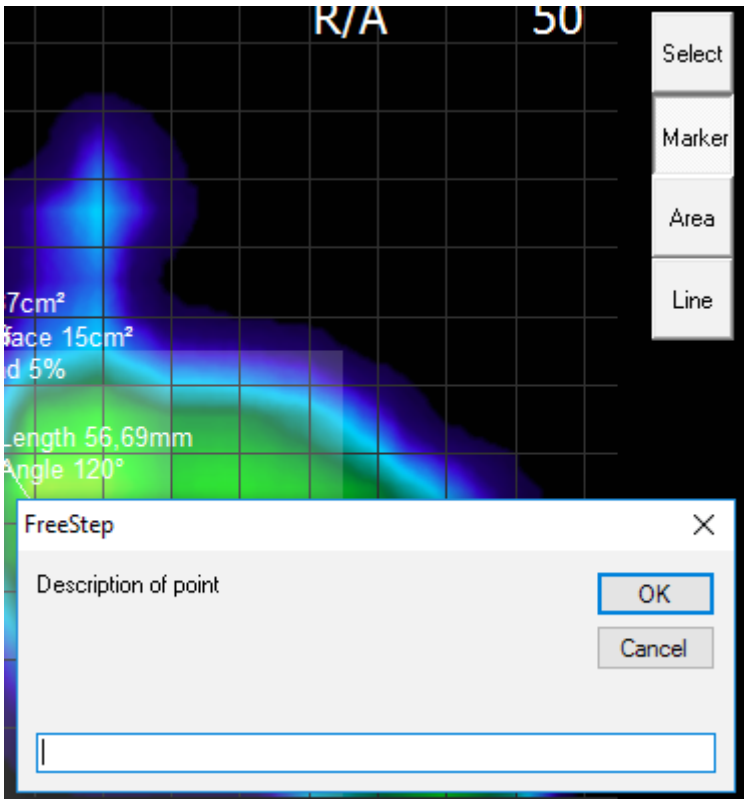


Once the footprints are aligned, click on "Apply" to save the changes, otherwise click on "Cancel".

By double clicking on the obtained footprint picture, the following screen opens.



In this case it is possible to indicate a precise point with a marker and take a note (e.g. to highlight an ulcer), or to select an area or draw a line.



The surface, load (%) and E/A ratio (%) values are tabulated on the right (cm²) both for right and left forefoot and rearfoot.

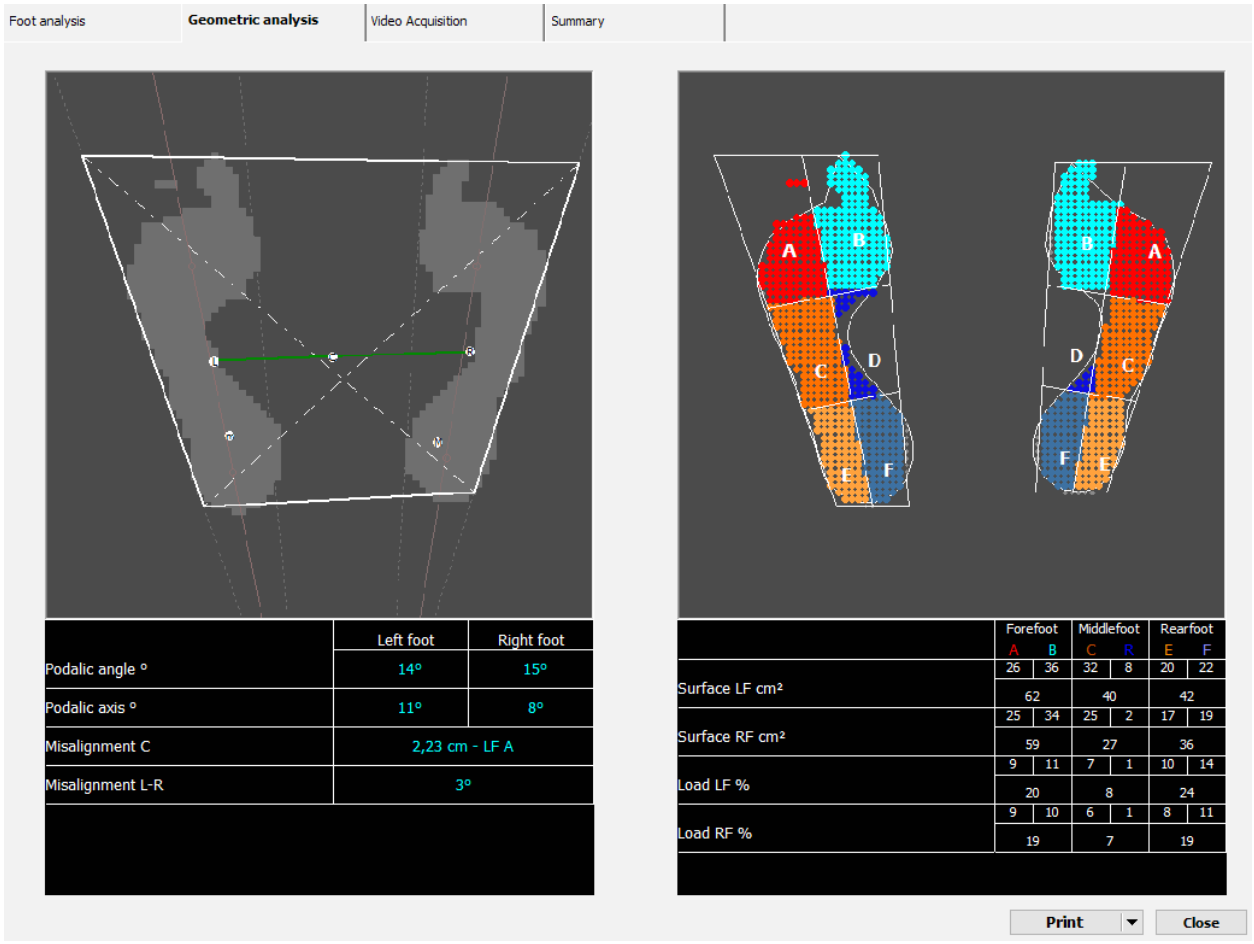
In the total, both right and left, are shown: maximum pressure (g/cm²), average pressure (g/cm²), surface (cm²), load expressed as a percentage and load expressed in Kg.

	Lx	Rx
Forefoot		
Surface (cm²)	**87**	**75**
Load (%)	**26**	**23**
Weight ratio R/F %	**47**	**50**
Rearfoot		
Surface (cm²)	**59**	**51**
Load (%)	**28**	**23**
Weight ratio R/F %	**53**	**50**
Total		
P. Max (gr/cm²)	**521**	**521**
P.Avg (gr/cm²)	**218**	**215**
Surface (cm²)	**146**	**126**
Load (%)	**54**	**46**
Load (Kg)	**32**	**27**

At the bottom right you can choose the kind of display (Dots, Levels, Numeric, Hi Res -default- or 3D), print or close the screen.

5.1.2 Geometric Analysis

By enabling the "Geometric Analysis" section it is possible to evaluate the support polygon rebuilt around the podalic footprints.



In the left screen we get the reconstruction of the support polygon, the podalic axis (axis passing centrally to the rearfoot and between the II and III fingers) and the podalic angle (obtained from the intersection of the tangents to the foot), the conjunction line of the CoFs (Center of Force) and the positioning of the CoP (Center of Pressure) both for the right foot and for the left foot. This information is presented both graphically and numerically (in the table). On the right side of the screen you can evaluate the load surface relating to each support area.

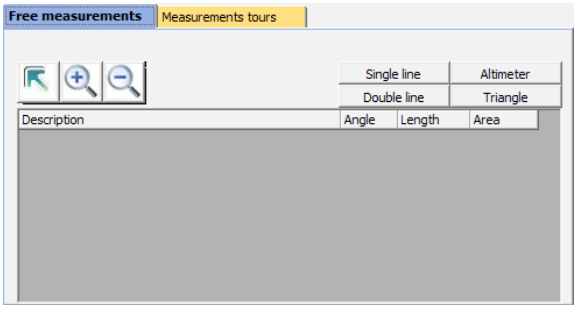
5.1.3 Video Acquisition

If during the static acquisition the camcorder is on, the “Video Acquisition” section automatically becomes available.

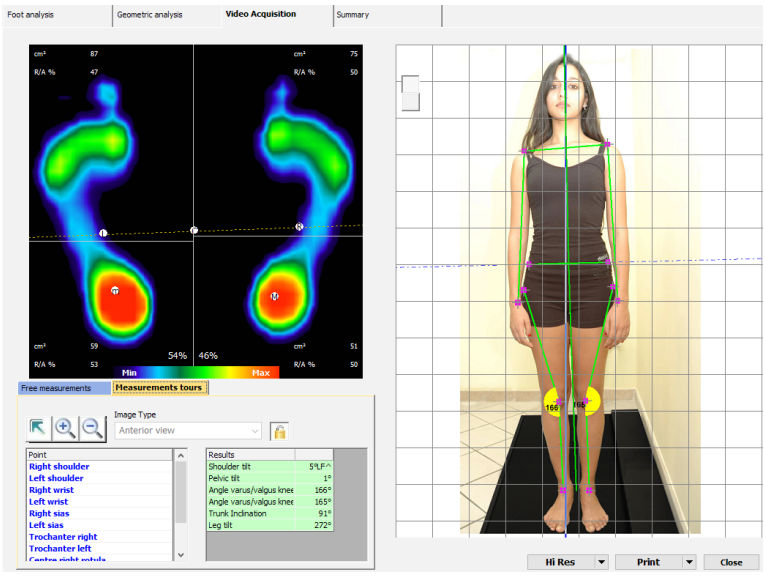
In this section you can choose whether to run free or guided measurements, selecting them in the window at the bottom left.

In free measurements you can enlarge or reduce the patient’s image and you can perform analysis using:

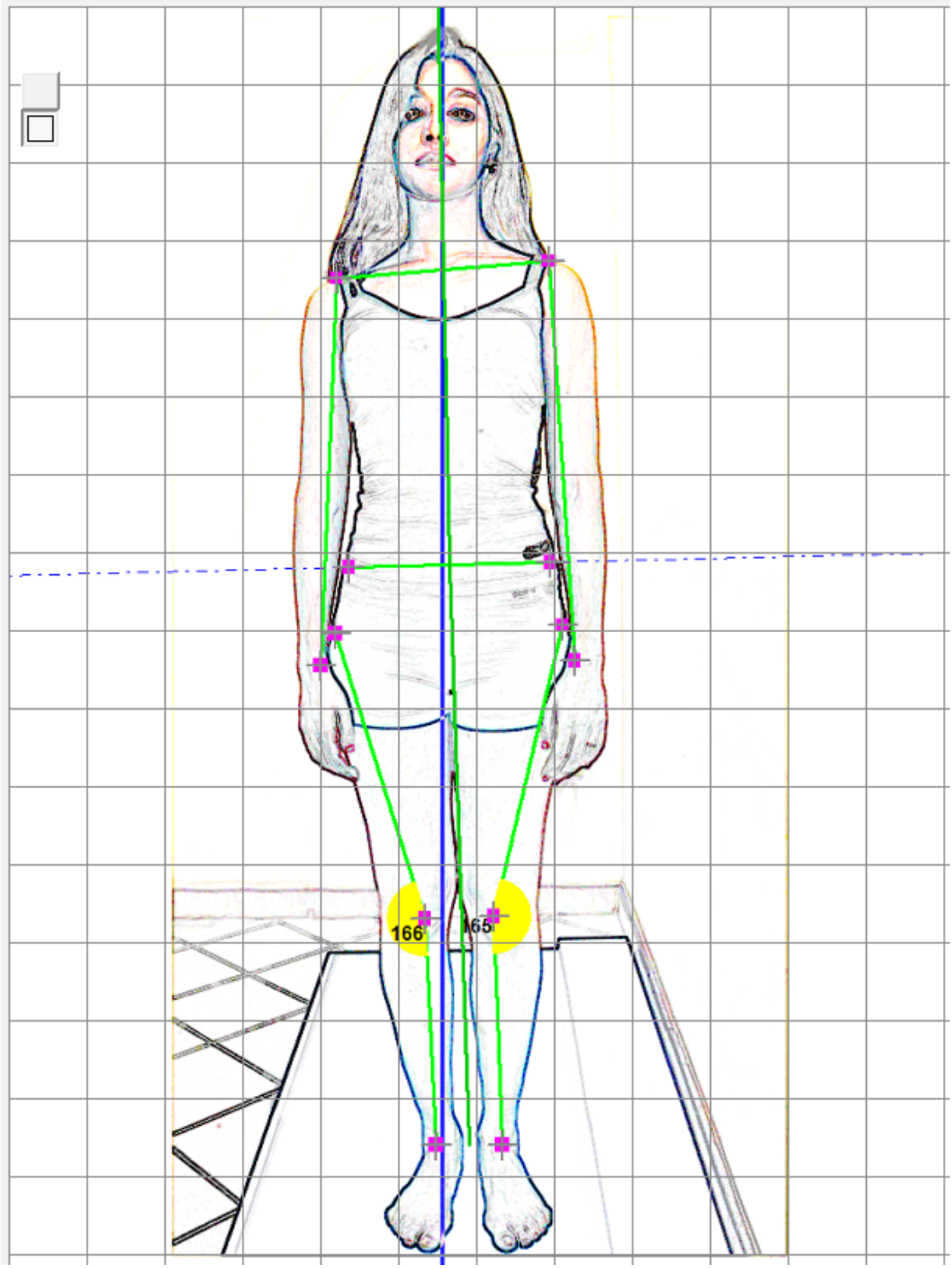
- individual lines that provide length and angle in relation to the transverse plane
- double line that provides the length and the included angle
- altimeter that shows us the ground clearance of the selected point
- triangle that gives us the selected area.



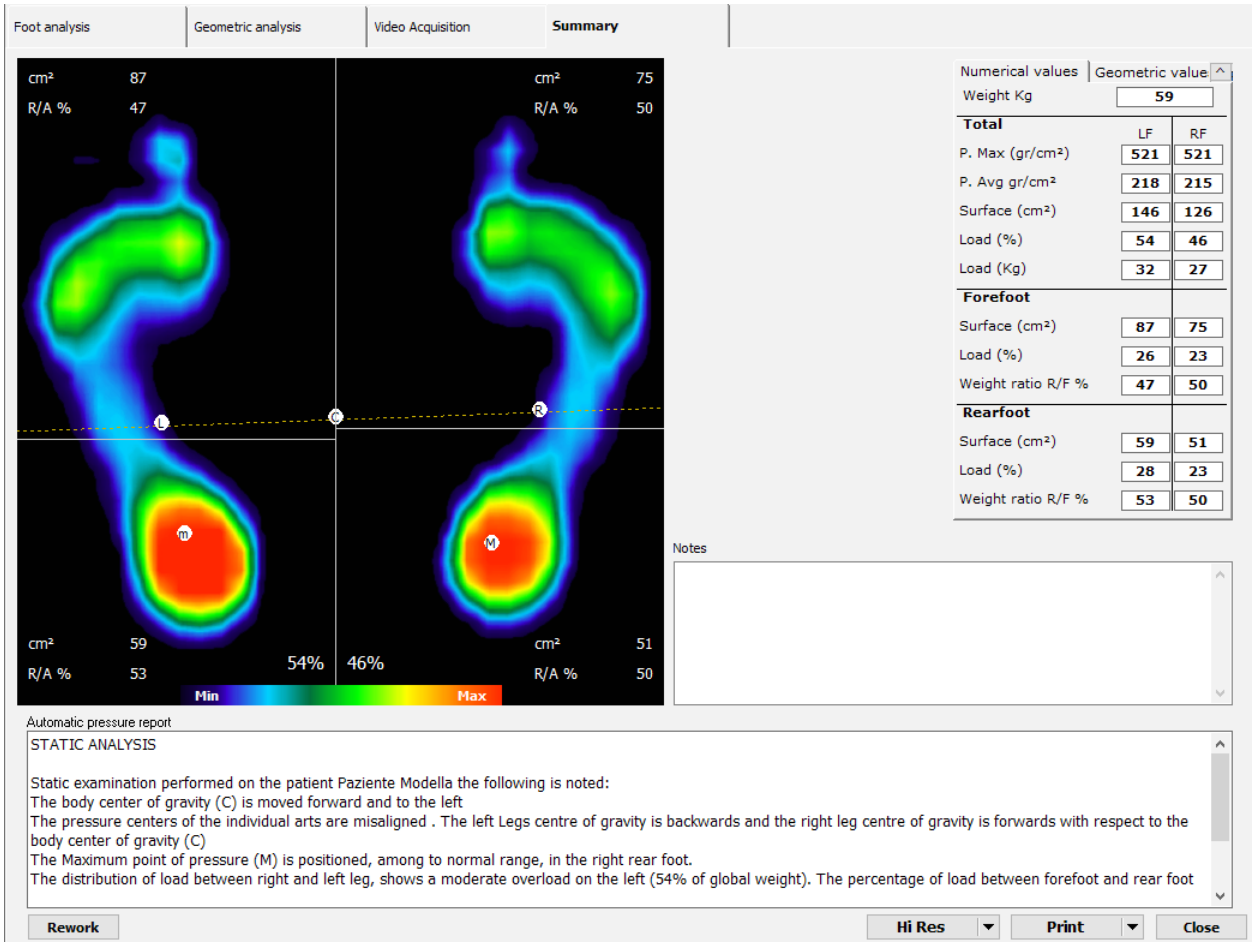
In the guided measurements the anatomical landmarks are indicated: once they are placed, angles and inclinations are provided.



To anonymize the figure, press the second square in the top left of the right screen where the patient is displayed. What you will get is shown in the following image.



5.1.4 Summary



The summary section displays, in addition to the podalic footprints captured and shown in a colorimetric Graph, all the numeric variables calculated on the exam.

For a detailed description of all the viewed parameters, please refer to the appropriate section “Glossary and Conventions” of this manual.

In addition, at the bottom of the page, you will find the textual pressure report, automatically processed by the system.

In fact, the software can analyse and interpret a certain amount of information and to compare them with the normal values. These information are processed as text and associated to the exam itself.

The text, editable by the user, is automatically saved when the page is closed.

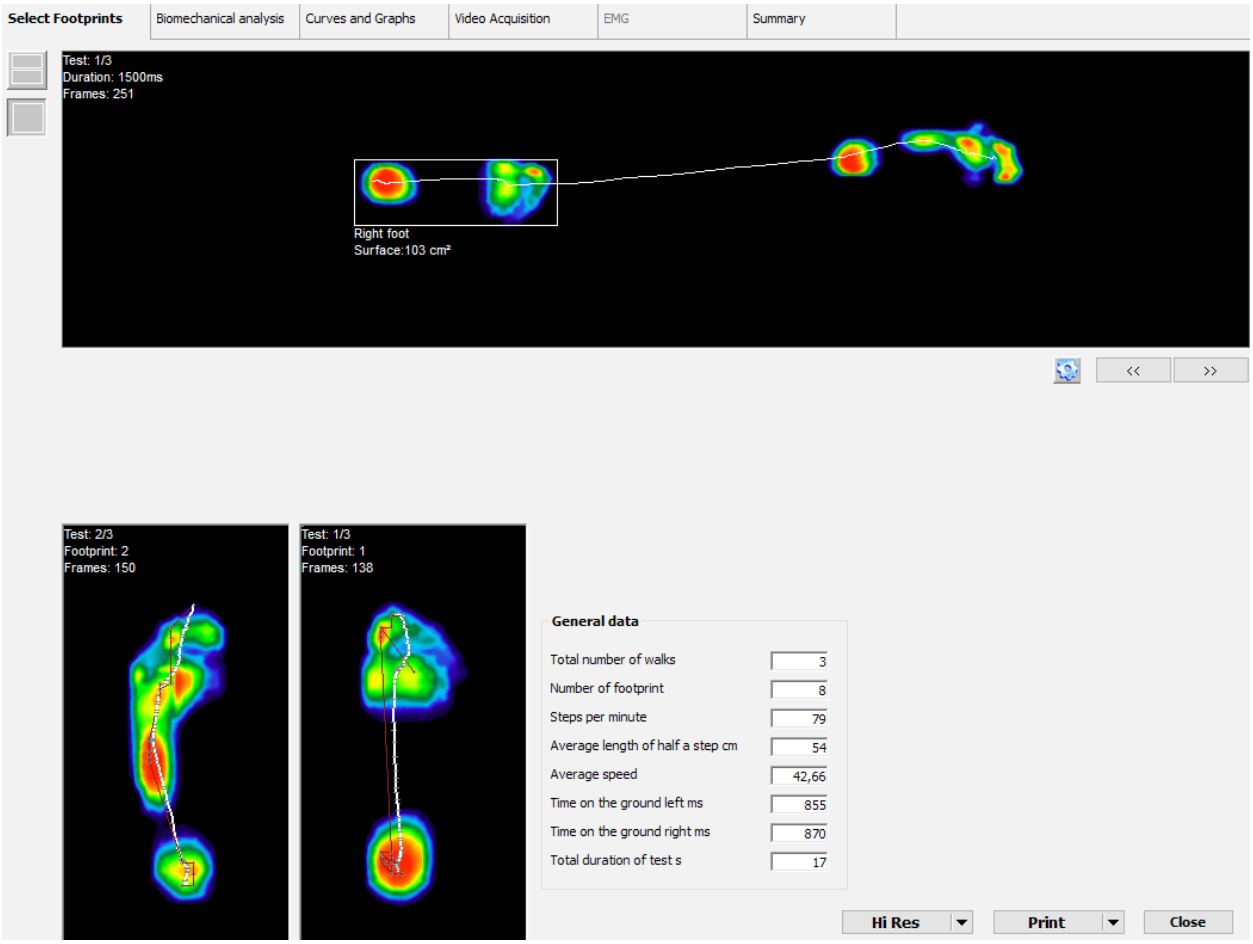
Clicking on the “Rework” button, any changes will be lost in favor of the automatic report.

Within the system, a synonym algorithm allows you to obtain always different automated reports, even treating concepts and results similar to each other.

5.2 Viewing Dynamic Analysis

5.2.1 Select footprints

The first summary screen provides an overall view of all captured footprints.



All the footprints proceed unidirectionally from left to right: the software automatically rotates the footprints that proceed in the opposite direction in order to analyze and visualize the patient's gait more easily.

For a correct overall analysis of the dynamic test it is essential to check and select the footprint samples and discard the incomplete or unreliable ones.

In fact, during the repeated tests carried out by the patient, is very likely to bump into partials footprints (at the beginning or end of the sensory part of the platform),

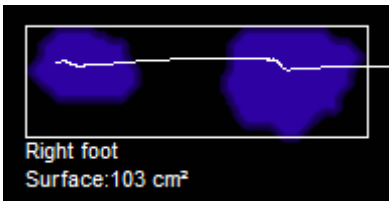
or excessively contrasting with the real patient's support(momentary oscillations or uncertainties while walking).

It is therefore necessary to examine carefully all registered footprints and to evaluate which ones may interfere during the average calculations.

To view all the tests, use the appropriate test scrolling commands, placed on the right of the screen, in the middle [<<] [>>].

To exclude a footprint from the calculation, just right click on the print and select "Disable". This operation, besides excluding the footprint from the calculation, will prevent its accidental printing by the operator.

The excluded foorprints will be displayed in blue instead of colors.

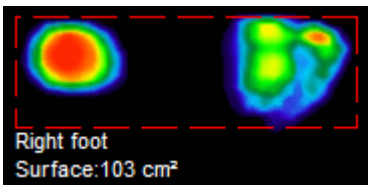


During the footprint preliminary analysis, you might find that the automatic footprint identification system may have misinterpreted a right footprint as a left or vice versa.

In this case, right click the change (left-right) that you want to make to the footprint.

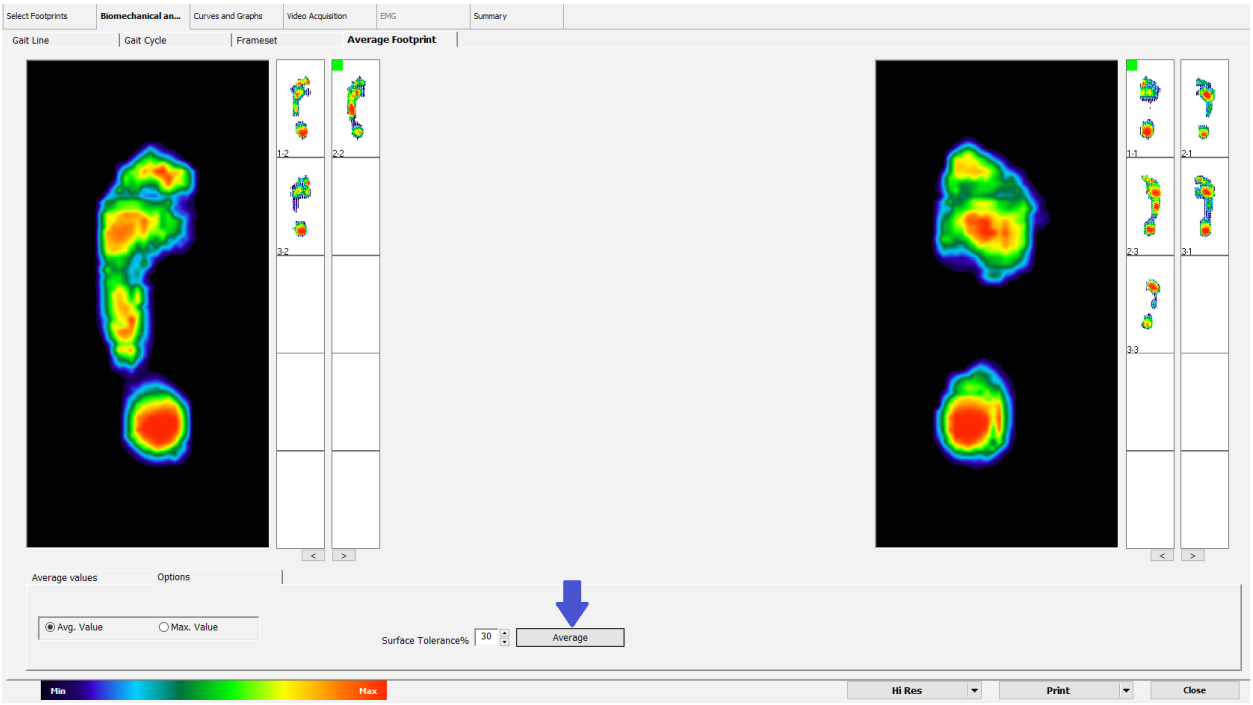
By double clicking on a footprint (or right click - Select), this will become the footprint sample on which most of the detailed calculation will be elaborated.

Finally, you can redraw the perimeters of footprints through the special function button  . The footprints perimeters will be highlighted with a dotted red line.



Through the mouse, select and correct the perimeters.

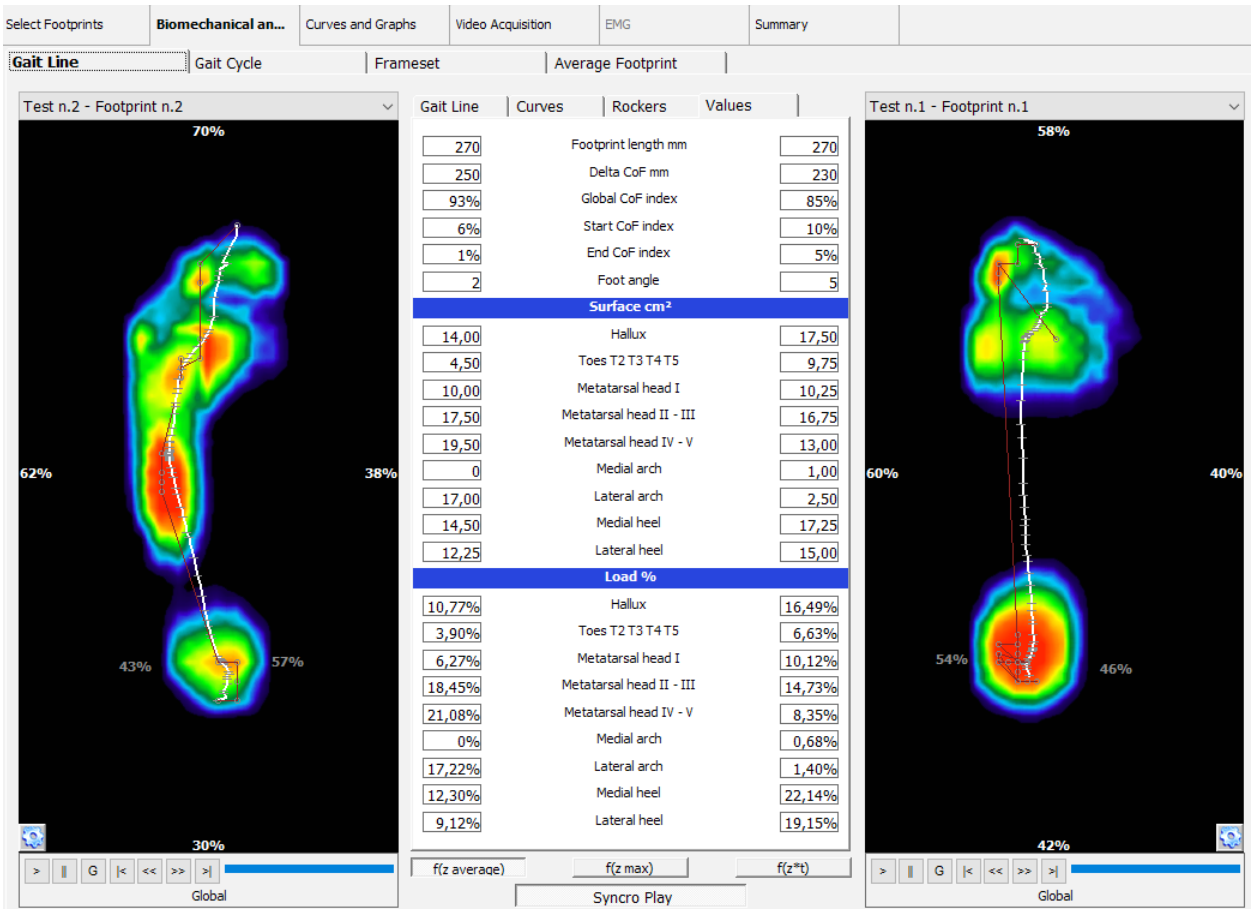
To accelerate and automate the footprint selection process, it is possible to click the button “Average Calculation” (path: Biomechanical Analysis - Average Footprints - Options). This function, based on the surface of every single footprint, will evaluate the most reliable and will automatically exclude the incomplete ones.



From the same page you can also evaluate and, if needed, change the automatic recognition of right and left footprints.

5.2.2 Biomechanical Analysis — Gait Line

The study of the Gait Line and related dynamic frame allows to evaluate, moment by moment, the execution of the step.

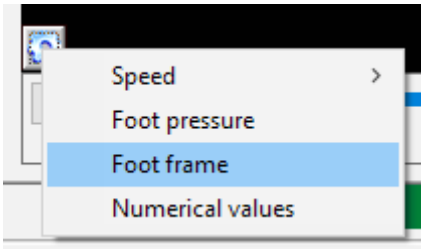


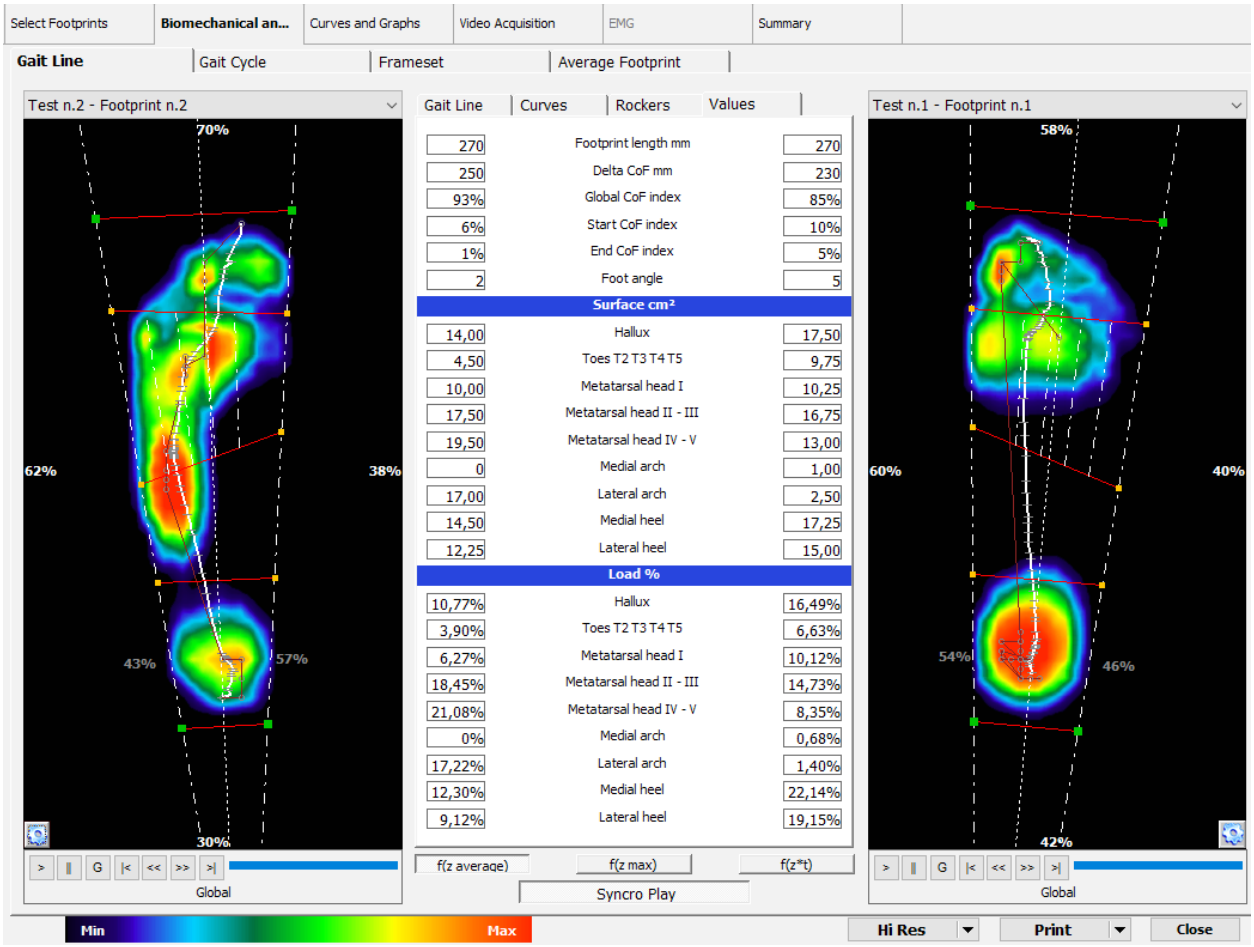
The execution buttons, below the podalic footprints, allow to explore, stage by stage the “rolling movement” of the foot.

Displaying the global picture (button [G]) you can represent the footprint in three different ways:

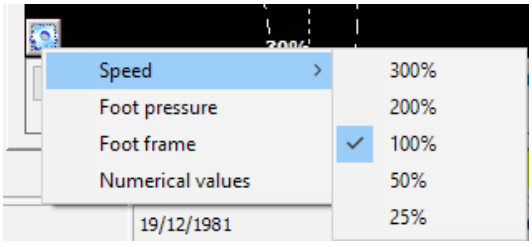
- F (z average): Represents the mathematical average of the pressure values captured for each frame.
- F (z maximum): Represents the maximum pressure peak reached by every single point.
- F(z*t): Represents the pressure value multiplied by the time spent on the ground.

By pressing the button below the podalic footprint and selecting “Foot Areas” you can modify the foot sections moving the different markers with the cursor





With the command it is also possible to choose the gait playback speed, to display the pressure footprint and numerical values or not.

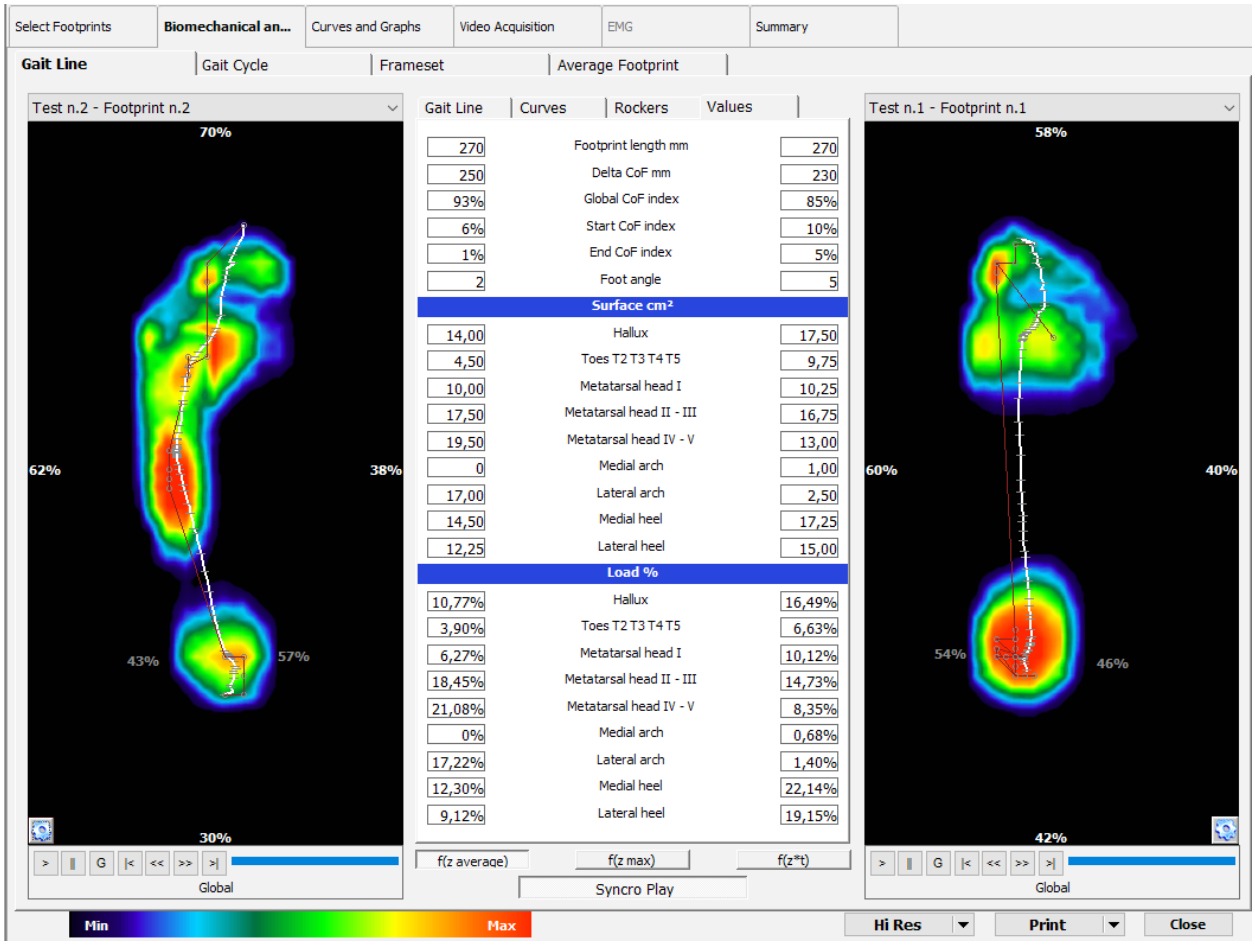


5.2.2.1 Values

Opening “Biomechanical Analysis - Gait Line”, the section “Values” is the first we find.

Both for the right and the left foot, the following values are tabulated:

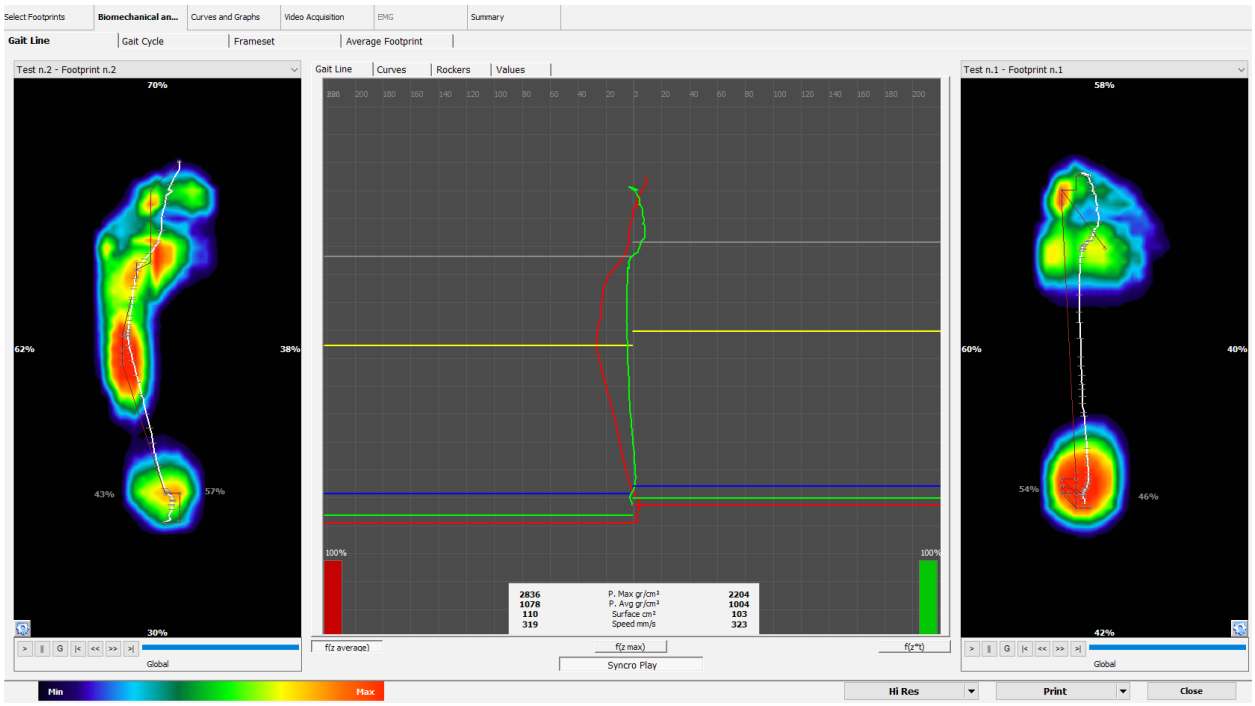
- Foot length (mm)
- Delta CoF (mm)
- Global CoF Index (%)
- Start CoF Index (%)
- End CoF Index (%)
- Foot angle
- Surface (cm2) of: Hallux, Toes T2 T3 T4 T5, Metatarsal I, Metatarsal II-III, Metatarsal IV-V, Medial Arch, Lateral Arch, Medial Heel, Lateral Heel
- Load (%) of : Hallux, Toes T2 T3 T4 T5, Metatarsal I, Metatarsal II-III, Metatarsal IV-V, Medial Arch, Lateral Arch, Medial Heel, Lateral Heel.



5.2.2.2 Gait Line

In this section, during each phase, you can evaluate:

- the podalic support
- the positioning of the body center of gravity that contributes to the resultant of the forces description (the white line on the foortprint)
- the momentary value of the Surface
- momentary value of the Maximum Pressure point
- momentary Average Pressure value
- momentary load value (expressed as a percentage related to body weight) weighing on the analysed foot.



The picture in the middle shows the layout of the resultant of the forces. At each stage, hovering on the dot that represents the position of the centre of gravity in a specific phase (selectable by the buttons “<<” and “>>”), the numerical information of the position of centre of gravity at that moment are displayed (frame, time, X and Y coordinates).

The horizontal lines, represented in different colours, indicate the following step moments:

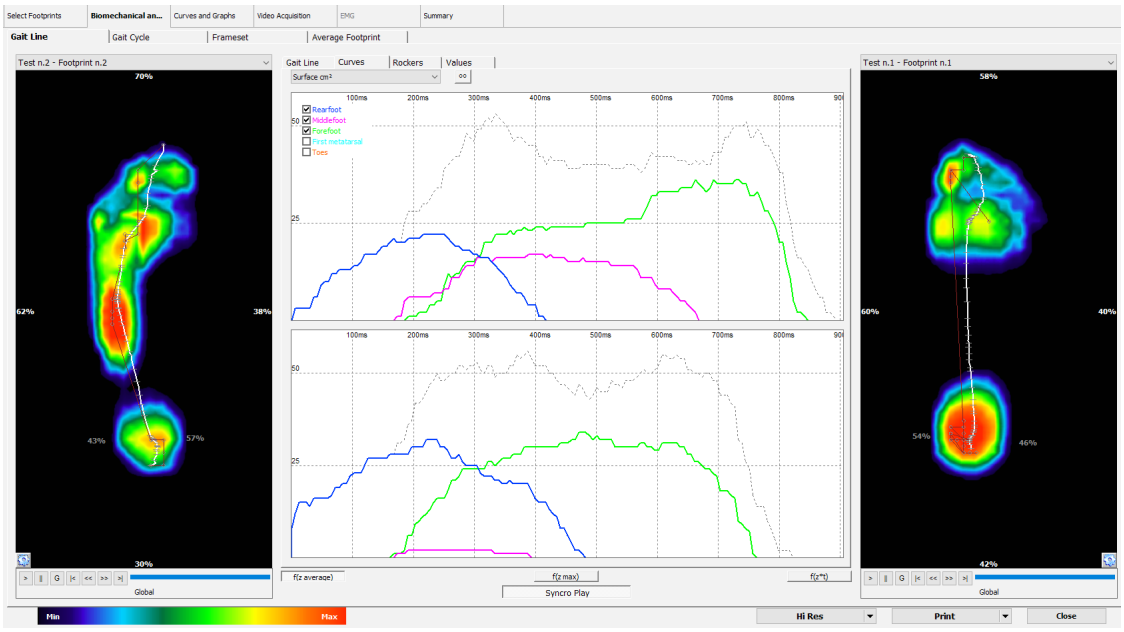
- Red line: Initial contact (0-2% of the duration of the step)
- Green line: Loading Response (3-10% of the duration of the step)
- Blue line: MidStance (11-30% of the duration of the step)
- Yellow line: Terminal Stance (31-50% of the duration of the step)
- Yellow line: Preswing (51-60% of the duration of the step).

5.2.2.3 Curves

In the section "Curves" you can choose to display, for the left and right foot, the developments of Surface (cm^2), Load (Kg), Maximum Pressure (g/cm^2) and Average Pressure (g/cm^2) for:

- Rearfoot
- Middlefoot
- Forefoot
- Metatarsal I
- Toes.

Each trend is represented by a different colour and it is possible to disable the ones you don't want to observe.



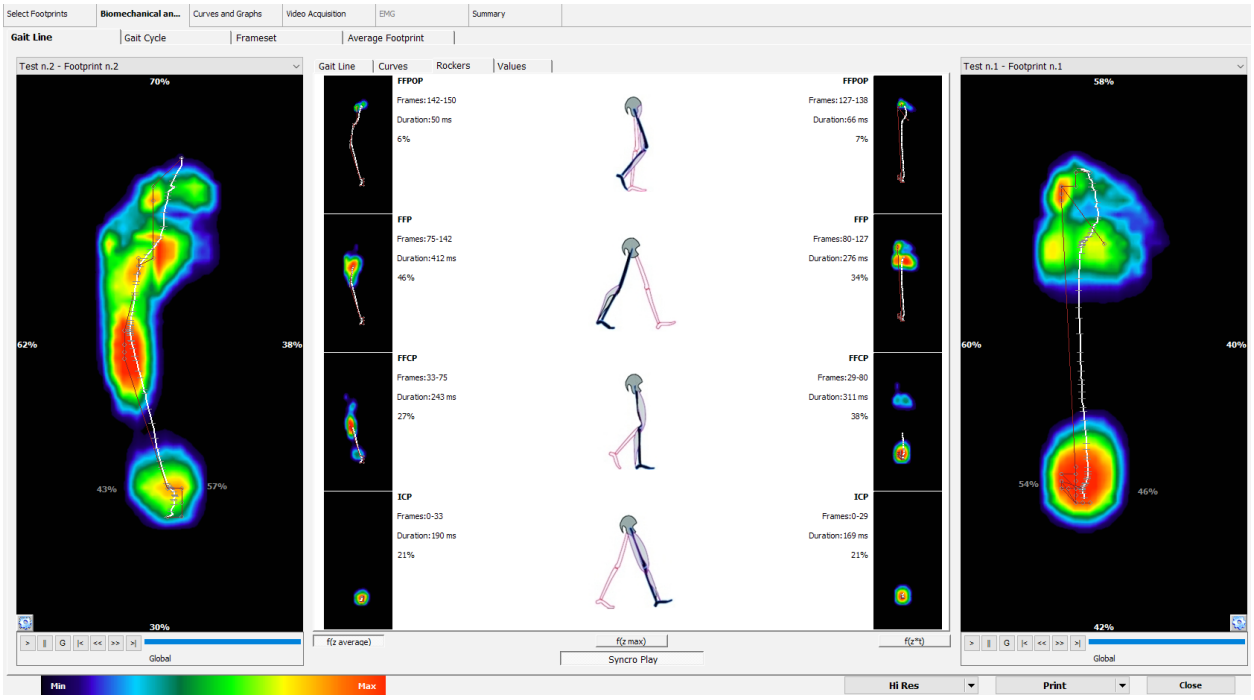
5.2.2.4 Rockers

In the section “Rockers” are shown, both for the right and for the left foot, the various phases of the step:

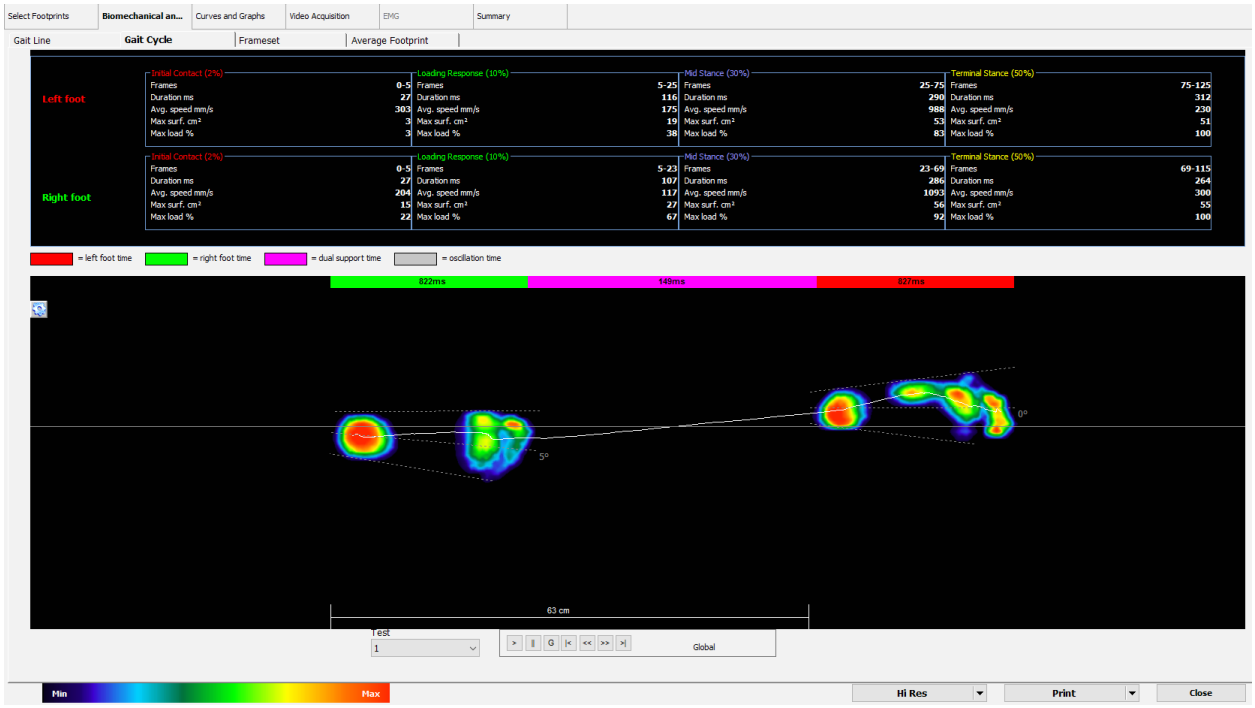
- FFPOP: The ForeFoot Push-Off Phase
- FFP: Foot Flat Phase
- FFCP: ForeFoot Contact Phase
- ICP: Initial Contact Phase.

For each phase are indicated:

- The frames related to that particular phase
- The duration expressed in ms
- The load percentage.



5.2.3 Biomechanical Analysis — Gait Cycle

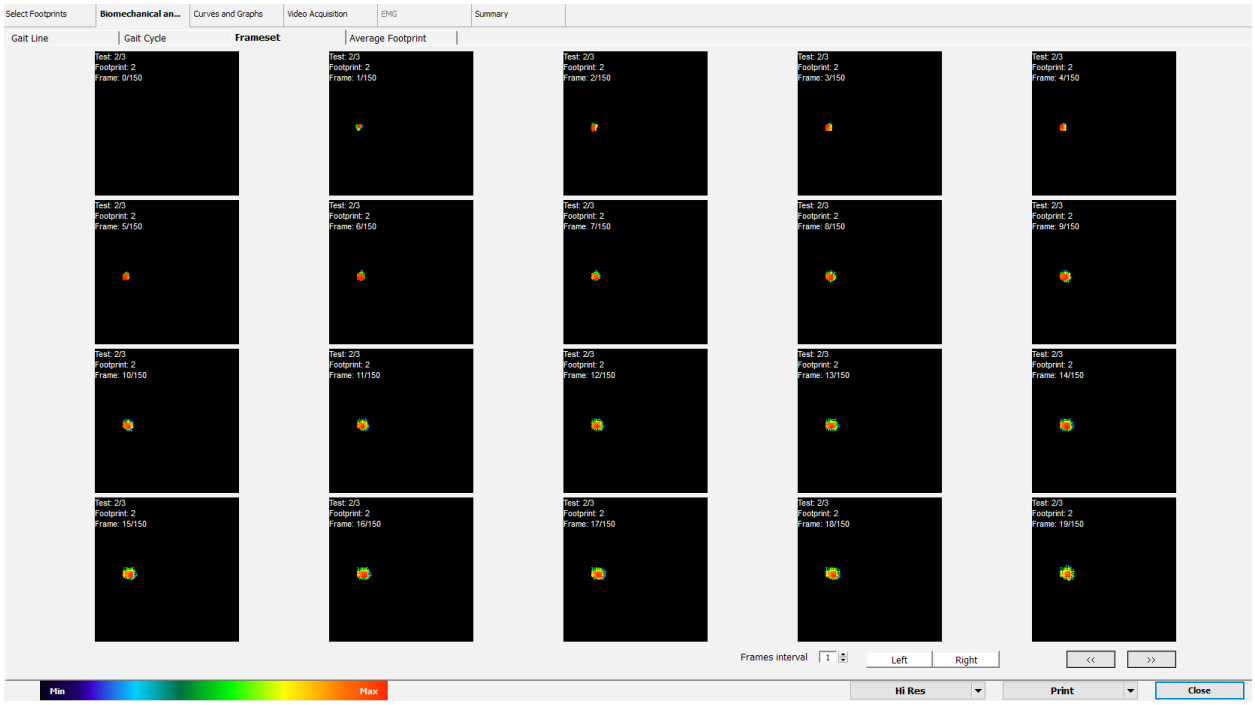


The table at the top shows all numeric values (frames, duration, average speed, maximum surface and load), divided by the main phases of the plantar support, both for the right and the left foot.

At the bottom of the screen are shown all the tests performed in sequence. If your platform captures multiple steps for each test (platform longer than 60 cm) you can also evaluate the complete cycle times of the step and so:

- Half step duration of first foot
- Dual support duration
- Swing time (requires at least 3 supports)
- Half step duration of the second support.

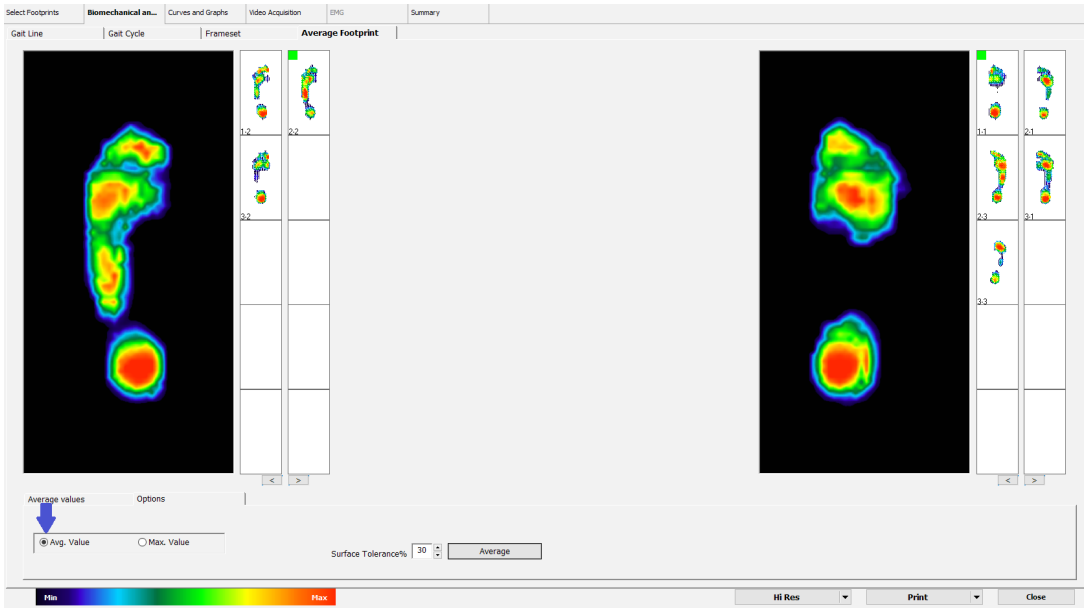
5.2.4 Biomechanical Analysis — Frameset



In this section you can see step by step the complete development of left and right half steps in a single pane.

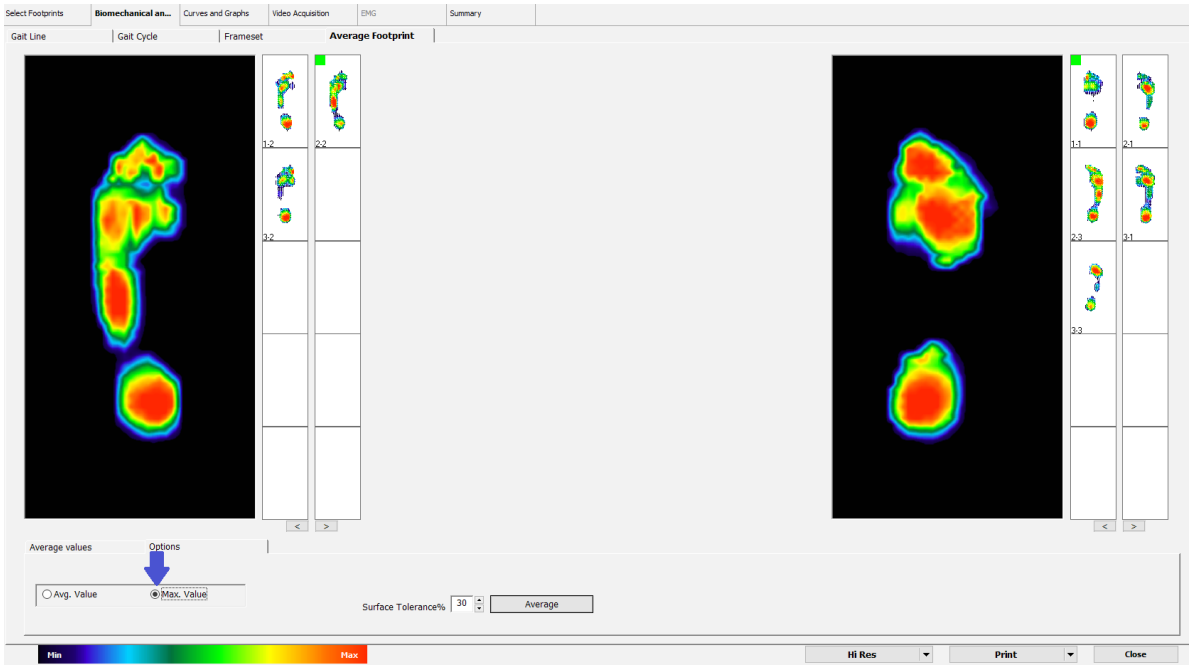
Based on the number of available frames, you can adjust the interval between one frame and another to get a full view in a single pane.

5.2.5 Biomechanical analysis — Average Footprint



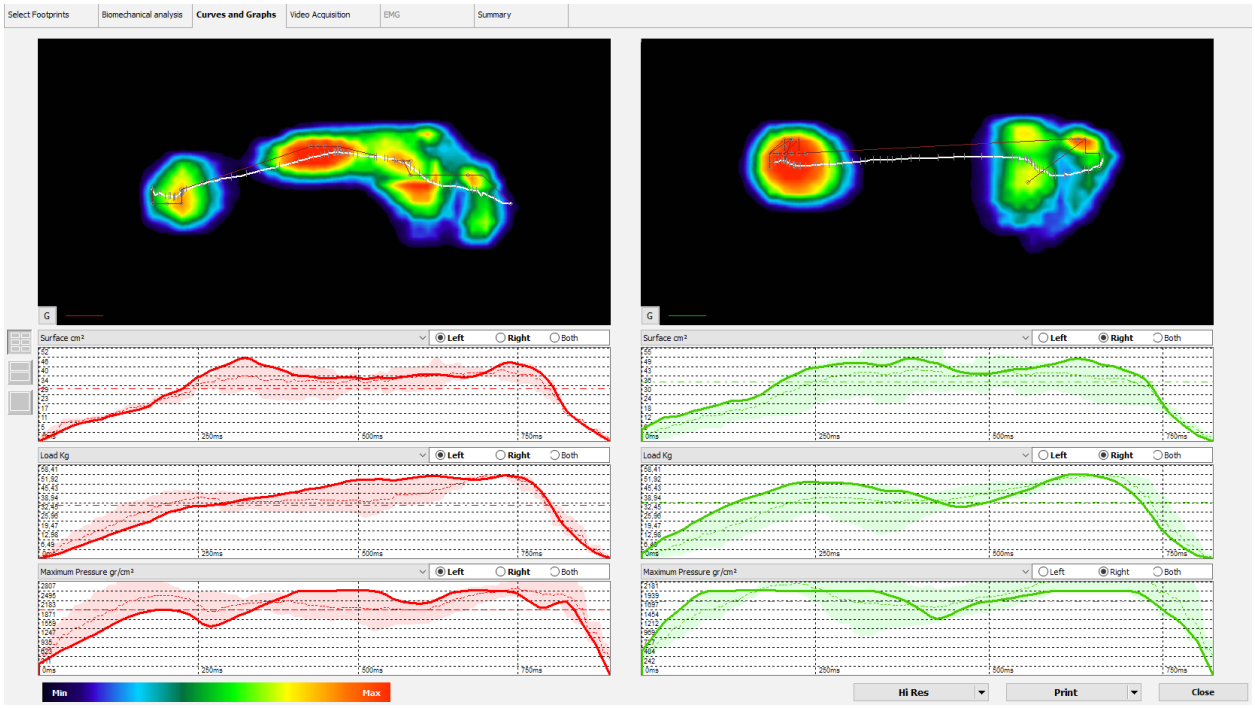
In the screen it is possible to evaluate the average of all recorded footprints not excluded from the calculation. Each footprint, indicated by test and footprint number (from left to right) contributes to the calculation of the displayed average.

The average picture can be displayed as an expression of maximum pressure peaks by simply activating the view “Max. Value” from the tab-menu “Options”. The standard deviation values (RMS) related to the main calculated indicators are also displayed.

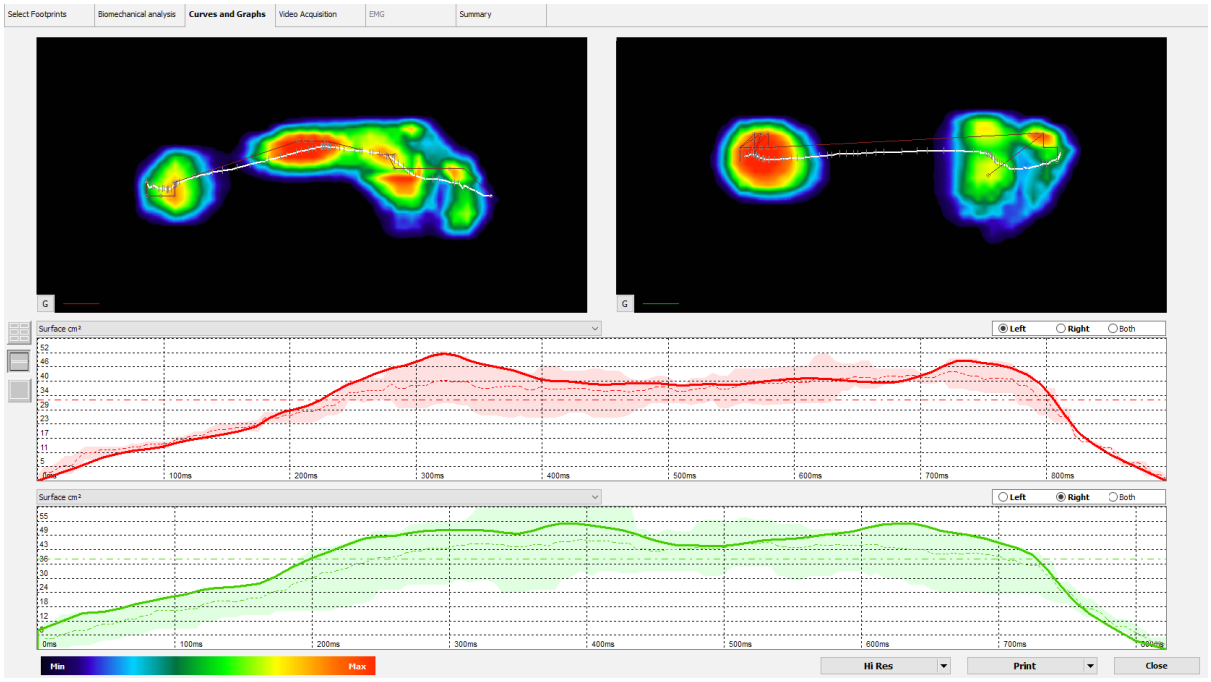


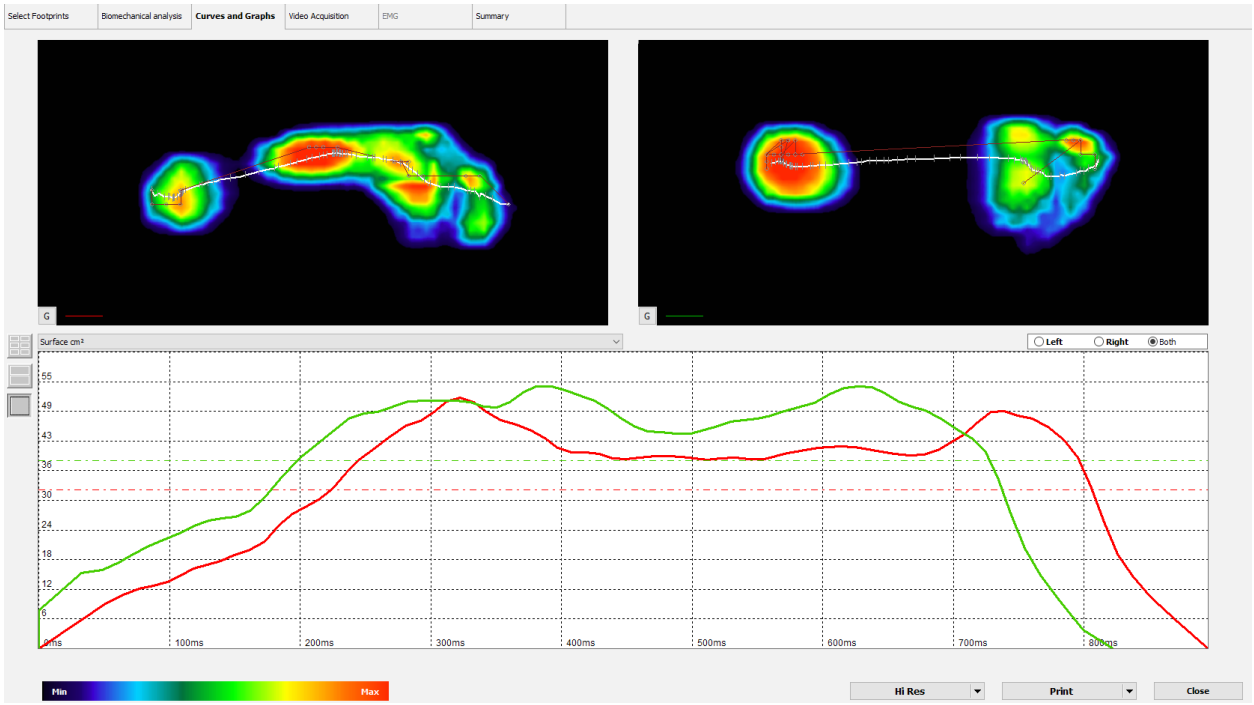
5.2.6 Curves and Graphs

Al numerical values calculated during the execution of the steps are shown as curves and grouped on a single screen.



Depending on the selected display template, it is possible to view six, two or one graph at a time by clicking on one of the three icons on the left.





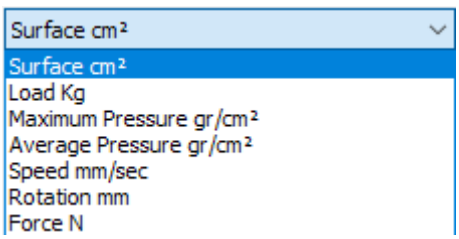
Each graph can show a specific curve of one or both feet. A graph representing only one foot shows:

- The curve including all footprints (trail of semitransparent colour)
- The average curve of all footprints (dashed curve)
- The curve of the footprint taken into consideration (the most important curve)
- The average standard deviation (dashed horizontal line).

Exploring the curves with the mouse, when approaching the curve, an indicator highlighting the exact value of the Graph in that specific point appears. Clicking on the curve, the corresponding phase at that particular point is displayed on the top of the screen.

To display again the global support foootprint, click on the corresponding button [G].

In the graphs, you can choose the value to observe by selecting it from the drop down menu over each graph.

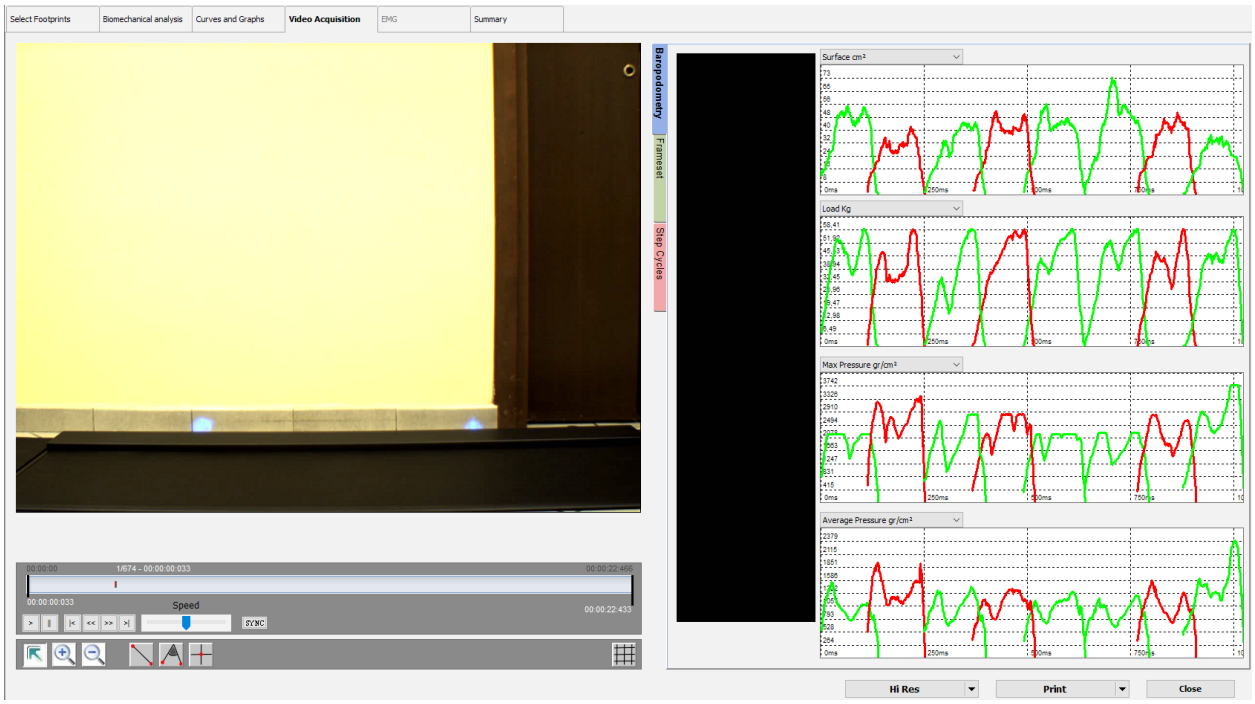


5.2.7 Video Acquisition

If during the dynamic acquisition one or more camcorders are activated, the Video Acquisition option will be automatically available.

The main video captured during the test will be shown on the left side of the screen.

At the bottom of the screen you will find the scroll bar and control buttons.



On the scroll bar there is a small red rectangle. This marker shows the frame where the first foot contact with the baropodometric platform took place.

In addition there are two selectors, placed by default at the beginning and at the end of the scroll bar, that allow to define the working area (beginning and end of the video to display), allowing you to focus on certain parts of the whole video. To move the markers simply drag them along the scroll bar.

Finally, using the scroll bar "Speed" you can adjust the video playing speed.

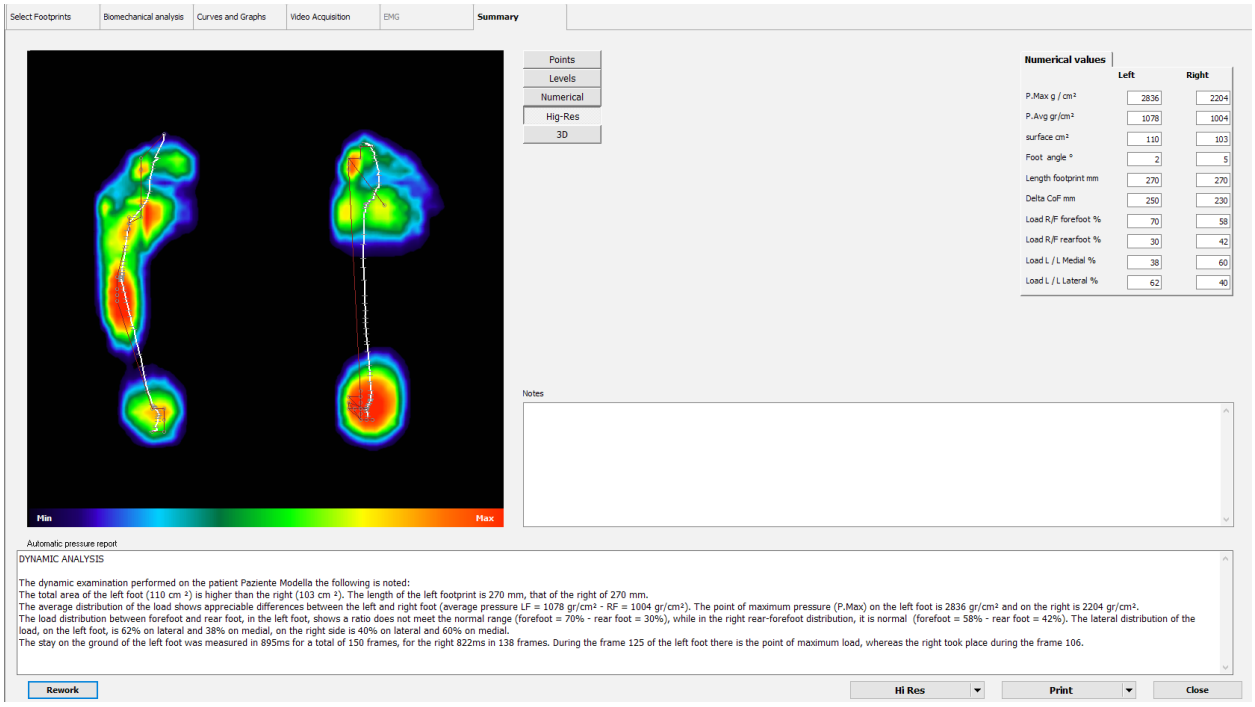
On the right side of the screen there is the function menu referring to the available detailed studies for the motion analysis:

- Baropodometry: Inside the menu are displayed, in sync with the video, the baropodometric platform and all the calculated curves (surface, load, maximum

pressure, average pressure, speed, rotation and force).

- Frameset: The movie frames are displayed in a single screen where you can make angular evaluations and specific treatments for motion analysis.
- Step Cycles: In this menu there are the performed tests and for each acquisition are indicated durations and corresponding frame corresponding to: right foot contact, right middle stance, left foot contact (beginning dual support), right foot detachment (end dual support), left middle stance, right foot contact (beginning dual support), left foot detachment (end dual support), right middle stance.

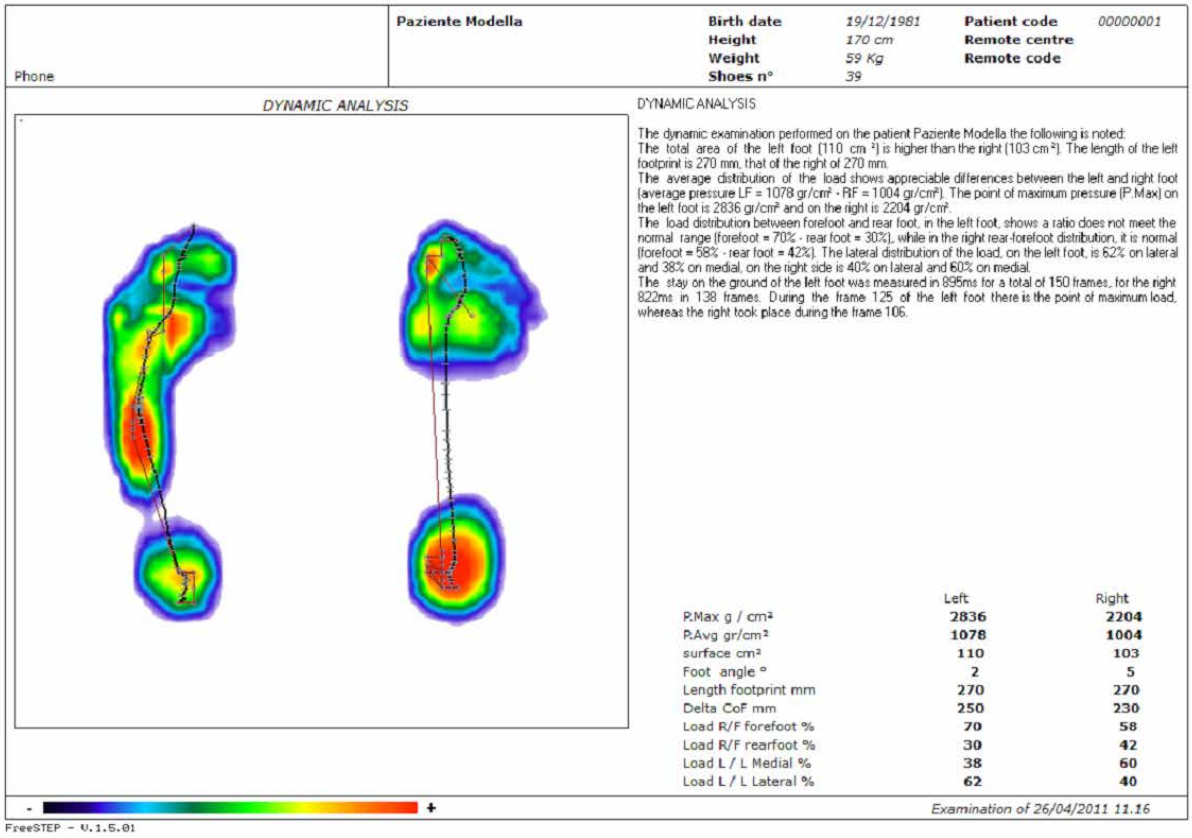
5.2.8 Summary



In the summary page, as in the static examination, the most significant data of the examination are displayed.

In addition, at the bottom of the page, you will find the textual pressure report, automatically processed by the system.

In fact, the software can analyse and interpret a certain amount of information and to compare them with the normal values. These information are processed as text and associated to the exam itself. Afterwards, you can print the report or save it in .pdf format.



Phone	**Paziente Modella**	**Birth date**	*19/12/1981*	**Patient code**	*00000001*
		Height	*170 cm*	**Remote centre**	
		Weight	*59 Kg*	**Remote code**	
		Shoes n°	*39*		

DYNAMIC ANALYSIS

DYNAMIC ANALYSIS

The dynamic examination performed on the patient Paziente Modella the following is noted:
The total area of the left foot (110 cm ²) is higher than the right (103 cm ²). The length of the left footprint is 270 mm, that of the right of 270 mm.
The average distribution of the load shows appreciable differences between the left and right foot (average pressure LF = 1078 gr/cm² - RF = 1004 gr/cm²). The point of maximum pressure (P.Max) on the left foot is 2836 gr/cm² and on the right is 2204 gr/cm².
The load distribution between forefoot and rear foot, in the left foot, shows a ratio does not meet the normal range (forefoot = 70% - rear foot = 30%), while in the right rear-forefoot distribution, it is normal (forefoot = 58% - rear foot = 42%). The lateral distribution of the load, on the left foot, is 62% on lateral and 38% on medial, on the right side is 40% on lateral and 60% on medial.
The stay on the ground of the left foot was measured in 895ms for a total of 150 frames, for the right 822ms in 138 frames. During the frame 125 of the left foot there is the point of maximum load, whereas the right took place during the frame 106.

	Left	Right
P.Max g / cm²	**2836**	**2204**
P.Avg gr/cm²	**1078**	**1004**
surface cm²	**110**	**103**
Foot angle °	**2**	**5**
Length footprint mm	**270**	**270**
Delta CoF mm	**250**	**230**
Load R/F forefoot %	**70**	**58**
Load R/F rearfoot %	**30**	**42**
Load L / L Medial %	**38**	**60**
Load L / L Lateral %	**62**	**40**

- +

Examination of 26/04/2011 11.16

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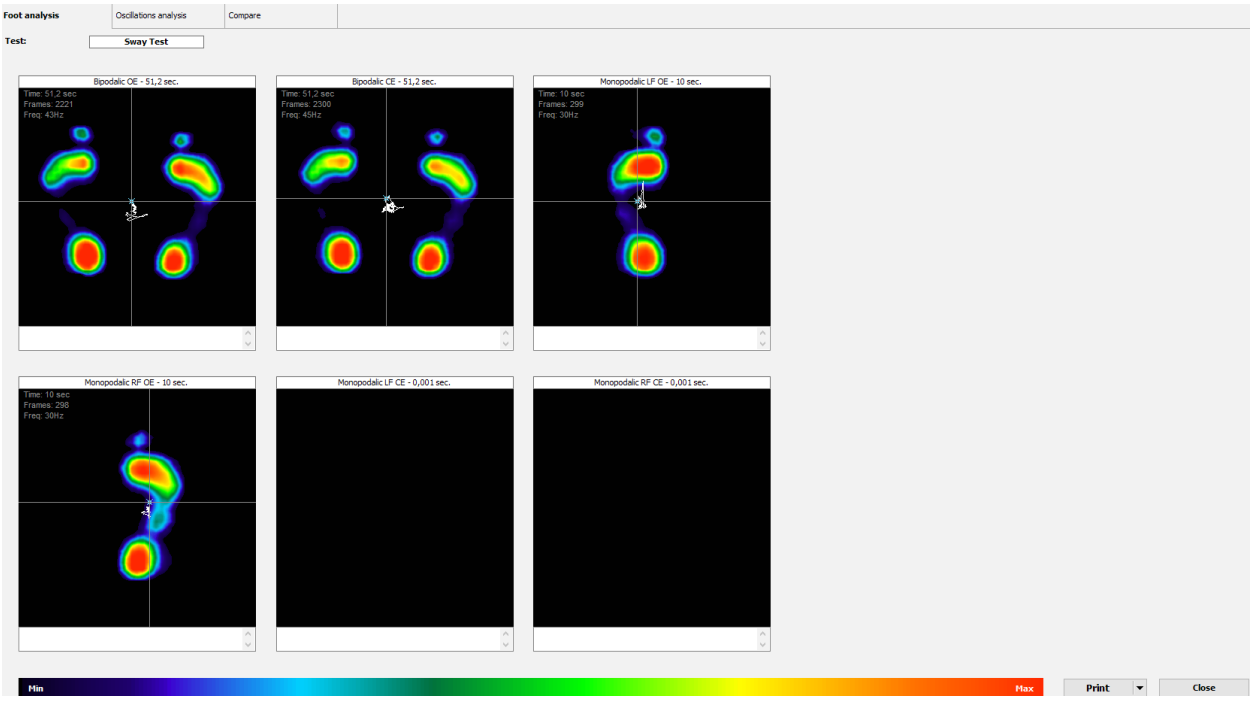
5.3 Posturographic and Stabilometric Analysis

Depending on the acquisition protocol adopted during the stabilometric analysis, the software will display from one to six images relating to the patient's oscillations.



This test allows to evaluate the balance condition of a patient, standing at the centre of the platform, and to study the position and dynamics of the ground projection of the centre of pressure representing the centroid of the pressure distribution on the supporting surface of the foot.

The centre of pressure is the neuromuscular response to imbalances due to the centre of mass, i.e. the localization in 3D of the patient's equivalent mass (the projection on the ground is called CoG, centre of gravity). The CoP is therefore the expression of the motor control and of the movements impressed to the ground to maintain balance or generate motion.

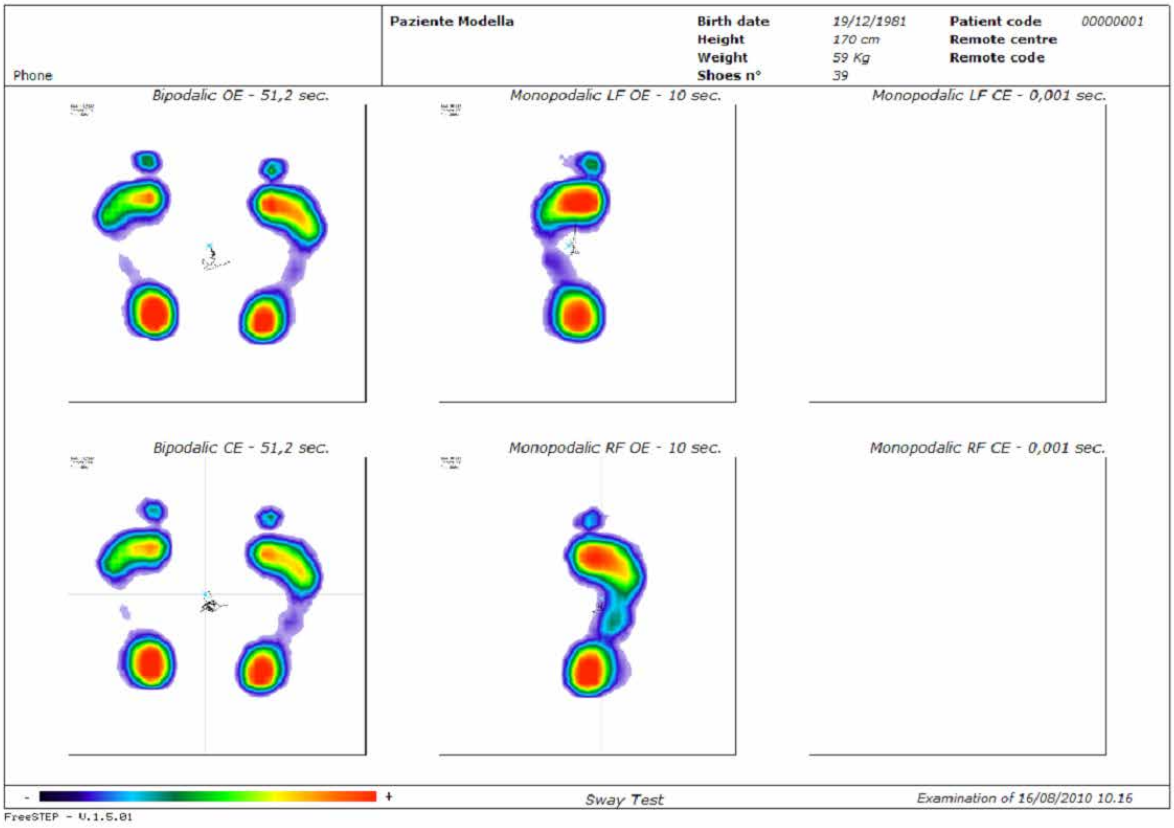
So the typical parameters of the oscillatory control of the patient are here recorded.

5.3.1 Foot Analysis

This section shows the summary of the carried out examination, indicating what kind of test was performed, the sampling frequency and duration of each test, the kind of test

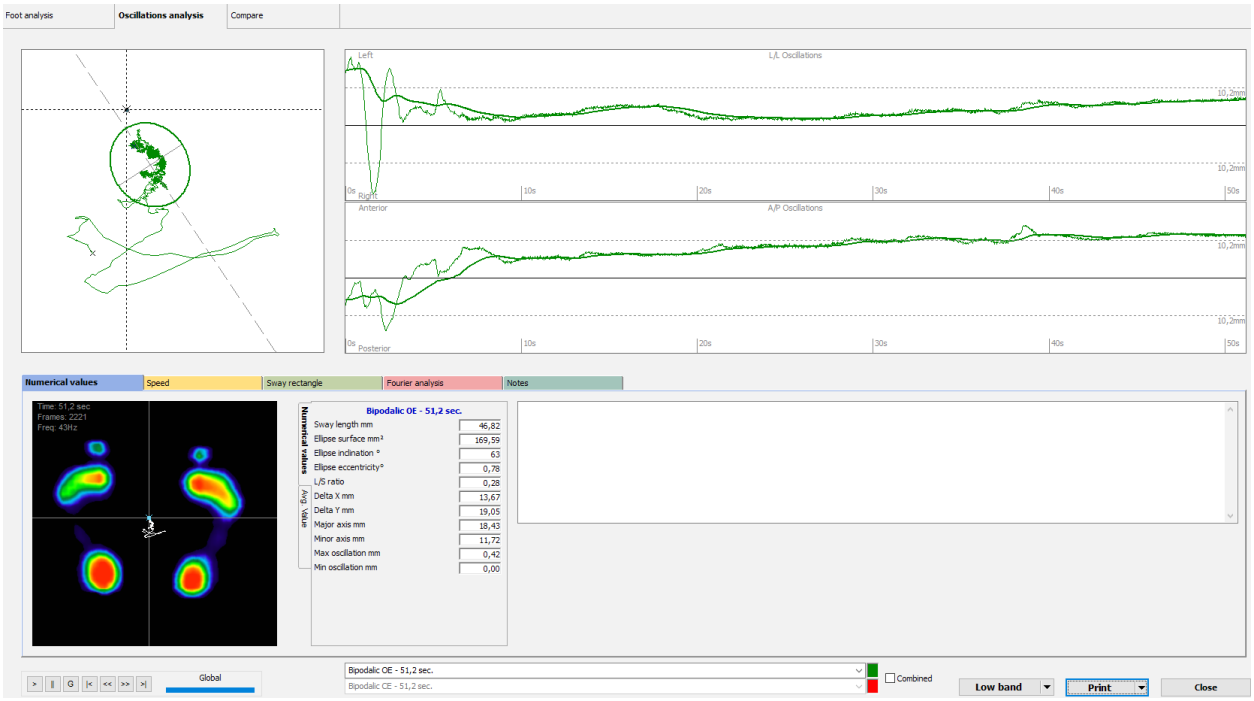
title and description.

The pictures displayed are the average of the recorded pressures in the given time and are always printable with the specific button.



5.3.2 Oscillation Analysis

In the oscillation analysis it is possible to evaluate one test at a time or to compare two tests.



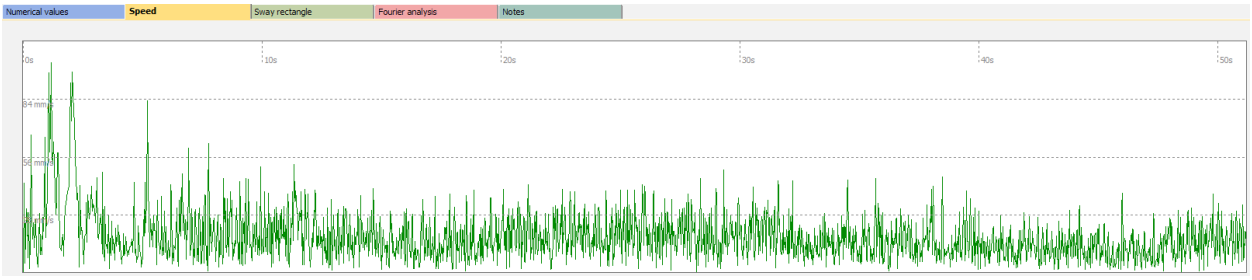
In the image placed in the top left there is a zoom of the oscillations, the ellipse inscribing the 90% of the movements and its related strings. Here you can observe the CoP displacement in the supporting plane and this is called statokinesigram: the smaller the confidence ellipse area within which is located the 90% of the recorded points, the greater the stability of the patient.

Oscillations are displayed on the right side of the screen, separating the two oscillatory components (antero-posterior and latero-lateral movements).

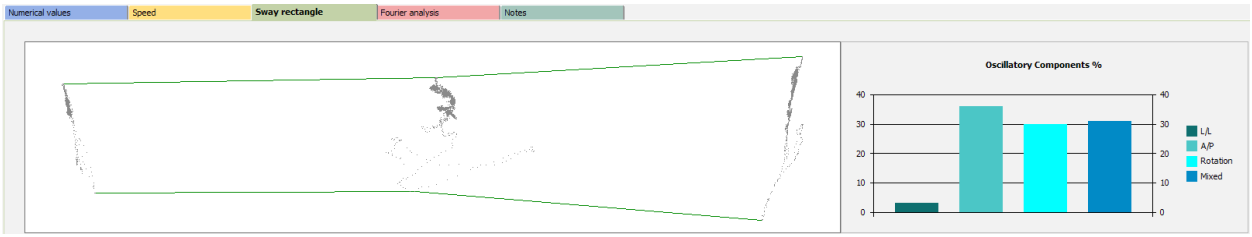
In the lower part, near the pressure footprints, there is a table with the calculated numerical values and a note text field.

It is also possible to display:

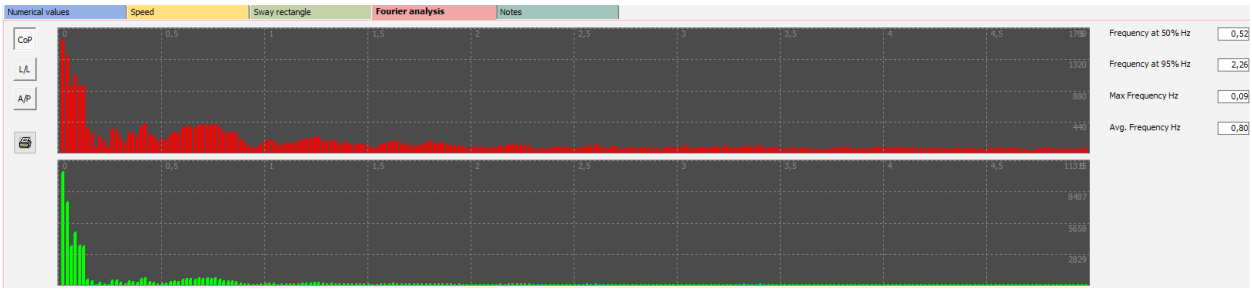
- the speed graph



- the postural rectangle



- the oscillatory components, the Fourier analysis and the power spectrum.



The Fourier analysis (red graph) and the power spectrum (green graph) are available for both the total oscillations of the body centre of gravity (CoP), both for the oscillations L/L and A/P.

You can zoom in the graphs by double clicking on the desired picture, and you can compare them with a second test of the same exam.

To get a comparative view, you need to activate the option “Combined” next to the Print button and select the second test from the drop-down menu.

During the comparison of the two tests, Romberg indices (numeric values) will also be calculated and displayed.

5.3.3 Compare

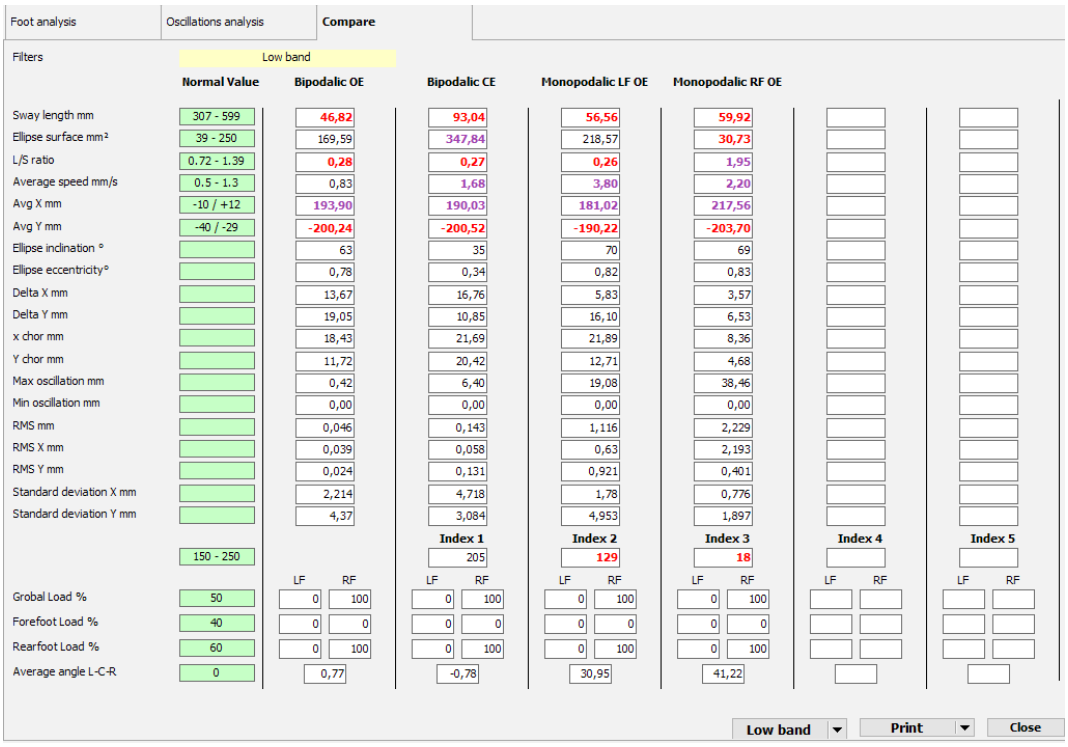
In the section “Compare” the following values are tabulated:

- Sway length (mm)
- Ellipse surface (□cm□^2)
- L/S Ratio
- Average speed (mm/s)
- Average X (mm)
- Average Y (mm)
- Ellipse inclination (°)
- Ellipse eccentricity
- Delta X (mm)
- Delta Y (mm)
- Chord X (mm)

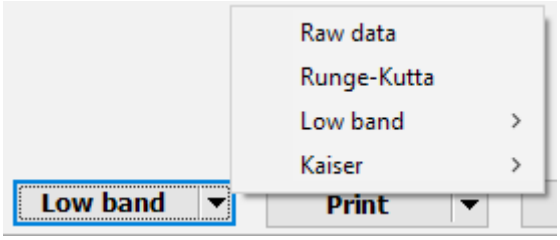
- Chord Y (mm)
- Maximum oscillation (mm)
- Minimum oscillation (mm)
- RMS (mm)
- RMS X (mm)
- RMS Y (mm)
- Standard Deviation X (mm)
- Standard Deviation Y (mm)
- Global load (%)
- Forefoot load (%)
- Rearfoot load (%)
- Average angle L-C-R.

For each element the “normal” value and the value obtained with the various tests are indicated. If the value obtained from the acquisition shows a great difference from the normal one, this is written in purple or red.

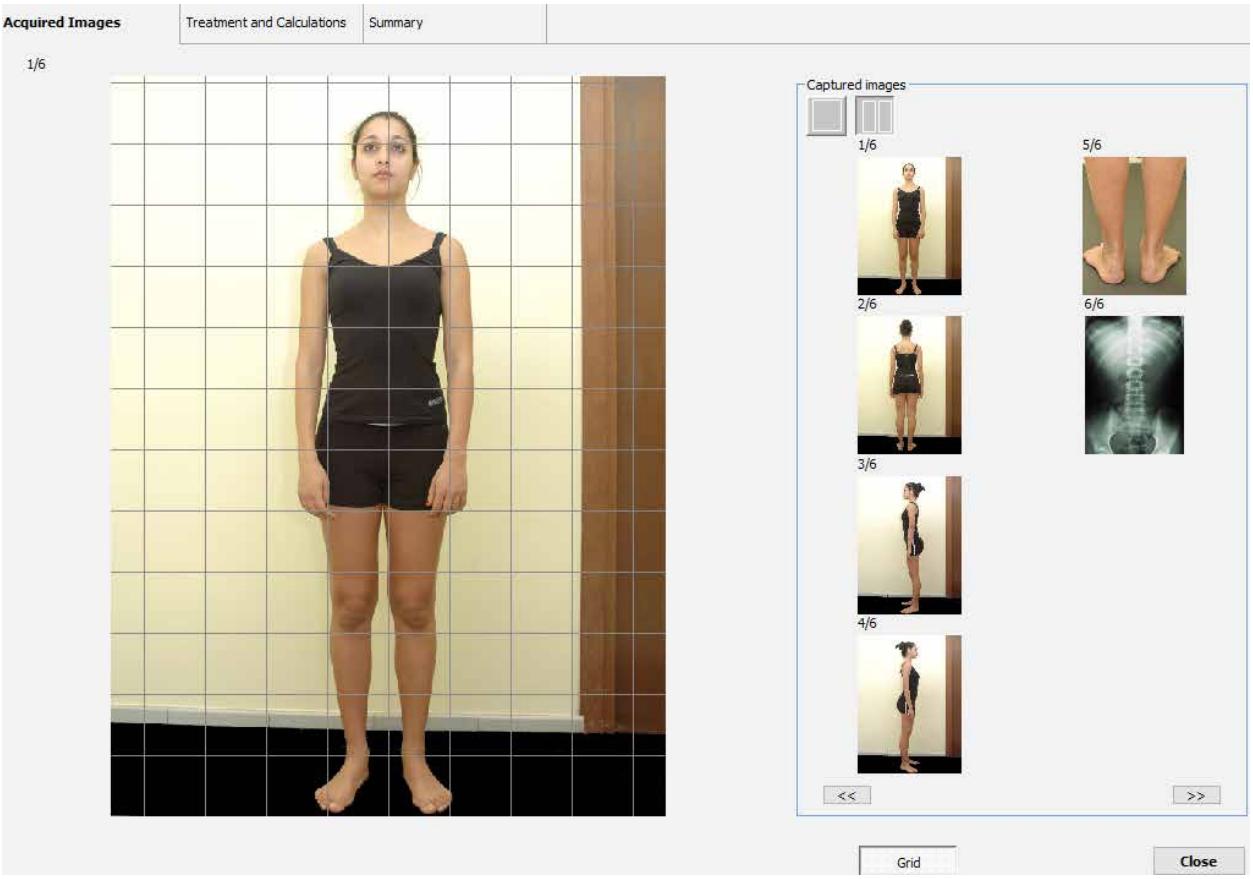
In addition to these values, depending on the type of test performed, the various indices are also displayed.



Before viewing the values and comparing them, it is possible to apply a filter other than the default “Low-Pass”. To select a different filter, you must click on “Low-Pass” at the bottom right and select the desired filter.



5.4 Video Acquisition

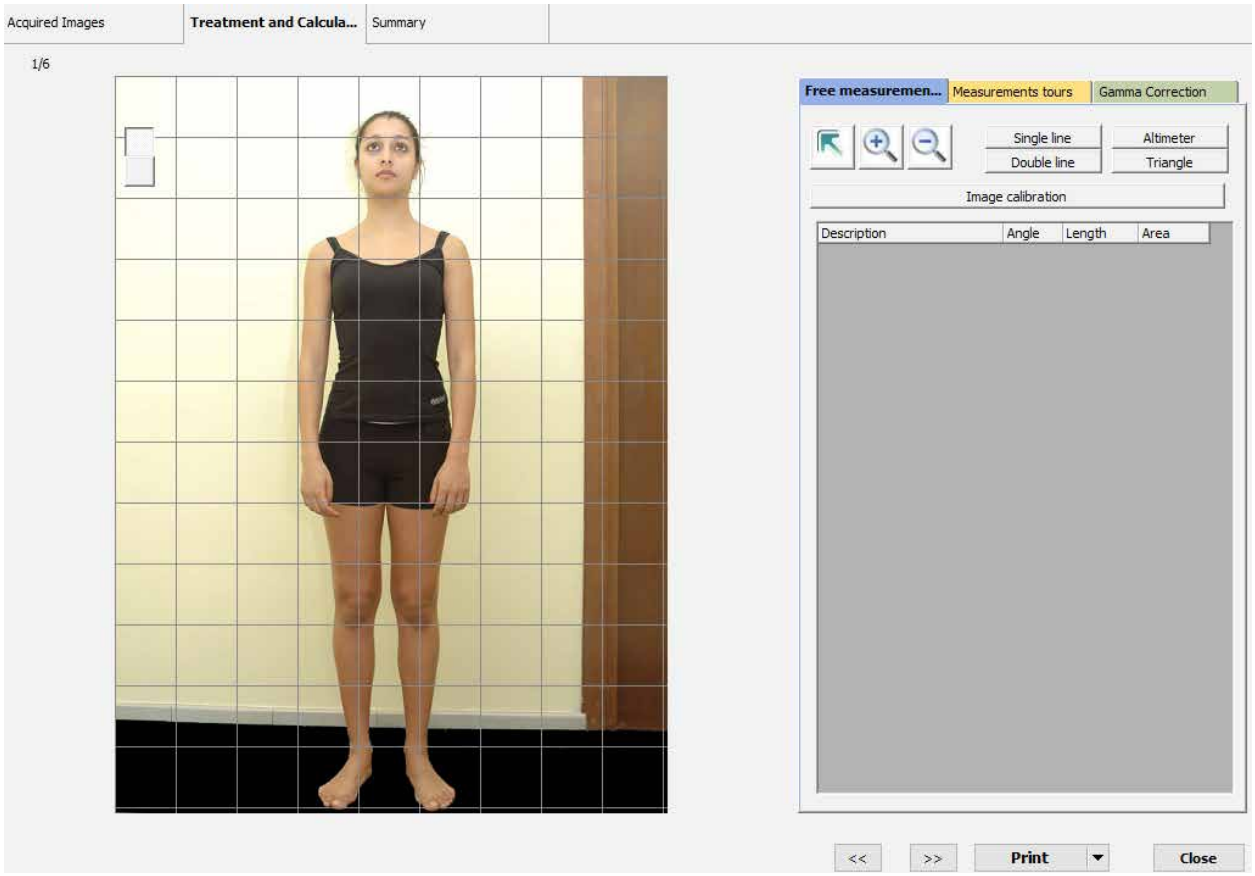


The splash screen of Video Acquisition show all pictures recorded during the analysis, you can have up to 4 different perspectives in real time using 4 camcorders.

With the scroll buttons [<<] [>>] it is possible to explore all of the stored images.

Enable the “Grid” function to project on the pictures a light reference grid, useful for objective evaluations.

5.4.1 Treatment and Calculations



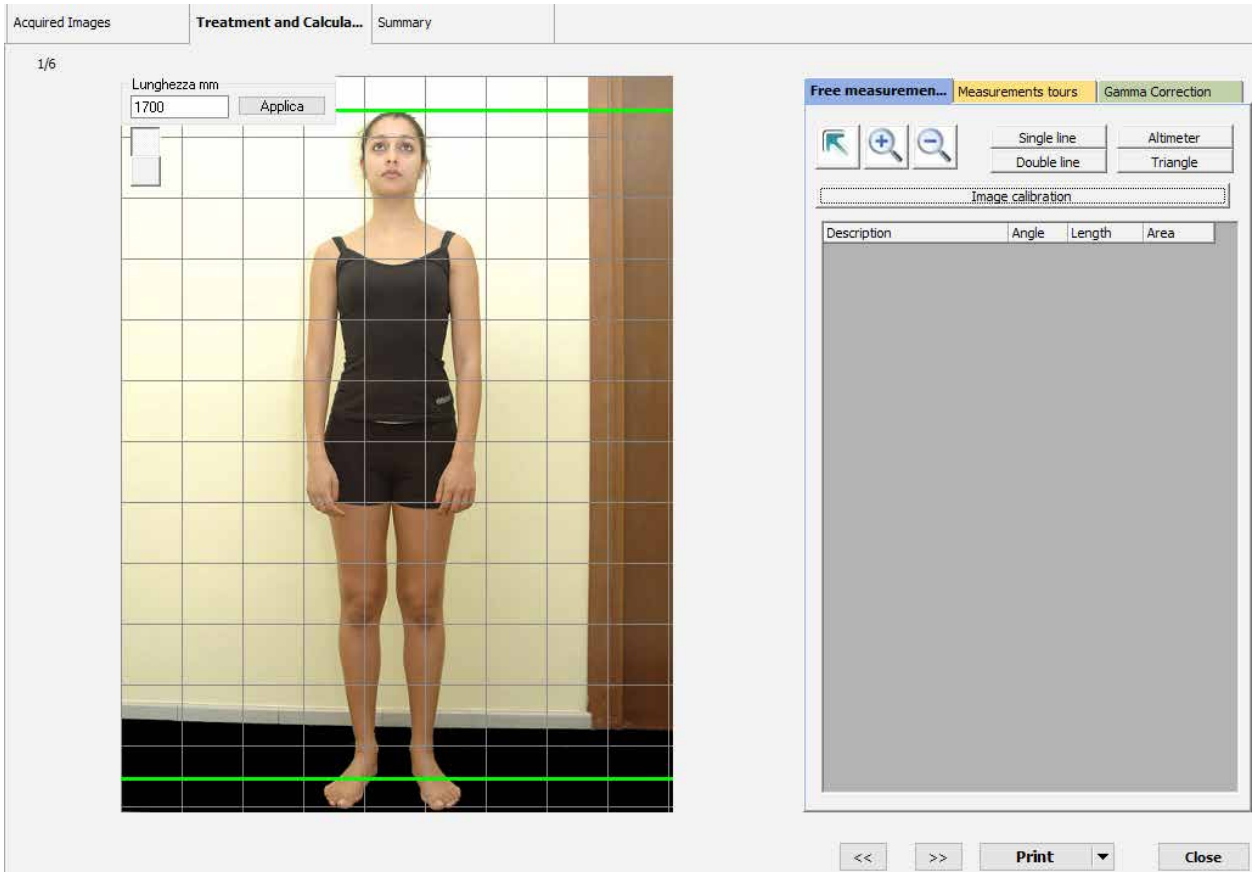
For each acquired image, it is possible to carry out a series of evaluations and calculation aimed at the structural study of the patient, in two different methods.

The evaluation methods are mainly two: one by means of free measurements, the other through guided measurements.

Free measurements allow the user to draw different kinds of segments directly on the picture and to automatically obtain the calculation of the drawn length, area or angle.

In the absence of image calibration, evaluations of lengths and areas are expressed in pixels. However, following the image calibration process, evaluations will be converted to millimeters.

To calibrate, click on “Image Calibration” at the top right: two lines will appear (which can be adjusted by moving the cursor) through which you will set the patient’s height.



Guided measurements allow the operator, by means of specific protocols, to identify a series of indicators in a semi automatic way.

To start the automatic evaluation process, it is essential to indicate, from the appropriate drop down menu, what kind of picture you are going to analyse.

For example, if we have the patient's picture in front view, we will select "Anterior View" from the drop down menu and we will confirm our choice clicking the lock icon (association of a picture to a protocol).

Now, following the sequence shown in the list below, click directly on the image, identifying the anatomical landmarks suggested by the software.

The greater the accuracy when positioning the virtual Markers, the greater the accuracy and reliability of calculated answers.

As you place the points, you will see the calculated numerical values in the list of results.

A correct and complete videographic evaluation consists in capturing the patient's pictures regarding:

- Anterior View
- Posterior view
- Right Side View
- Left Side View.

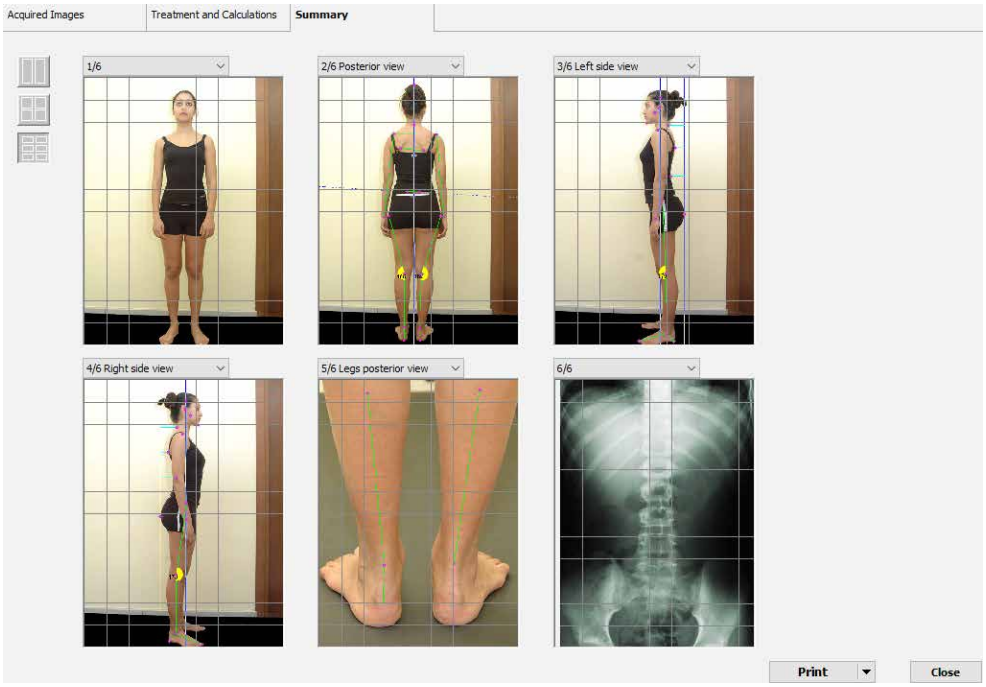
Then, following the guided assessment protocols, you will get extremely reliable and exhaustive results.

Each picture, both manually and automatically evaluated, can be printed as described in chapter on printing.

It is very important to complete the placement of all anatomical landmarks, otherwise not all automatic calculations will be executed.

5.4.2 Summary

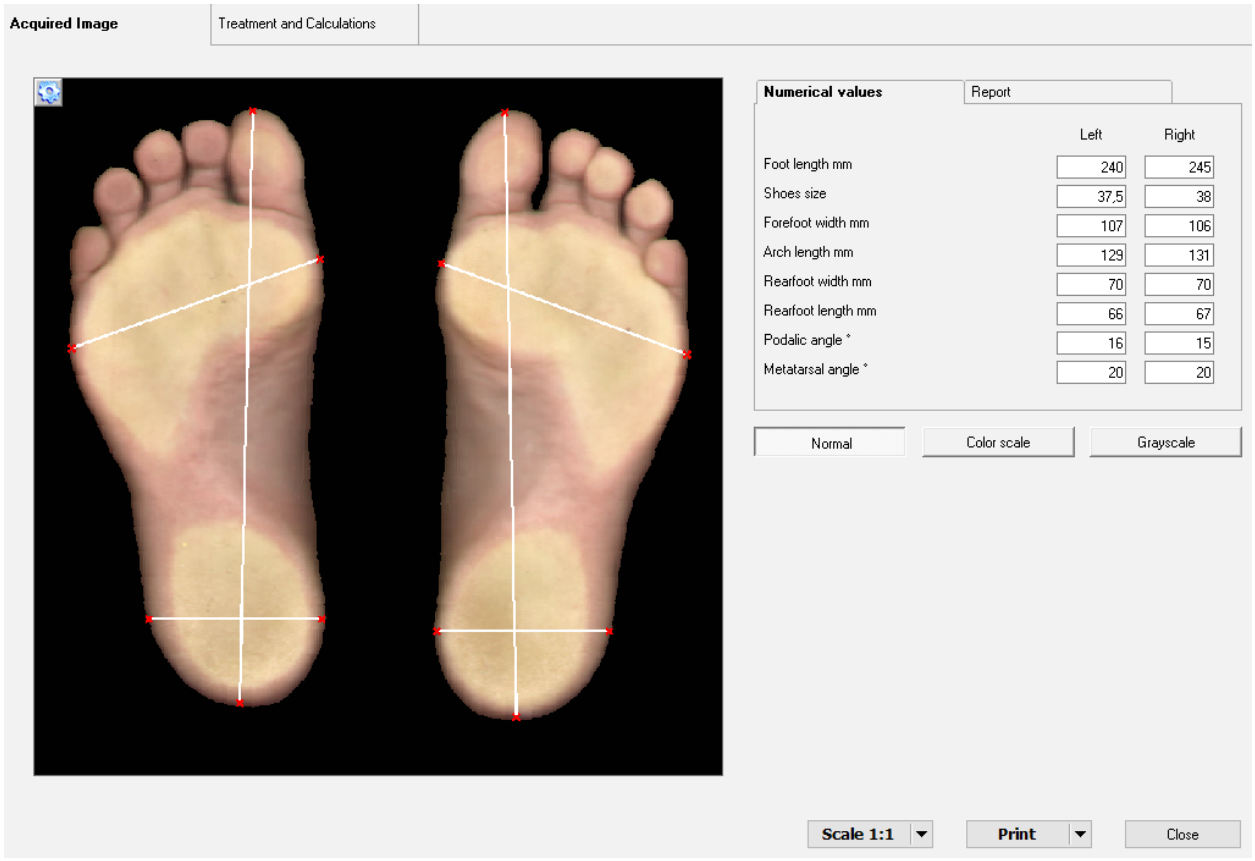
In the screen you can see two, four or six of the captured and found images that can be printed, in combination with each other, in order to obtain a global summary report on a single page.



5.5 Podoscan 2D

5.5.1 Acquired Image

What we get with the acquisition with the podoscan 2D is shown in the following window.

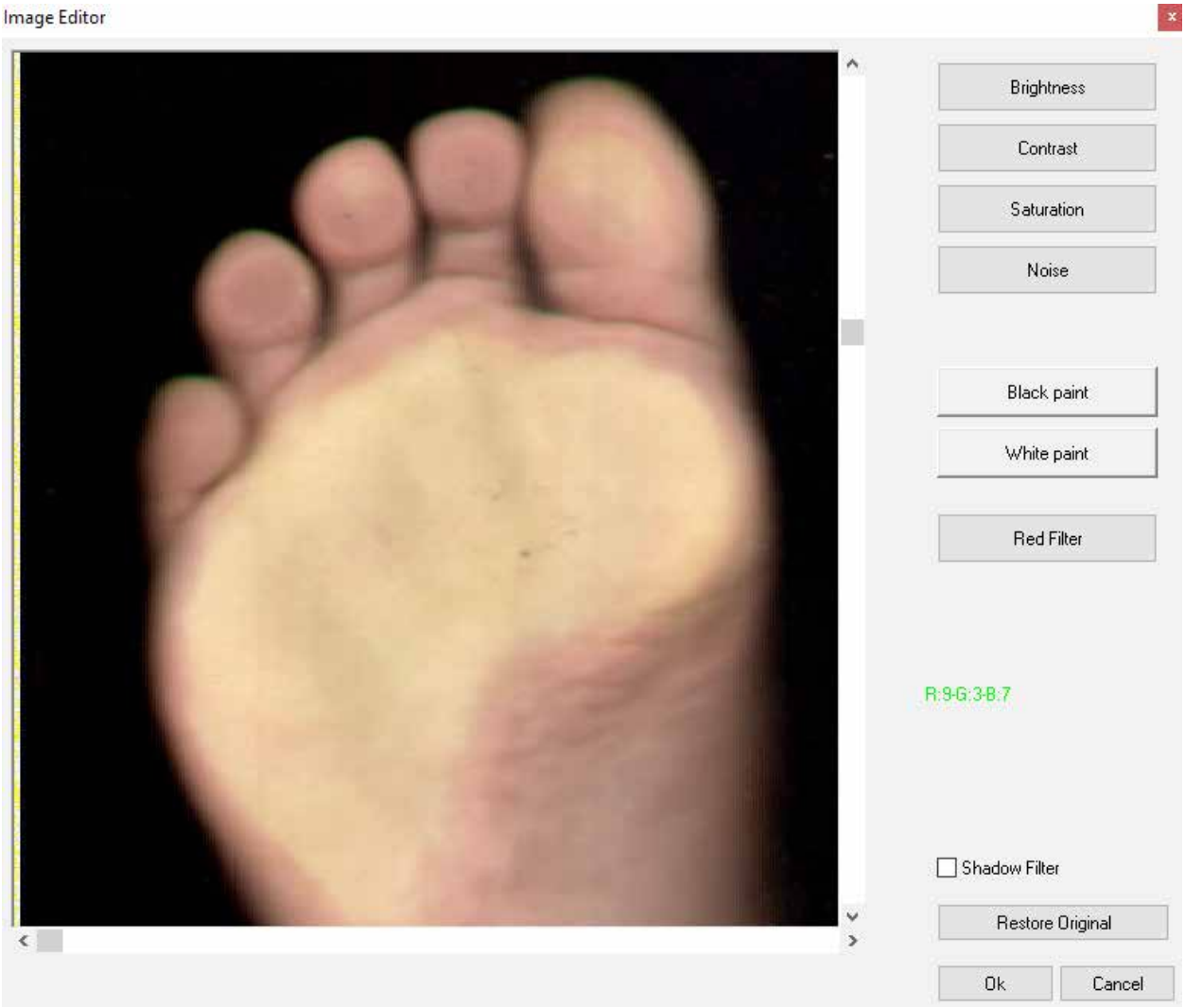


The main axes of the podalic footprints are highlighted.

The image, which you can view in natural colours, in shades of gray or in a color palette, can be printed in scale 1:1 in order to have the podoscopic footprint directly on paper.

The following values are tabulated at the top right, both for the right and for the left foot: foot length (mm), shoe size, forefoot width (mm), plantar arch length (mm), rearfoot width (mm), rearfoot length (mm), podalic angle and metatarsal angle.

Pressing the command  in the top left of the podalic footprint the following screen will appear.



In this window, it is possible to make changes to the acquired image, operating on brightness, contrast, saturation and noise.

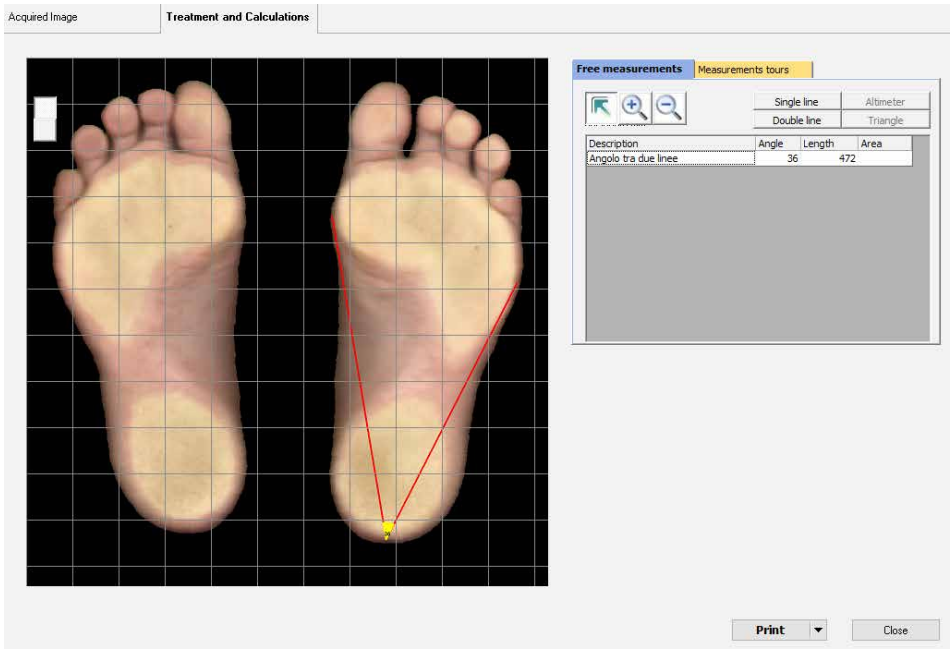
With freeStep you have also the possibility to trace some areas, making them black or white.

Click on “Ok” to save your changes, or on “Restore Original” to return to the original picture.

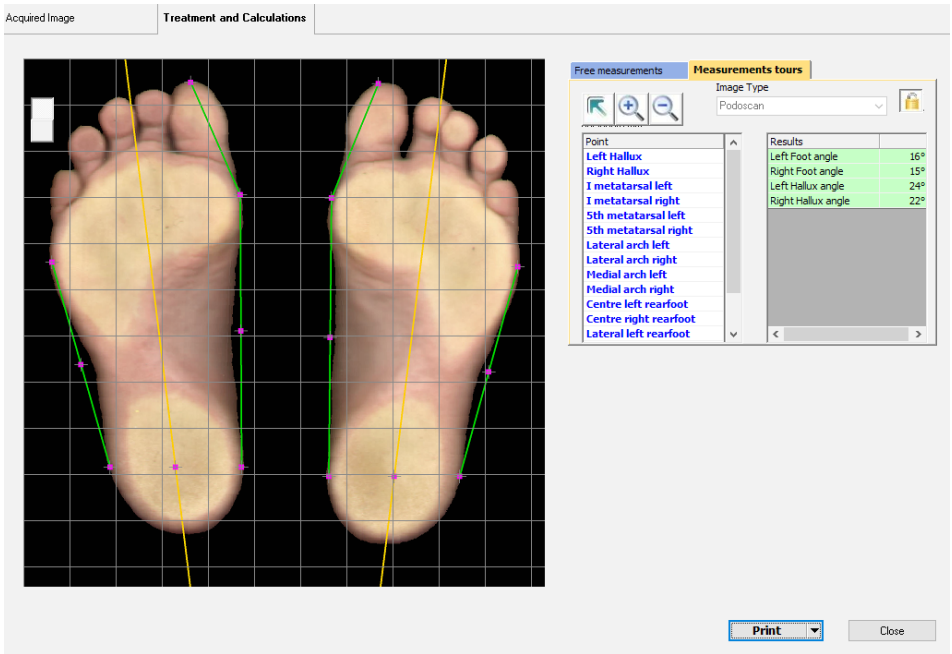
5.5.2 Treatment and Calculations

In this section you can perform calculations directly on the patient's footprint.

In this case you can make free measurements: by drawing single or double lines on the foot you get included angle, length and area.

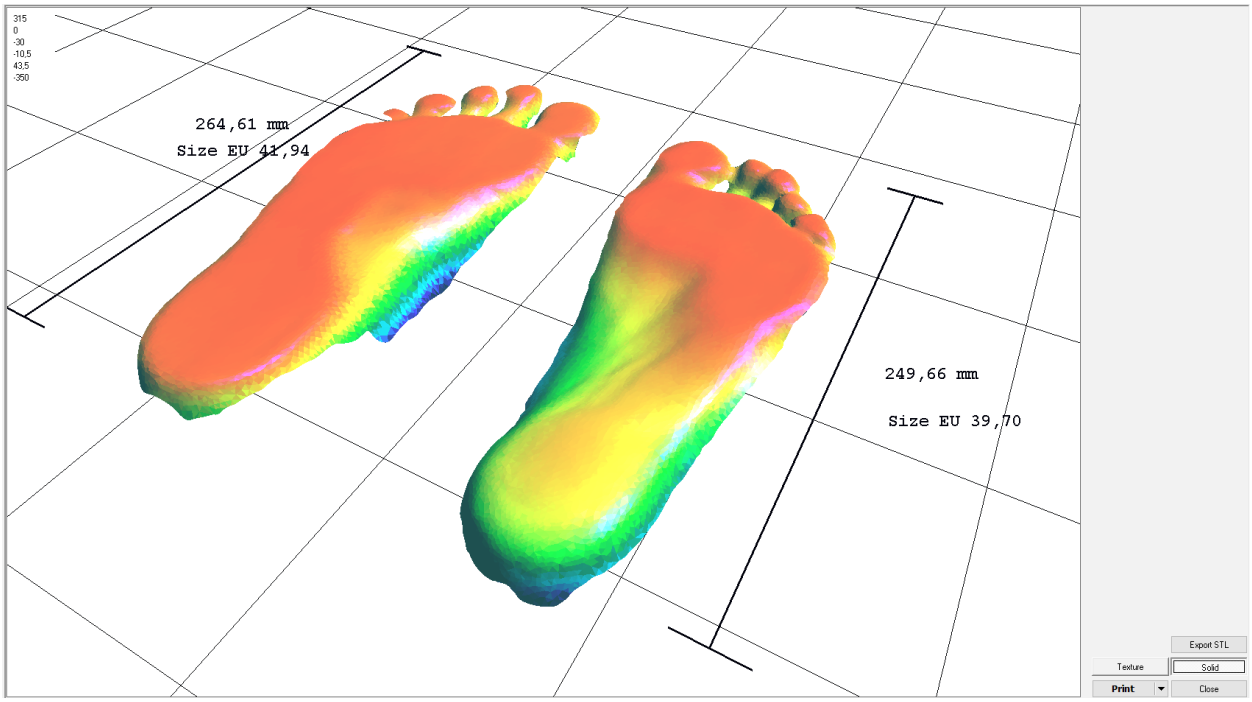


Alternatively you can get help by the guided measurements, where the main foot points are listed: just highlight with some markers to obtain the main results.

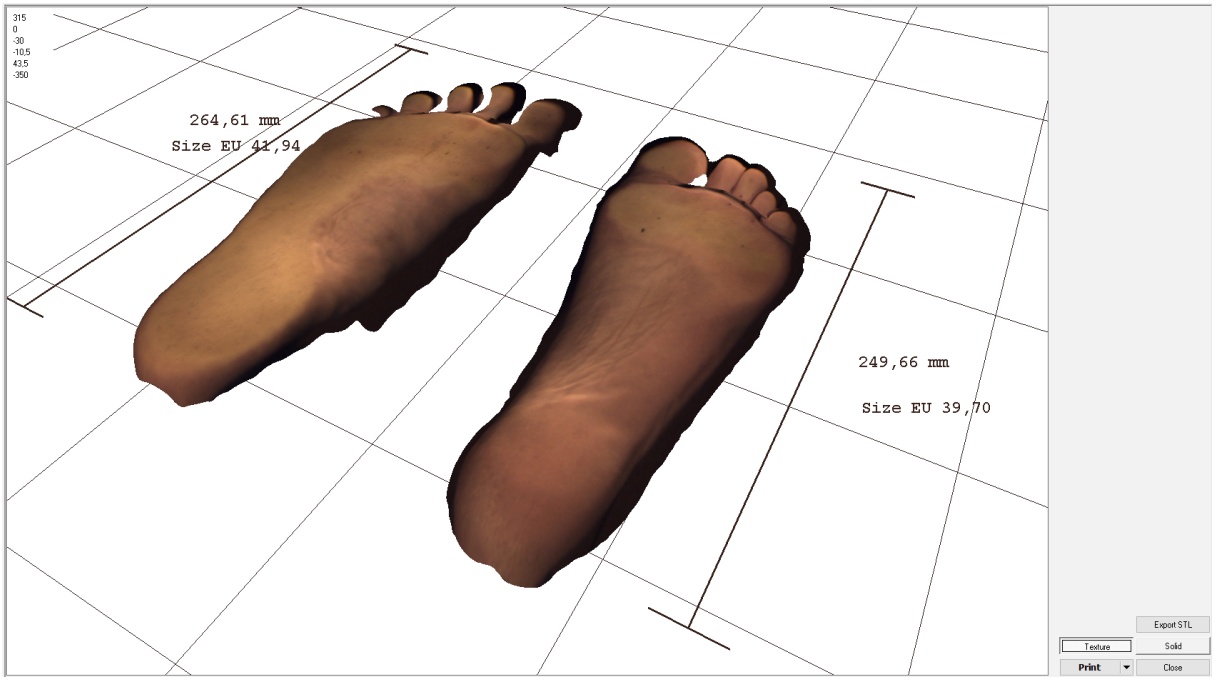


5.6 Podoscan 3D

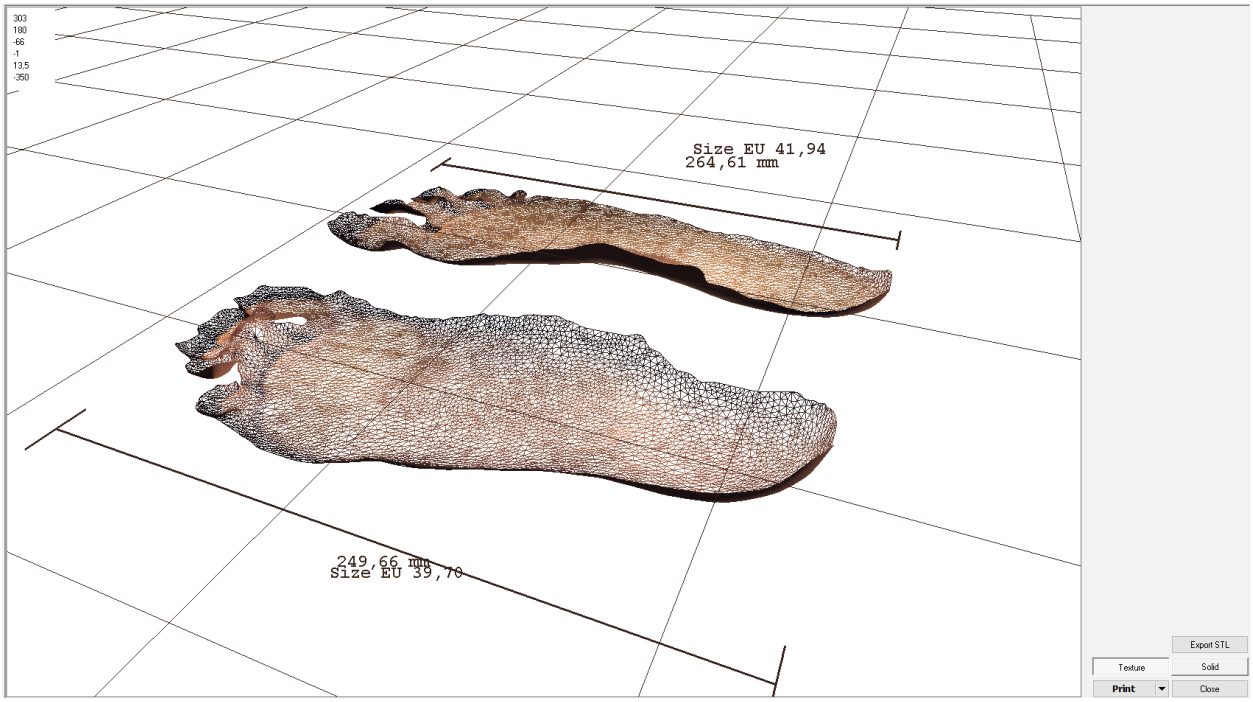
An example of what we get with the Podoscan 3D is the following screen.



The length in millimetres and the shoe size are indicated next to each podalic footprint. You can change the view from “Solid”,i.e. in the color scale, to “Texture”, i.e. with the captured image projected onto the 3D image, by clicking the specific button.



With the mouse commands you can rotate the picture in 3D along each of the three axes.

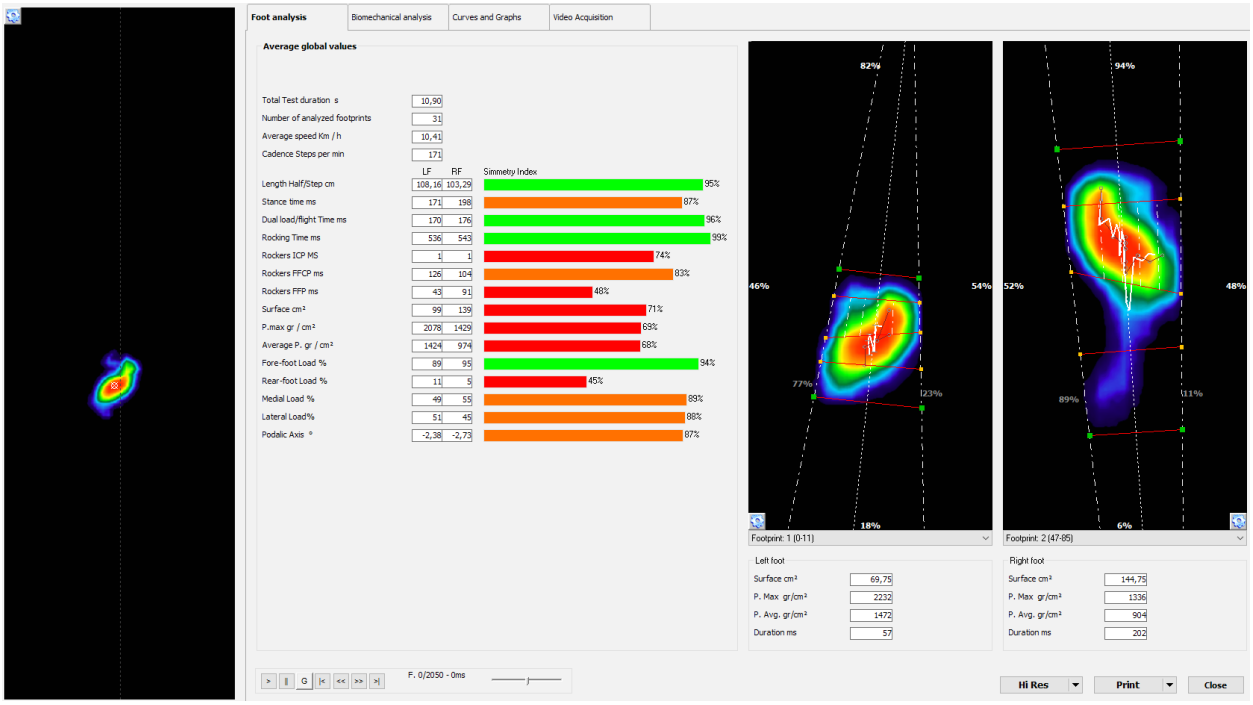


Finally, you can export the picture in STL by clicking on “Export STL” o print it by clicking on “Print”.

5.7 Treadmill

5.7.1 Foot Analysis

An example of what we get with a TreadMill is shown below.



On the left there are the dynamic footprints (in this case the footprint of the left foot).

In the middle there are the values of:

- Total test duration (seconds)
- Number of analysed footprints
- Average speed (km/h)
- Steps per minute.

In addition, both for the right and the left foot, the following values are tabulated:

- Half step length (cm)
- Stance time (ms)
- Dual load/flight time (ms)
- Rocking time (ms)
- Rockers ICP (ms)
- Rockers FFCP (ms)

- Rockers FFP (ms)
- Surface (cm^2)
- Maximum pressure (g/cm^2)
- Average Pressure (g/cm^2)
- Forefoot Load (%)
- Rearfoot Load (%)
- Medial Load (%)
- Lateral Load (%)
- Podalic axis (°).

For each of these values, for the right and left foot, you have the index of symmetry, a value expressed as a percentage that indicates how much the two feet are symmetrical: you will also find a bar, whose color may vary from green, orange to red according to whether the footprints are very symmetrical, averagely or little.

On the right of the screen you can choose two captured footprints (one right and one left) and get values of Surface (cm^2), Maximum Pressure (g/cm^2), Average Pressure (g/cm^2) and Duration (ms) for every single step.

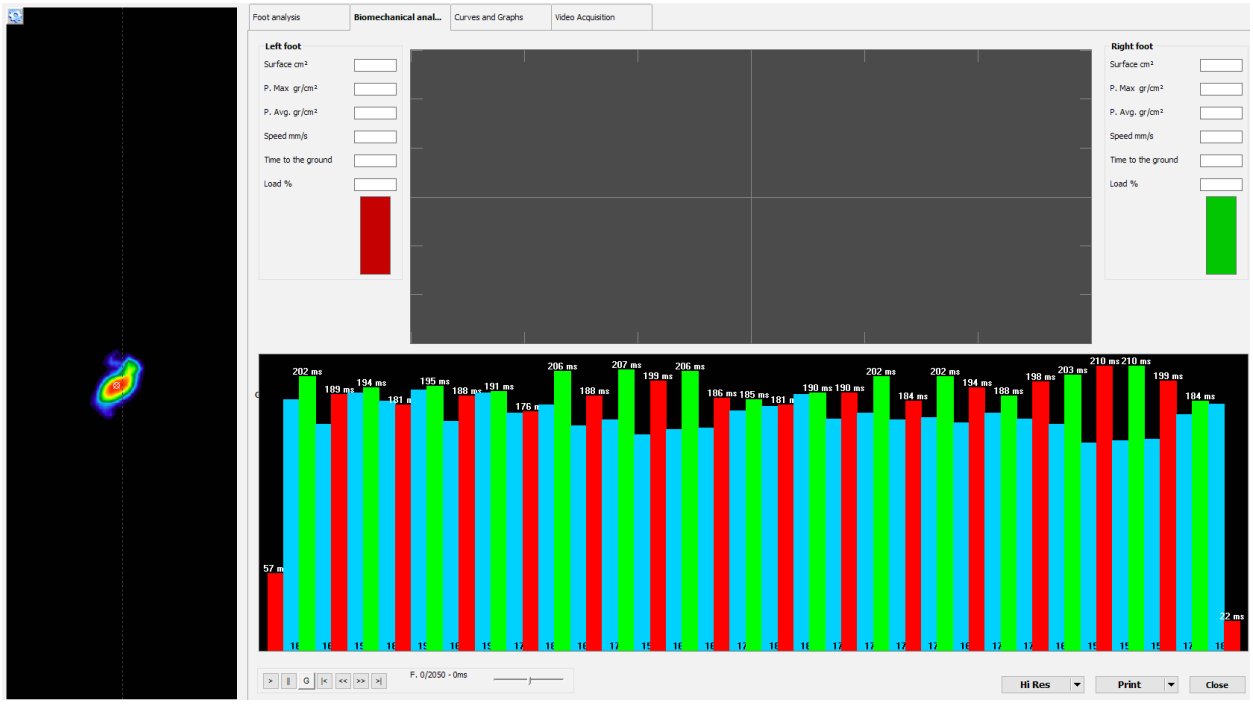
In addition, you can modify the various sections of the foot by moving the markers with the cursor.

5.7.2 Biomechanical Analysis

In the section "Biomechanical Analysis" you will find the bar graph of foot contacts:

- In red the left foot contact
- In green the right foot contact
- In blue the flight phase where there is no contact with the TreadMill.

The duration is indicated for each phase.

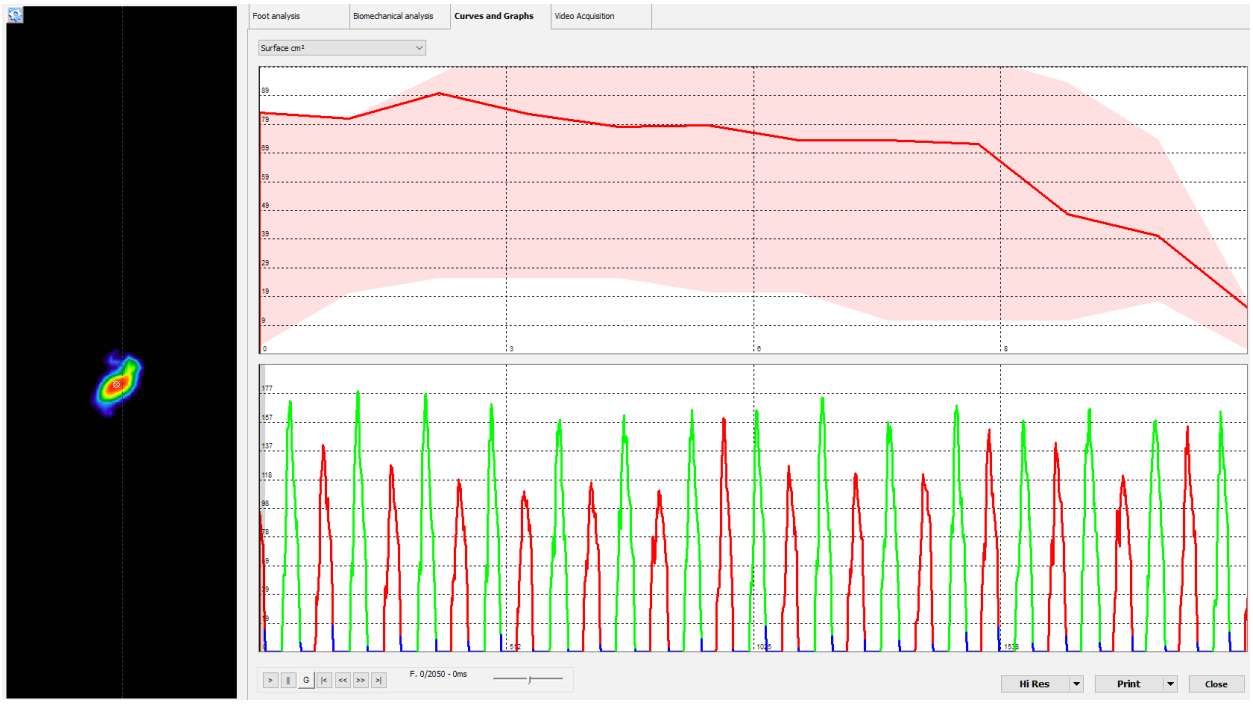


By clicking on “>” the playback of the acquisition starts and, both in the left and in the middle top screen, you can see the trends of the feet contacts. Moment by moment the following values will be indicated: Surface (cm^2), Maximum Pressure (gr/cm^2), Average Pressure (gr/cm^2), Speed (mm/s), Time to the Ground (ms), Load (%) of the right or left foot, depending on which one is in contact with the TreadMill.

5.7.3 Curves and Graphs

In this section you can see the graphs related to the acquisition with the TreadMill.

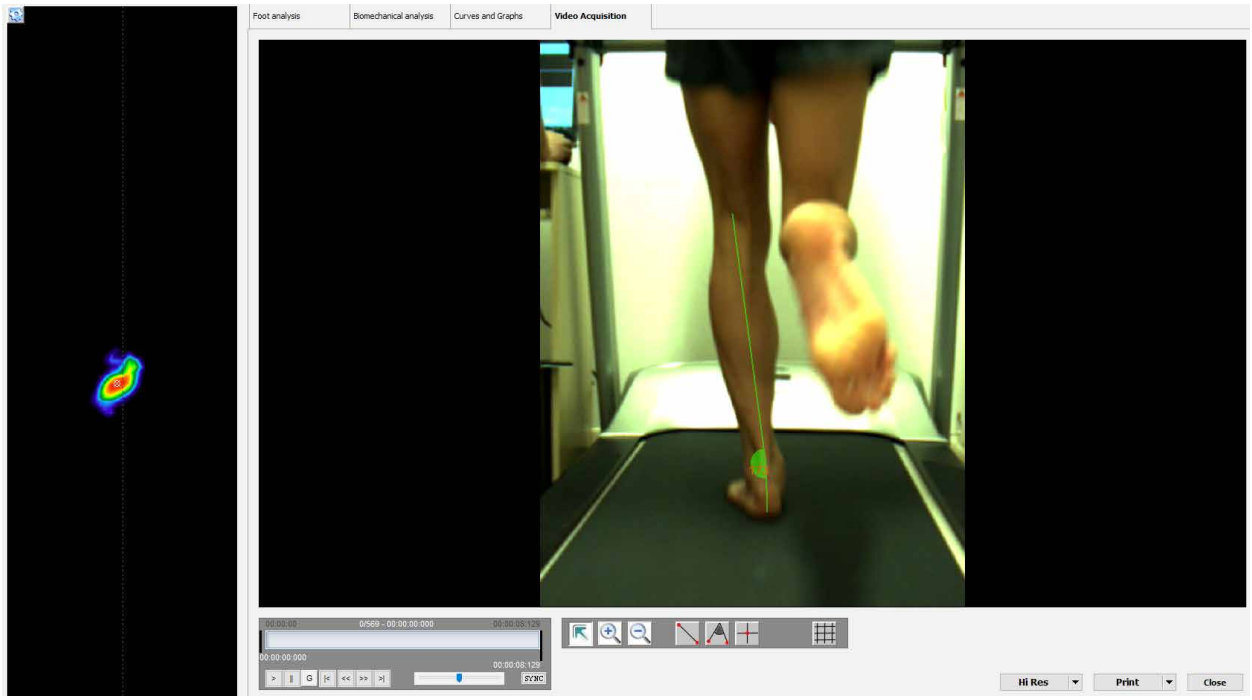
In the drop down menu at the top you can choose which trend to view among: Surface (cm^2), Load (Kg) Maximum Pressure (gr/cm^2), Average Pressure (gr/cm^2), Speed (mm/s) and Rotation (mm).



In the top Graph you will see the chosen trend only for the right or the left foot, while the Graph below displays the full trend, distinguishing the two feet with two colors (red and green).

5.7.4 Video Acquisition

In the section “Video Acquisition” you can play the video captured during the analysis.



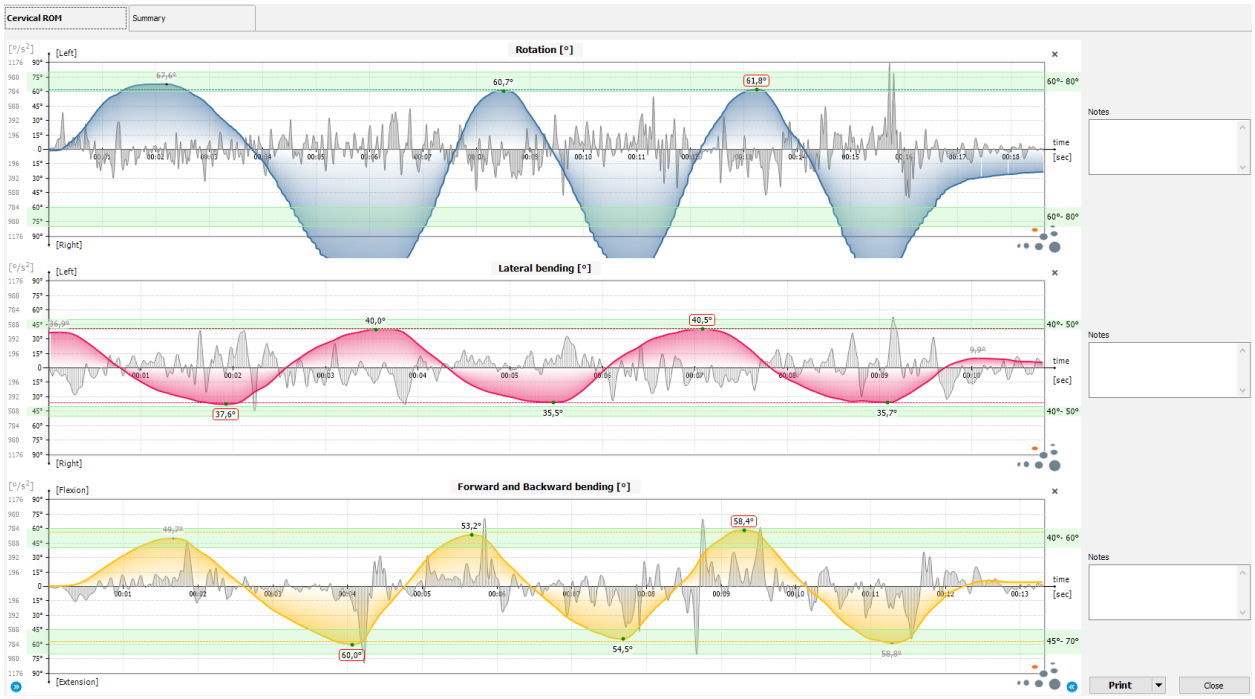
- The button “>” starts the playback of the video.
- The button “||” pauses the playback of the video.
- Use “>>” or “<<” to go forward or backward a frame at a time.
- With the buttons “|<” o “>|” you return to the beginning or go to the end of the movie.

You can enlarge or reduce your video with the buttons in the main menu below.

In addition, you can insert the grid and the lines to evaluate the corners.

5.8 Goniometry

What you get from cervical acquisition with a mOOver is as follows:



We got three graphs:

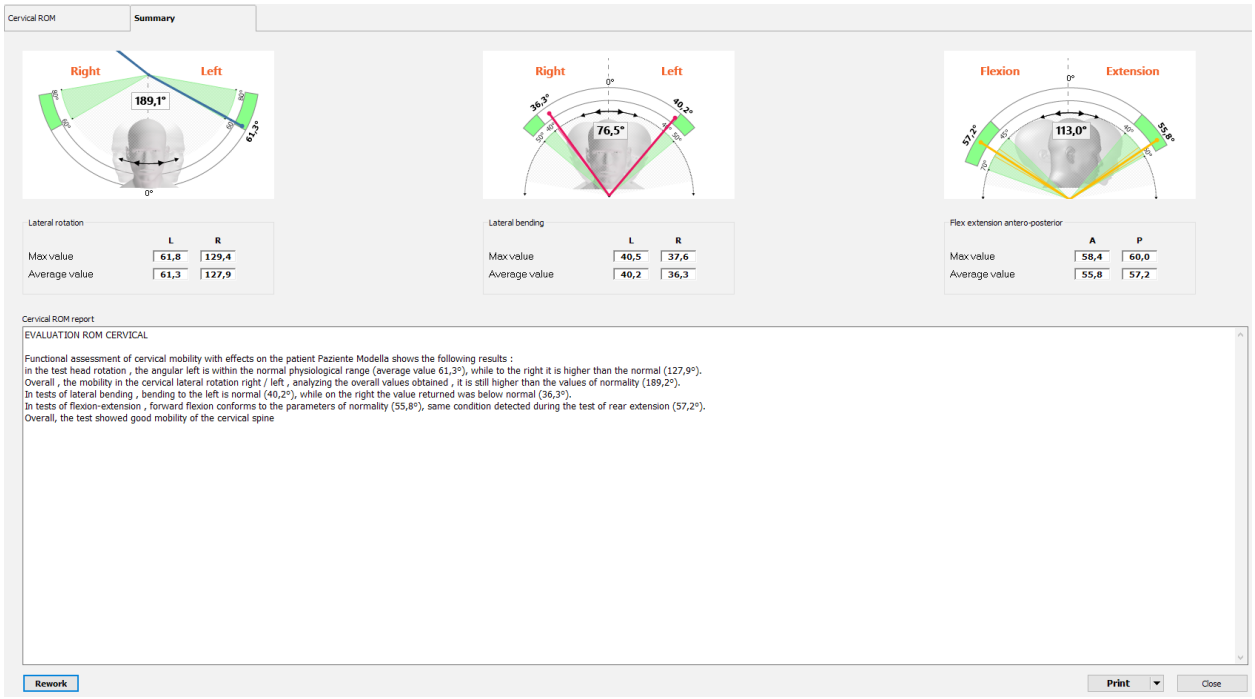
- The first graph represents the rotation of the head: when the curve goes upwards, it means that the patient is rotating towards the left, and when it goes downwards, it indicates a clockwise rotation.
- The second graph represents the incline: when the curve goes upwards, it means that the patient is tilting his head to the left, and when it goes downwards it means an inclination to the right.
- The third graph shows the flexion and/or extension: when the curve goes upwards, it means that the patient is making a flexion, while when it goes downwards the patient is making an extension.

Amplitude is shown in degrees for each peak.

In the summary we have the three tests represented and for each one the maximum and average values are expressed in both directions of the movement.

Below is the report prepared by the system, that may be changed by the doctor.

You can now print the analysis by clicking “Print”.



6 Statistics and Data

The freeStep® includes a brand new and revolutionary concept of statistics aimed at the understanding of the baropodometric values.

Until today little importance was given to the amount of stored in databases.

Instead, it is through the statistic study and analysis of these data, that we can get quantitative information aimed at the knowledge, at the decision making and at the anticipation of events, phenomena and situations.

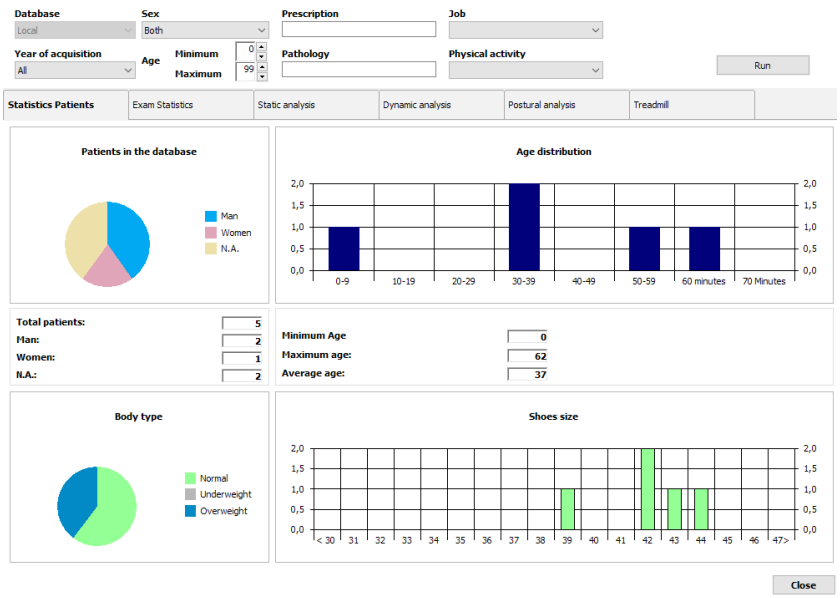
From this perspective, statistics plays a vital role in all phases of the study.

For example, all normal values so far known in the field of baropodometry and the investigation with pressure platforms are the result of scientific and statistic research.

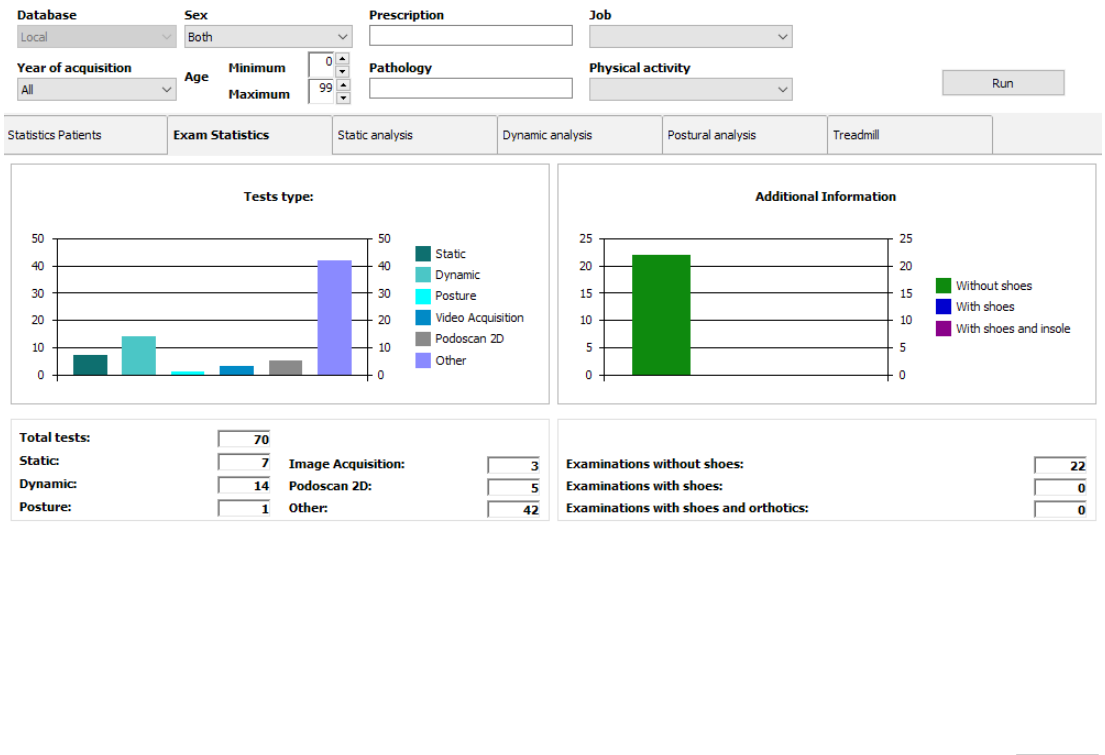
Each freeStep® software is connected to its own database, on which local statistics are calculated, and to a single center where statistics are processed internationally. The user who decides to share their statistics (in a totally anonymous way) has therefore access to the world statistics center and can consult in real time the global results of evaluations.

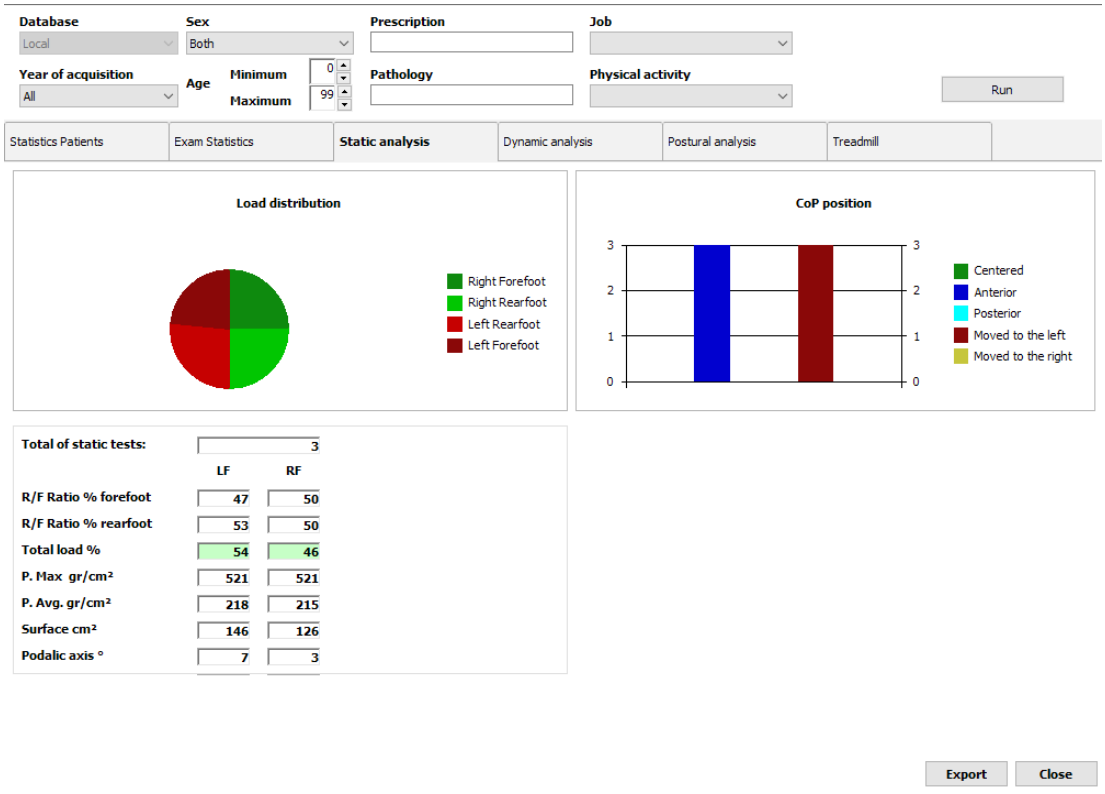
6.1 Statistics and Graphs

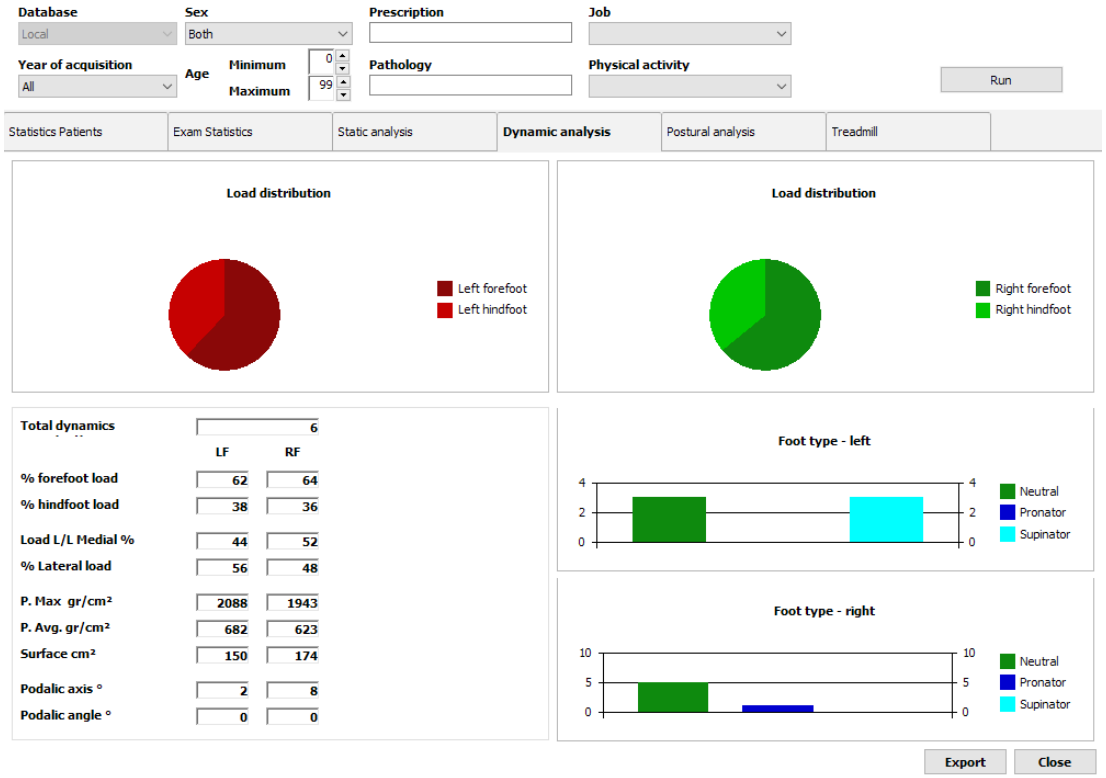
The page “Statistics and Graphs” shows the results (both local and global as applicable) for all tests. You can export the data in .csv format file.



The interface is subdivided by categories and represents the average and median values, the standard deviation, and a whole series of numeric information to a greater understanding of the scientific data found within the software itself.



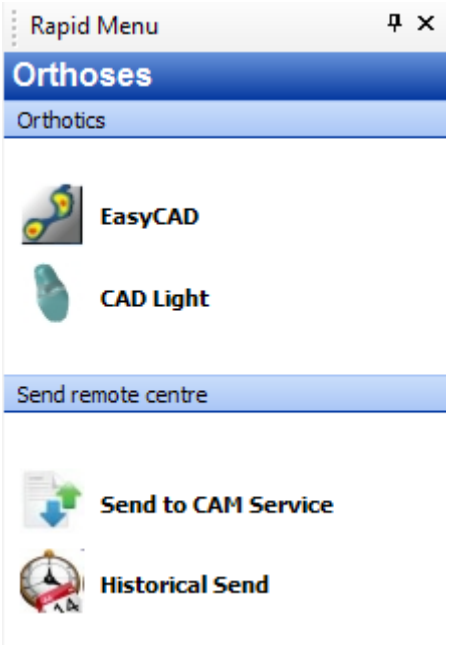




6.2 Clear data

It allows to reset all the statistics so far calculated (local, remote, or both). This procedure does not cancel the exams nor patients from the database, it only generates a new zero point from which it will calculate the statistics.

7 Orthotic Insoles



7.1 EasyCAD Insole®

If within the system there is also the software EasyCAD Insole® (CAD software for modelling and design of computerized orthotic insoles) and you have configured the appropriate item within the System Setup, you can use this menu to design a custom insole.

When viewing a static or dynamic analysis, using the menu EasyCAD Insole®, patient and baropodometric data are automatically transmitted to the CAD software with which you can quickly start designing. Also, you can export the following tests in a single, double or triple way, depending on the needs of the specialist commissioned to design orthotic insoles:

- Exam carried out with baropodometric platform
- Exam carried out with podoscan 2D
- Exam carried out with podoscan 3D.

For more information on the software EasyCAD Insole®, please refer to the product user guide or contact your usual dealer.

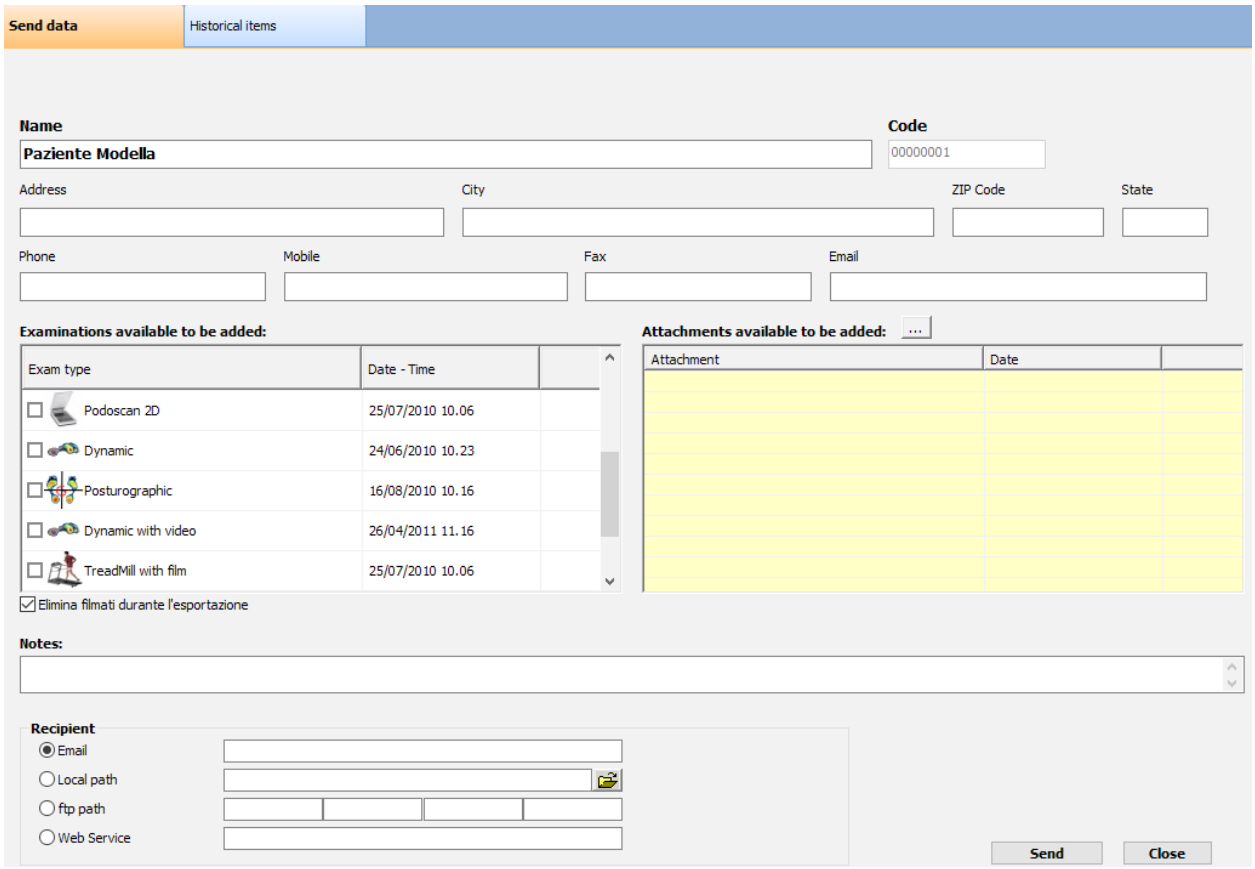
7.2 CAD Light

CAD Light is an extremely reduced and simplified version of the EasyCAD Insole® software. Its function is limited to the choice of the kind of orthotic insoles that you want to realize for a specific patient.

7.3 Send to CAM Service

The page “Send to CAM Service” is dedicated to all those who use an external service company for the production of orthotic insoles.

Its functions, in part similar to the Send and Receive Exams page, allow you to select patients, exams and attachments, to add notes and information relating to the realization of the orthotic insole and to send your data in a single compressed file in the following ways: e-mail, local or network disk, ftp, web service.



For the choice and configuration of the delivery mode, please refer to the chapter about the system setup and to the indications of your insole printing service.

8 System Setup

Before you begin using the freeStep® software, it is essential that you correctly set the application parameters. Through the top menu item - Settings - Setup Application, or directly from the rapid menu “System Setup”, you can access the setup procedure.

WARNING.

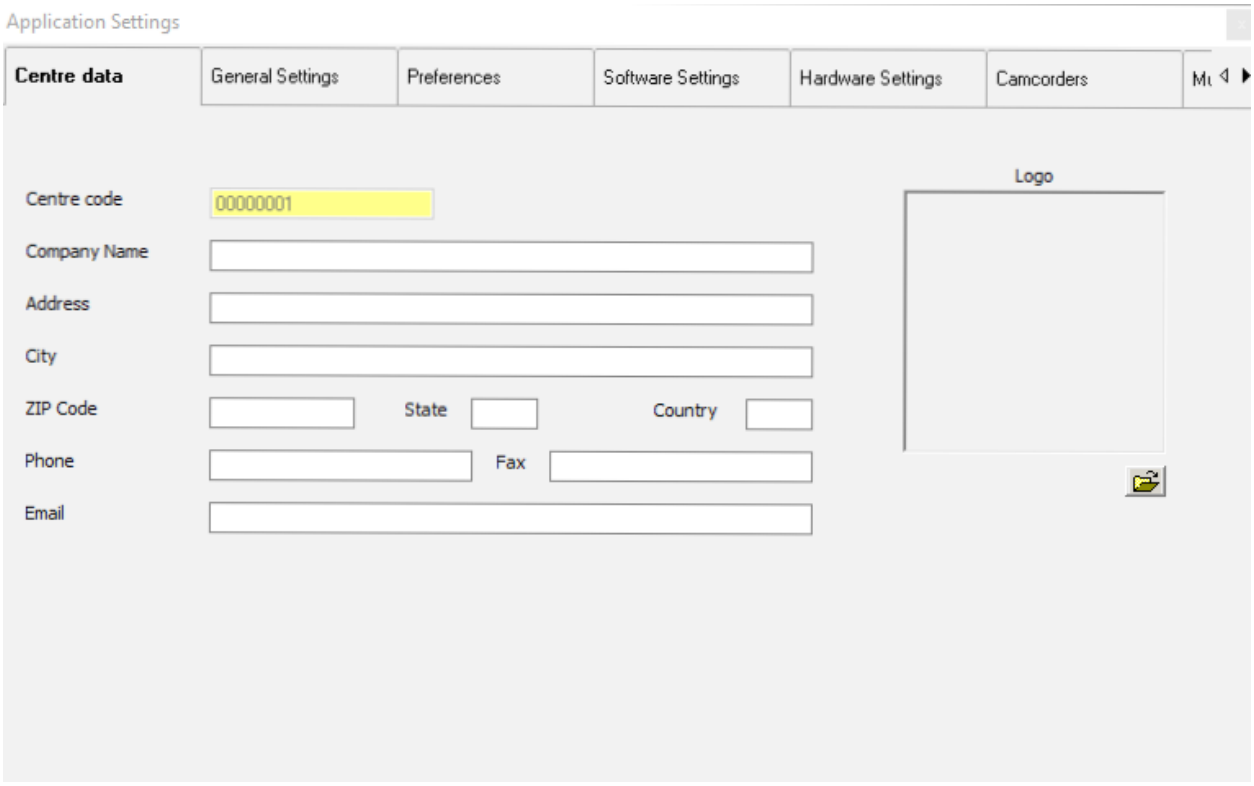
Some choices in the Setup can prevent proper operation of equipment connected to the software, and in some cases damage them. For proper configuration of hardware devices, please refer to the installation manual of the respective manufacturer.

8.1 Centre data

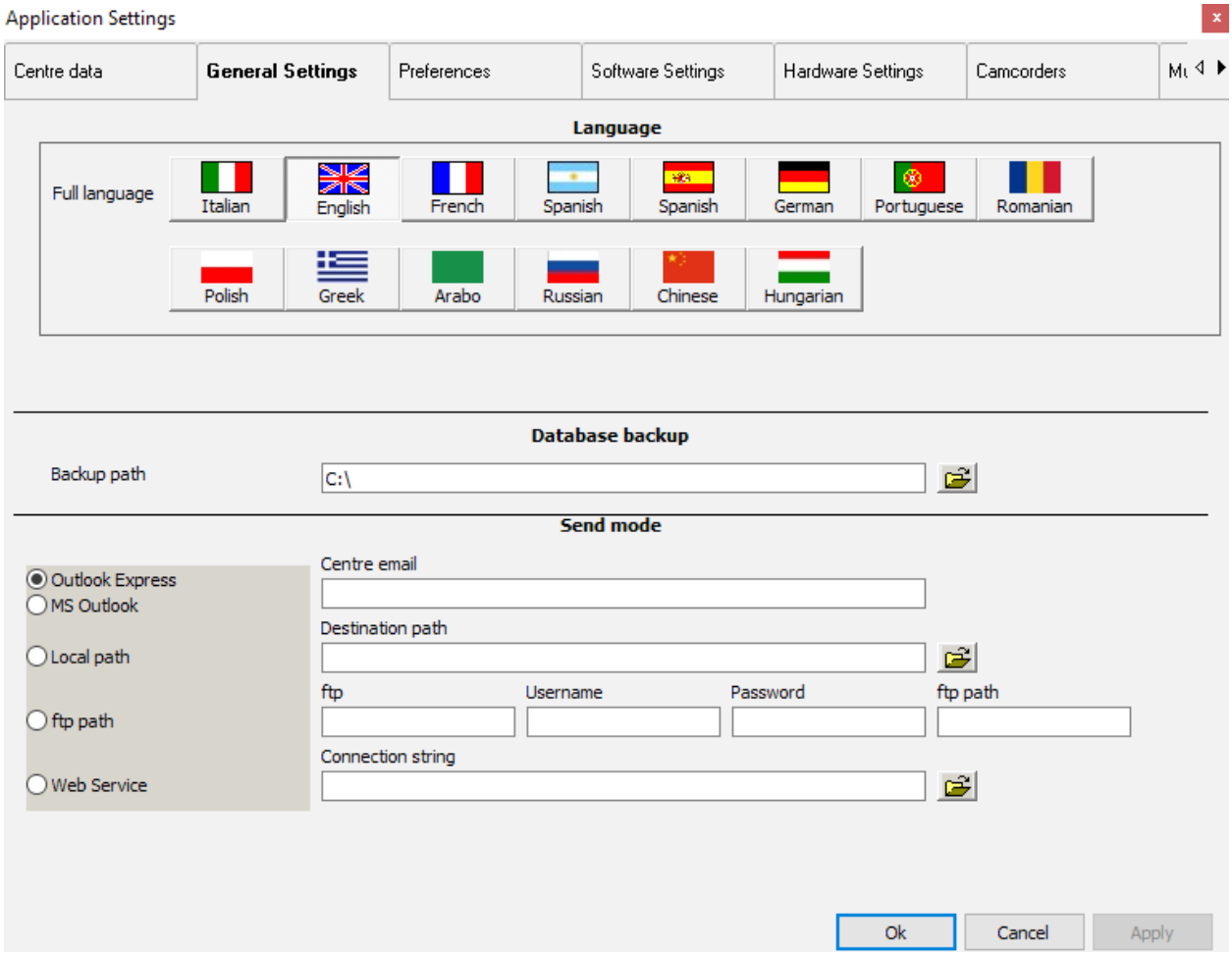
In the first screen you can enter the data of the software user center.

Enter your details in the appropriate spaces. The data you enter will be used in all print phases and to “identfy” patients when sending data to remote centres.

To further customize software and prints you can also insert your own logo in the appropriate field. The file format to be used in this case will be a JPG or BMP with a maximum size of 100px by 100px.



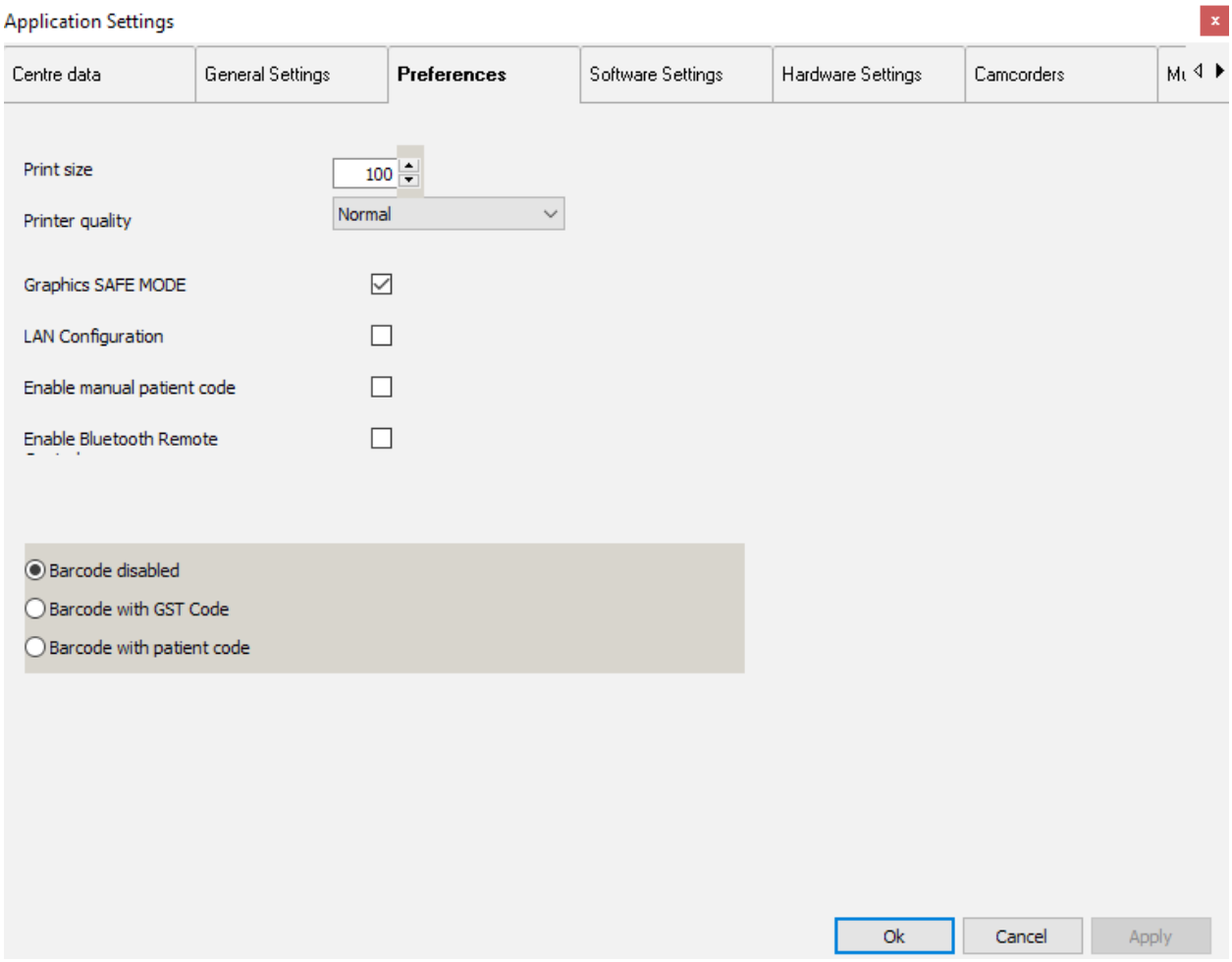
8.2 General Settings



In this screen you can configure:

- The language of the entire software interface: the default setting is the Italian language. If you want to change the language, select the option of your interest, click “Ok” and restart the program for the changes to take effect.
- The backup location: select a disk drive or a network path where to perform the backup. To select the backup destination drive, click on the graph button “Browse”.
- The default mode for sending data: configuration of the data transmission process to the orthotic insoles production service. (Optional)

8.3 Preferences



8.3.1 Print size %

Depending on the used printer, it may happen that the size of the prints made by freeStep® exceed the permitted size. This problem occurs mainly when the physical margins of your printer exceed one centimeter on each side.

By reducing the percentage of the print size you can still make up for this shortcoming. If during one or more print jobs you notice that the document is incomplete, gradually decrease the percentage, until you get the complete documents.

8.3.2 Print Quality

The selector allows you to send to the printer different types of images in order to speed up the printing process or, at the expense of speed, to get crearer images. It is

possible to choose between:

- Draft
- Normal
- Excellent
- SAFE MODE Graphics

While freeStep® being fully compatible with all new-generation personal computers with Microsoft Windows XP SP2 or higher operating system, it may happen that, during some particularly demanding graphic elaborations, the system may stop responding or cause Windows errors. Usually, these errors are caused by system drivers not properly updated or problems related to poor maintenance of the personal computer.
Activating the SAFE MODE Graphics option, freeStep® will disable a series of graphic functions in order to drastically reduce the chance that errors may reoccur.

8.3.3 LAN Configuration

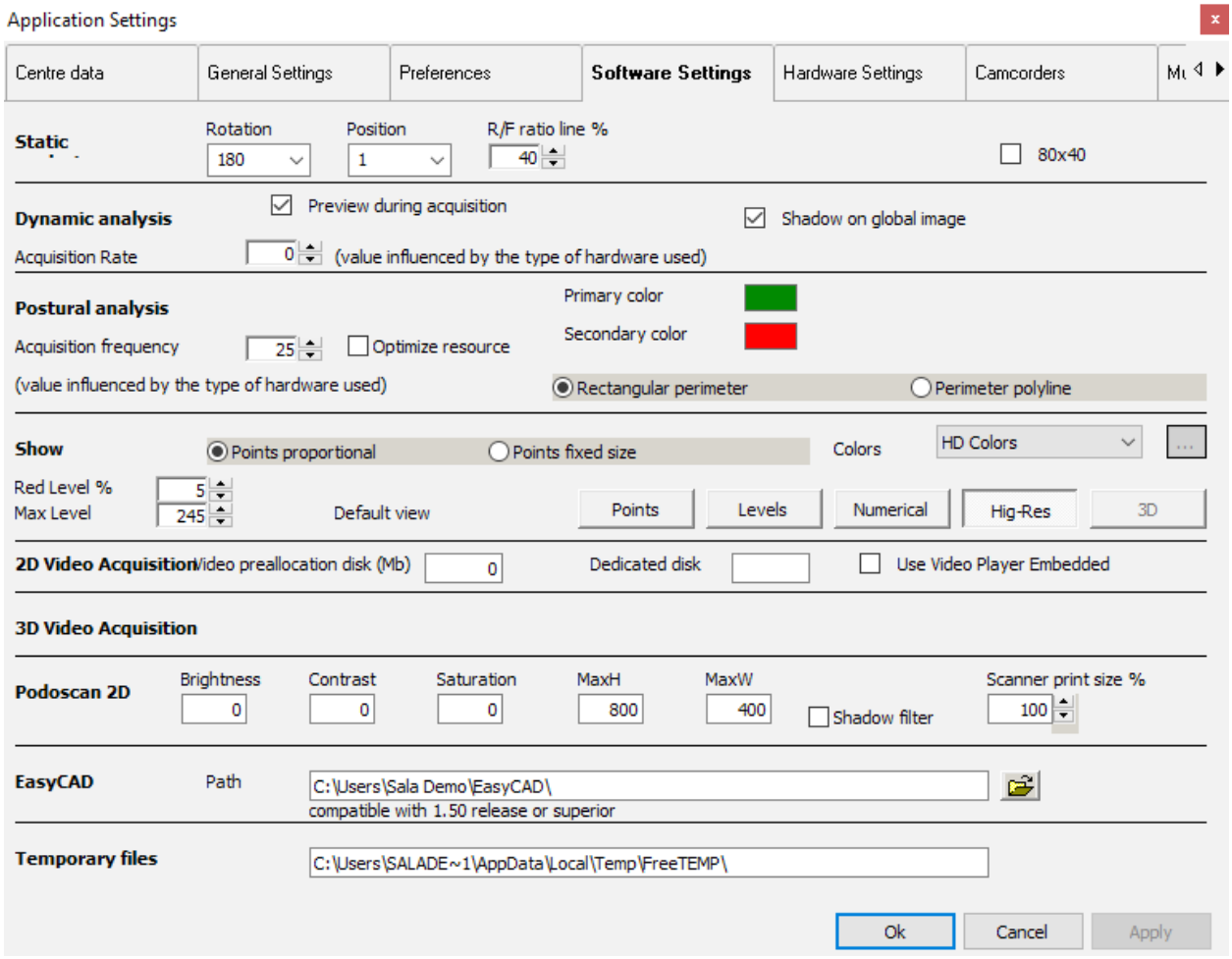
freeStep® is fully compatible for network use. This allows you to share, through a proper setup of your network, all information contained herein.
By activating this option you can configure, for each workstation, a user profile with the respective hardware devices connected to it without interfering with the configuration of other stations. For proper network configuration of freeStep® software, it is recommended that you enable the option “LAN Configuration” and make the freeStep folder of public domain, sharing it with the network, save the settings and restart the program. Repeat this process on all workstations on the network, then proceed to the configuration of each workstation.

8.3.4 Bar Code

If it is used in your business, you can activate the “Barcode” option. Choose the type of encoding that this will display (generated from unique codes created by the program or generated from the patient’s social security number).
The configured bar code will be displayed, and then printed, on the personal record of each patient.

8.4 Software Settings

Some fundamental functions related to the use of configured and used devices (see the Hardware Settings section) can be managed within this page.



8.4.1 Static Analysis Configuration

Depending on your preferences, the software allows you to change the position and orientation of static analysis.

If you have a large baropodometric platform, the “Position” function allows you to change the up to now mandatory position (for example at the beginning of the platform). “Rotation”, instead, allows you to orient the patient in the position you find most appropriate.

The “R/F ratio line %” acts directly on the automatic calculation of the positioning of dividing axes of the two feet.

The horizontal static dividers axis allow you to calculate the forefoot and rearfoot values. It is therefore essential that the axes are positioned correctly on the podalic picture (usually the position is corresponding to the Chopart interline). The default setting is 40% which corresponds, starting from the heel striking point, to the 40% of the total length of the plantar support.
Increasing the value you will get the displacement of the line to the front, and, decreasing, toward the rear.

8.4.2 Dynamic Analysis Configuration

Depending on your hardware, and in particular on the performance of your computer, you can enable or disable the image preview during the acquisition of dynamic footprints. Disabling the preview, the computer saves resources and calculations enabling, where possible, a higher image sampling. In some cases there has been an increase of up to 30% of the captured frames.

8.4.3 Postural Analysis Configuration

Several methodologies of stabilometric (or posturographic) investigation or particular acquisition protocols need to customize the sampling frequency in order to obtain consistent and normalized results.
The greater the PC quality, the higher the settable sampling frequency. If you wish to make comparisons with bibliographic data referring to older platforms, you must set the maximum frequency to 25Hz: in this way the data are made statistically comparable.

8.4.4 Show

Based on your experience, you can configure two display methods (this is only tied to a different visual perception of the pressure footprints):

- Proportional points
- Fixed size points.

You can choose the type of default display between: Points, Levels, Numerical, Hi-Res, 3D.

You can also choose the type of color palettes between:

- Default Colours
- Flat Colours
- WP Colours
- Custom Colours
- Hd Colours.

Try to set the different combinations until you get baropodometric images to your liking.

8.4.5 Podoscan Configuration

The parameter “Brightness” fixes automatically the data acquired with the digital podographic scanner. You can set negative or positive values (between -1000 and +1000) to get an automatic light correction of scanned images.

“MaxH” and “MaxW” are the dimensions of the processed images. Based on the performance of your personal computer, you can change the values to get the best performance/image quality.

If during the acquisition with your digital scanner you don’t get clear and well contrasted images (black outline and well visible podalic footprints) try enabling the “Shadow Filter” for an automatic correction of the image.

8.4.6 EasyCAD Insole® Path

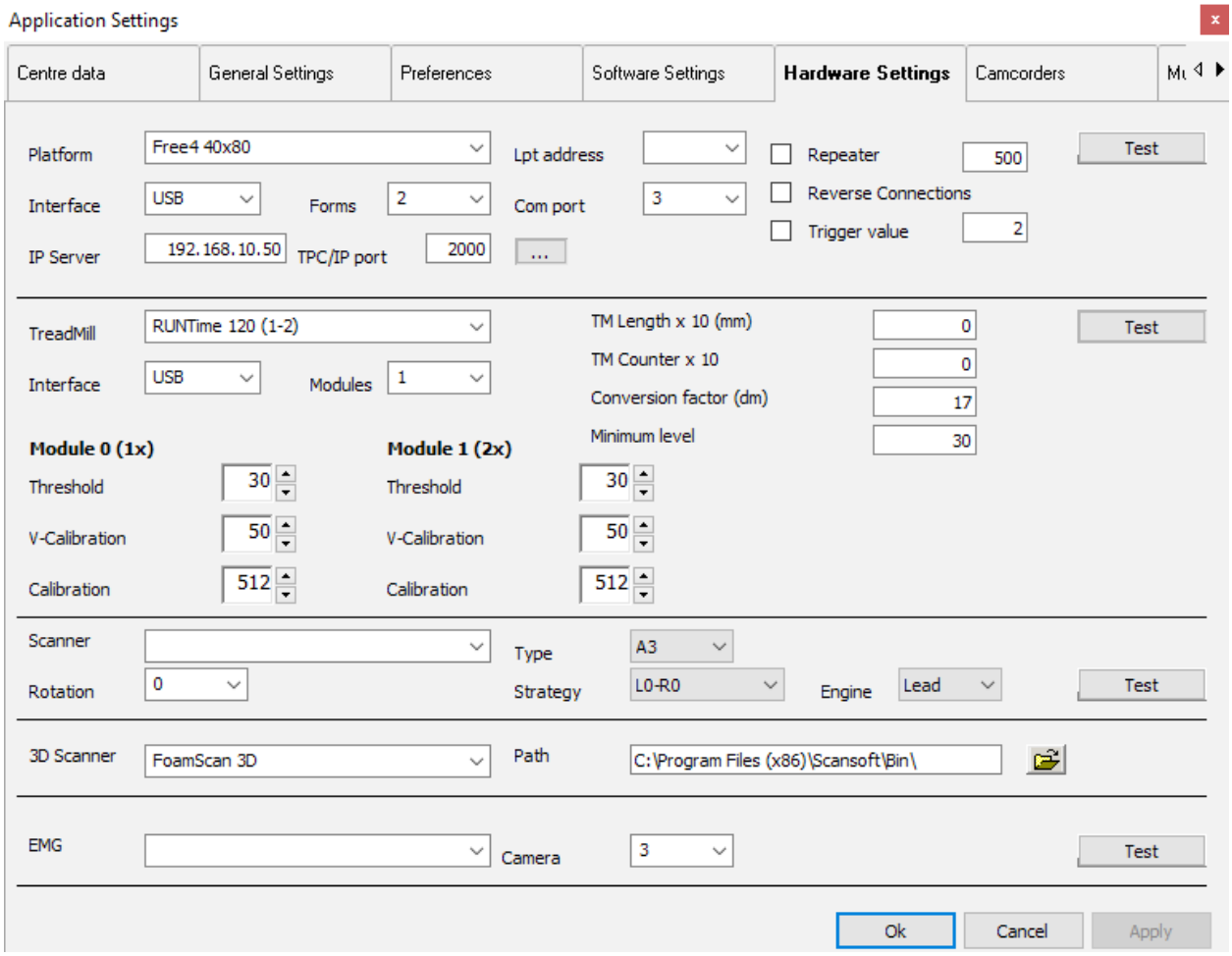
If you have the EasyCAD Insole® software installed on your computer (in the Light or Professional version) for the computerized design of orthotic insoles, configure the path to the program.

By properly configuring the setting, you will have the maximum interaction between the two softwares that will automatically dialogue with each other.

8.4.7 Temporary Files

Inside the field, not configurable, the local path of the temporary files used by the program is shown.

8.5 Hardware Settings



The configuration of the hardware section depends on the electronic devices in your possession. Combined with the following chapter, please refer to the technical documentation provided by the manufacturer of each device in your possession.

8.5.1 Platform

Through the drop-down menu select your baropodometric platform and the number of modules (interfaces connected to your pc) that compose it.

NUMBER OF MODULES	DROP-DOWN MENU ITEM	PLATFORM TYPE
1	Free 40x40	Base
1	Max 50x60	Maxi
2	Max 50x60	Dynamic
3	Max 50x60	Professional
4	Max 50x60	Extreme
5	Max 50x60	Sport

Normally, based on the selected system, all parameters related to it are automatically configured.

By clicking on the “Test” button you will be able to verify the correct functioning of the device.

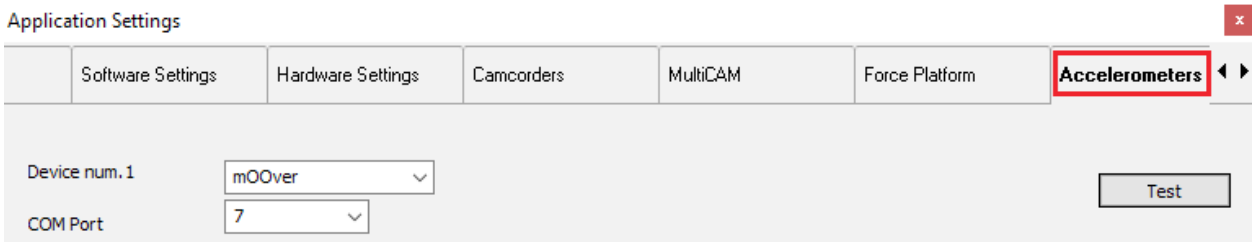
The Test page, only with reference to the platform, also allows you to adjust advanced settings of the system, such as: Threshold, V-Calibration and Calibration.

Since these parameters act directly on the device and determine the quality of the signal it reads, it is recommended to configure them only under the guidance of qualified personnel, or by using the appropriate calibration file attached to the platform.

8.6 Accelerometers

If you have a mOOver, to proceed to first and only installation you will have to contact technical support at .

Then you can proceed independently by following these instructions.

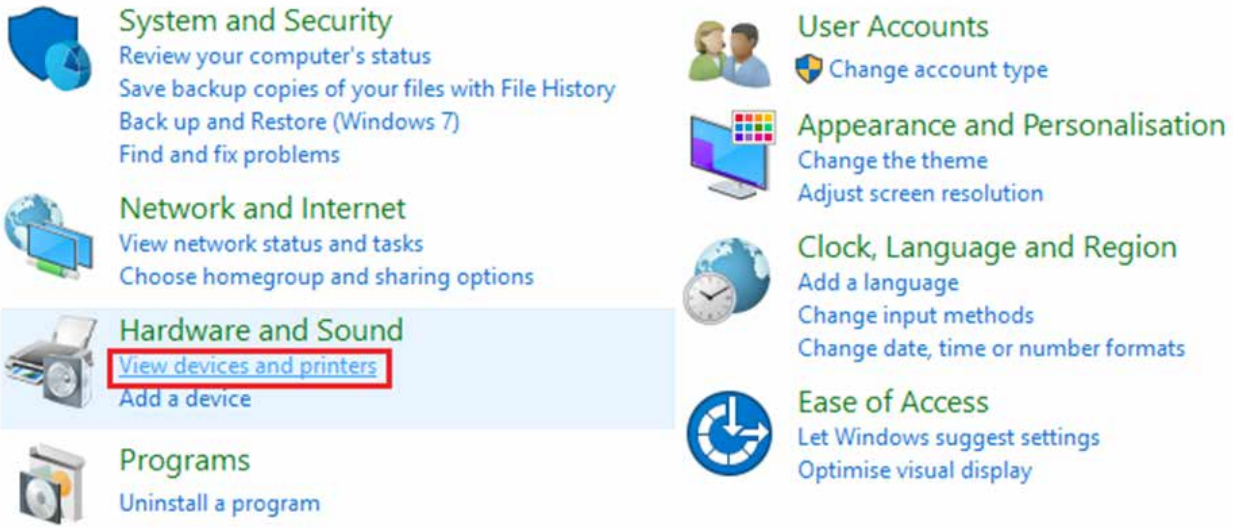


To set a mOOver on freeStep®, you will have to select the type of device at the entry "Device no.1" and the COM port assigned to it by the computer.

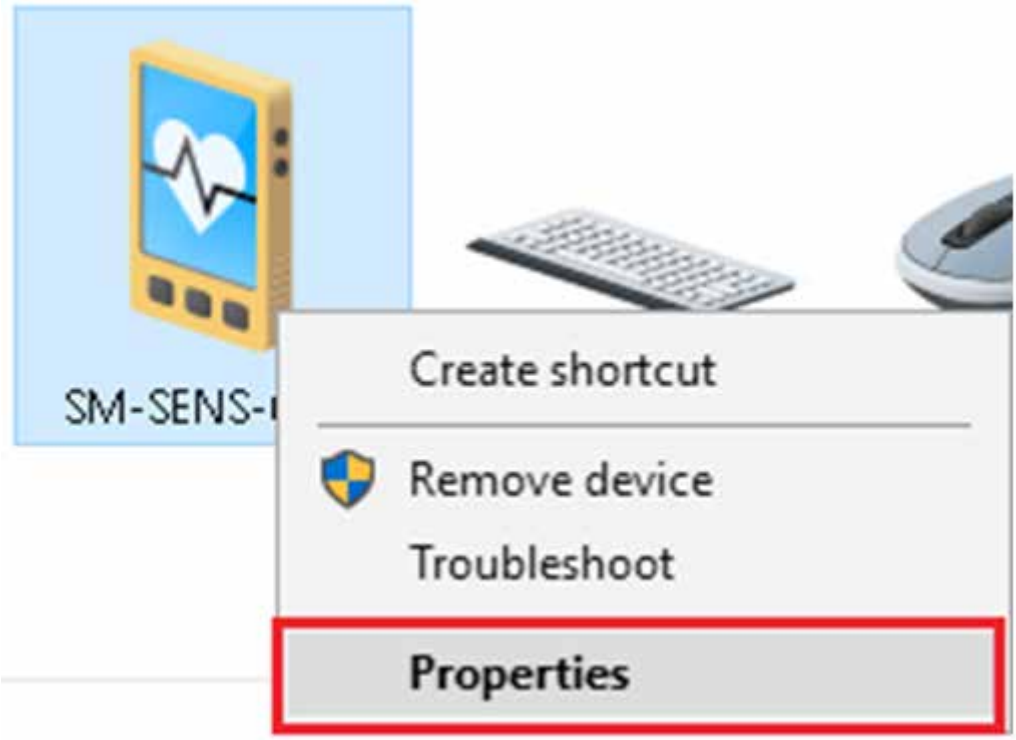
Click "Apply".

8.6.1 How to view the COM port

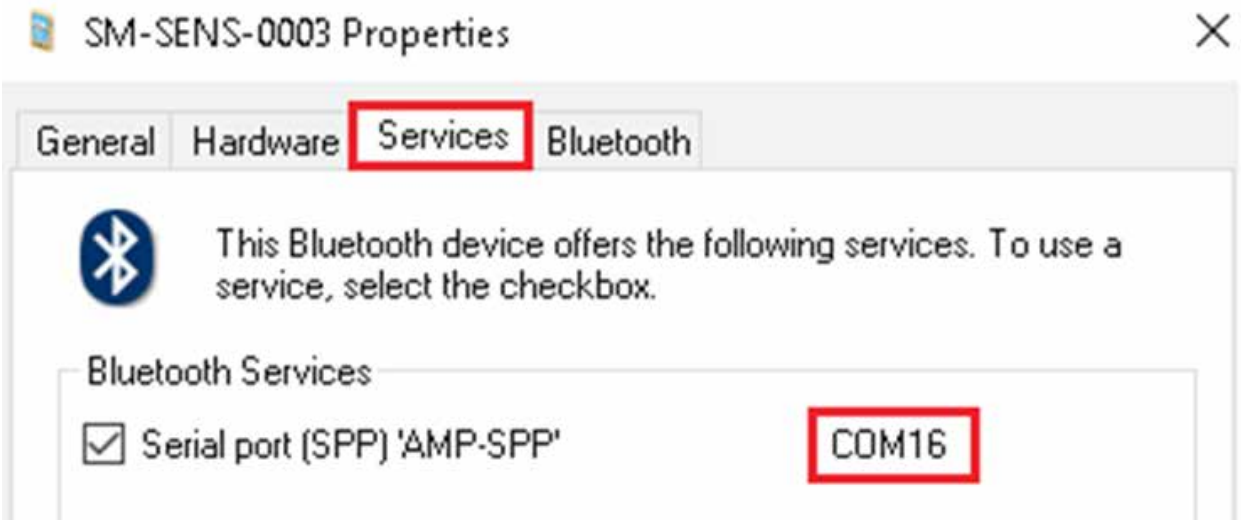
First, you must add the mOOver in the Bluetooth menu of your computer. Once added, to view the COM port you will have to go to the control panel.



Click on “View devices and printers”. The mOOver will be read as a medical device (only for operating systems above Windows 8). Right click and click on “Properties”.



Now click “Services” and in this window will be available the COM port assigned to the mOOver by the operating system (in this case the COM16).



8.7 Camcorders

In freeStep ® you can combine the analysis with photos and video, or perform videographic analysis with its calculations (see previous chapters). freestep® can have up to 7 camcorders connected and up to 4 camcorders for a single exam.

For each menu (Static, Dynamic, Scanner, Video Film) at the entry “Compression” select “Xvid MPEG-4 Codec”. After setting each camcorder, click on “Apply”.

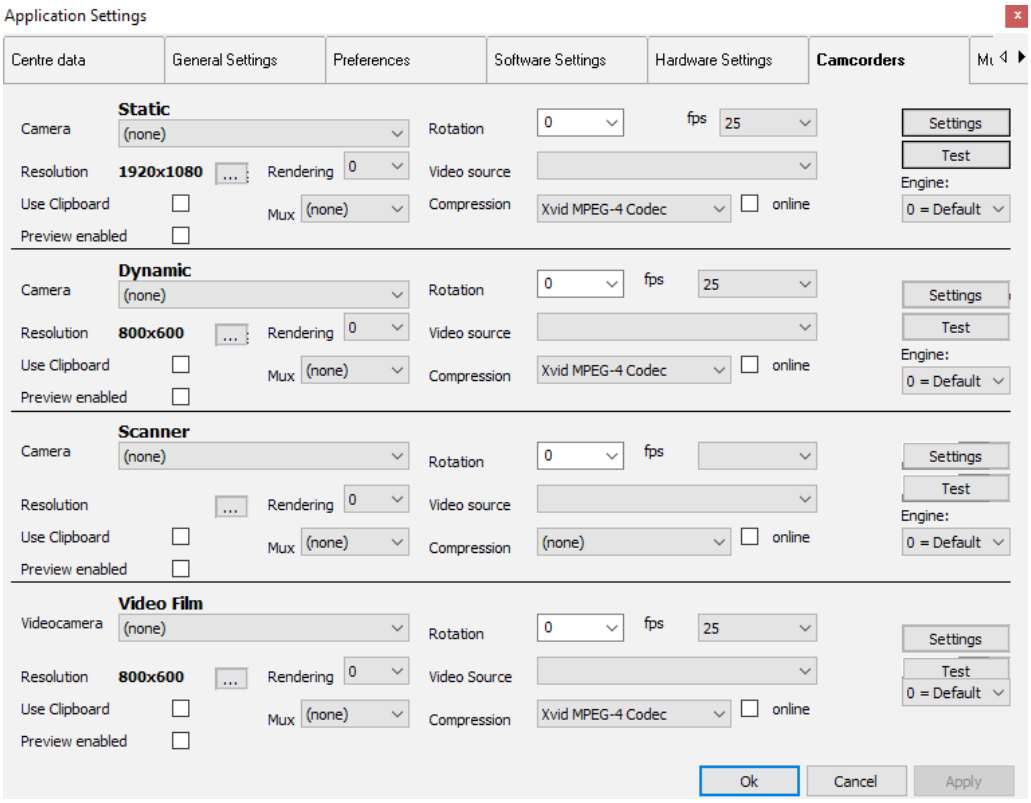
To set 2 or more (up to 4) camcorders for a single examination, under “Camera”, you should choose the option “MultiCAM” (see next chapter).

freestep ® also supports GigaEthernet camcorders. We recommend to install the camcorders (if need be) before setting them in freeStep ®.

We recommend to set the resolution and FPS based on the performance of your computer.

8.7.1 Static and Posturographic Camcorder

Select the configured camera for the videographic acquisition while standing (during static analysis or during Video Acquisition with patient not moving).



In the drop down menu you will see all video capture devices configured on your system. Then set the desired resolution, the video source (only for multi acquisition devices), image rotation and the capture rate (fps).

The type of "Rendering" and the "Swapp in clipboard" option allow you to obtain, based on your own personal computer, increased performance in terms of speed or greater image compatibility and stability. Test the various combinations until you get the best possible results on your system.

By clicking on "Test" you can get a preview of the configured camera.

8.7.2 Dynamic camcorder

From the drop down menu, select the camcorder to use for the dynamic acquisition. If the camcorder is the same you use in the static section, you will have to configure the same device. You can still modify the characteristics such as: resolution, video channel, capturing frequency, etc. Use the button "Test" to verify the correct setting.

8.7.3 Podoscan 2D and Podoscan 3D Camcorder

The drop down menu corresponding to the scanner lists all compatible Twain devices installed on the system.

If you have more than one device (for example, MFPs and scanners), exercise extreme caution to properly select the scanner dedicated to the podalic acquisition.

In combination with the scanner you can configure a specific camcorder that simultaneously captures an image. By properly positioning this service camcorder you will get, for example, in addition to the patient's podalic footprint, the back view of patient's heels.

8.7.4 Videographic Exam Camcorder

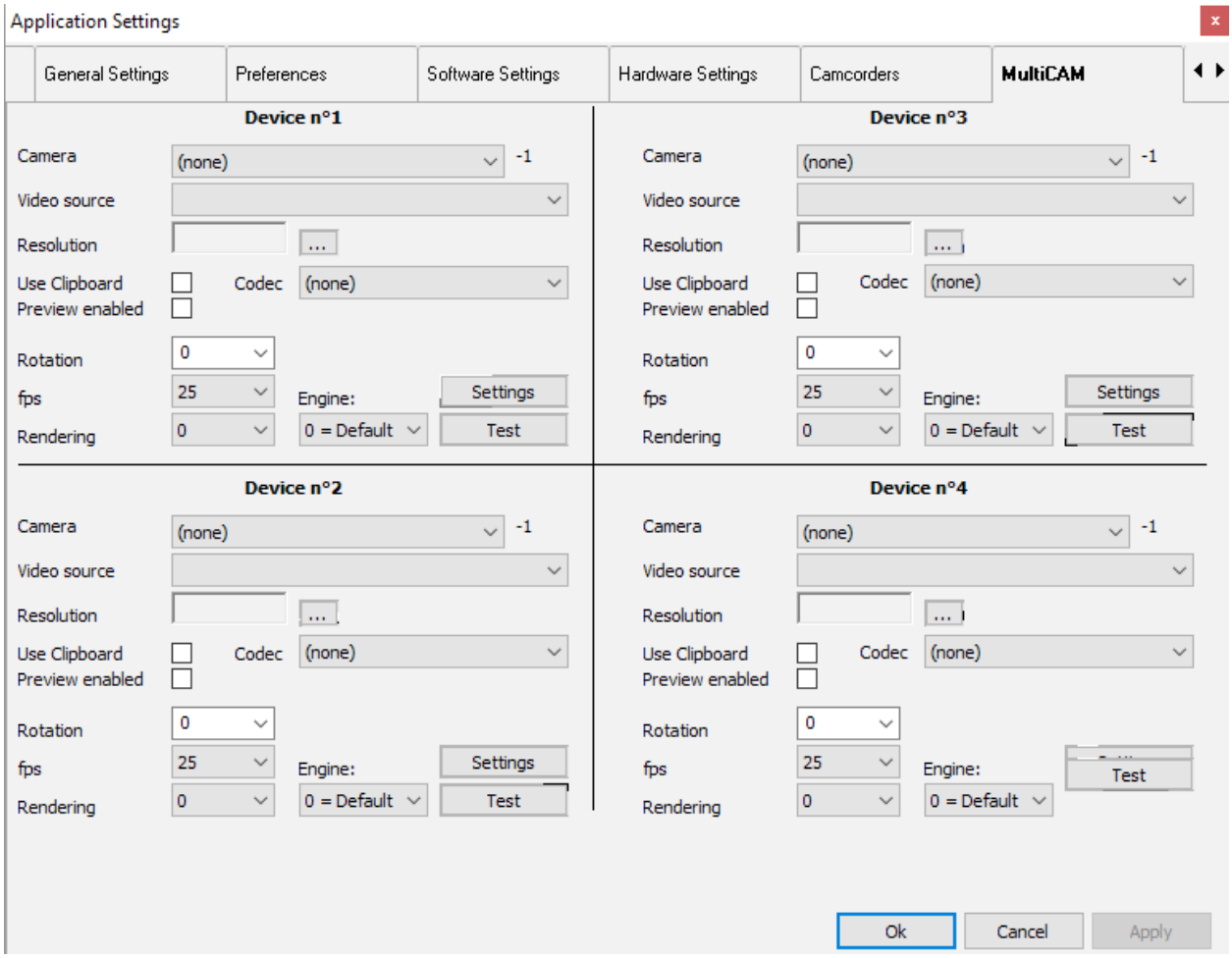
The videographic menu follows the rules of the previously described menus, this article concerns only the video you can realize in videographic analysis. Concerning the photos, freeStep® will consider the camcorder settings in static.

8.7.5 MultiCAM

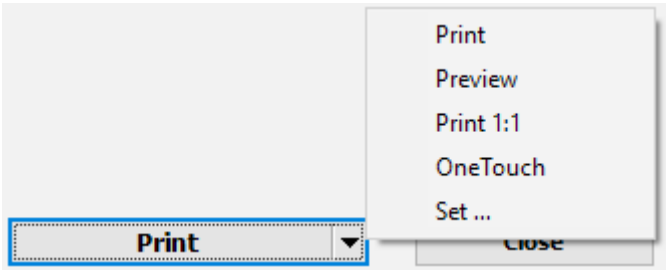
Under MultiCAM you can set 2 or more camcorders, up to 4. You will still need to choose the option MultiCAM in the menu “Video Cameras”.

Under “Codec”, set “Xvid MPEG-4 Codec”.

We recommend to set the resolution and FPS based on the performance of your computer.



9 Print Button



The print button, in addition to immediately print the analysis or graph shown on the screen, gives you access to a whole series of related functions that facilitate the routine work.

The available functions are:

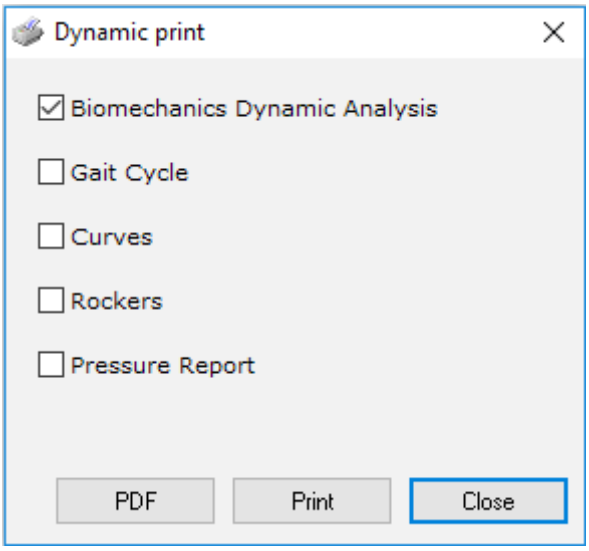
- Print
- Preview
- OneTouch
- Set

9.1 Set

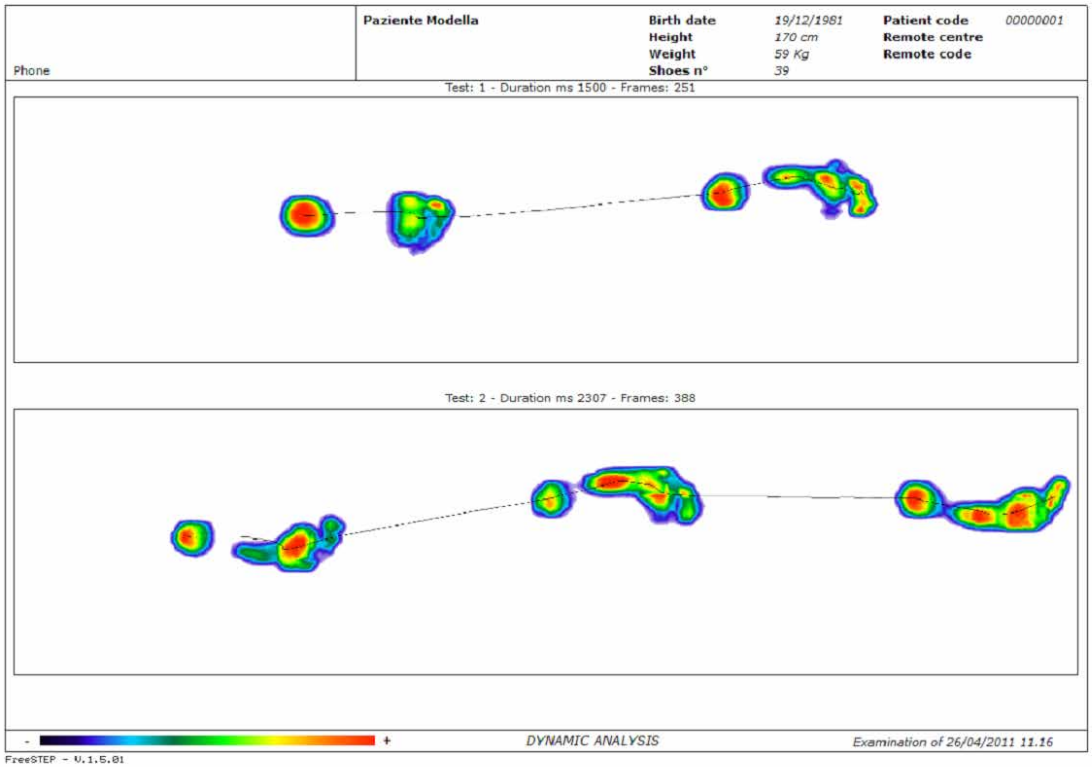
It allows you to change the print device or its features (print quality, paper size, etc.) without having to enter the related Windows Panel.

9.2 OneTouch

This function is available when viewing some analysis with multiple prints, and displays a quick panel which allows the operator to quickly select a predefined set of prints and to run them automatically with a single confirmation.



9.3 Preview



It displays an accurate print preview. Within the preview there are the print confirmation and cancellation commands.

9.4 Print

Sensor Medica
Umberto Agnelli 11
00012 Guidonia
Phone0774356165

[1]

It sends the current view directly to the default printer: in addition to printing the selected acquisition, at the top there are two sections, one with information concerning the center that is performing the examination (company name, logo, address, etc - see chapter “application Setup”, and picture 1) and the other with the patient’s personal data (name, date of birth, height, weight, shoe size and code - see Chapter 6.1 “Patient Database”, and picture 2). For any analysis that the company will print for the same patent, the top section will always be the same, with the center and patient data (amendments excepted).

Paziente Modella	**Birth date**	*19/12/1981*	**Patient code**	*00000001*
	Height	*170 cm*	**Remote centre**	
	Weight	*59 Kg*	**Remote code**	
	Shoes n°	*39*		

[2]

Direct Print and Print Preview commands are always available in the top command Toolbar.

Within the System Setup you can adjust print quality, size and margins. For further details, please refer to the chapter on System Setup.

10 Glossary and Conventions

A

A/P - Antero Posterior.

Podalic Angle - angle-angle formed by the foot tangents.

Podalic axis - axis of positioning/rotation of the foot which creates an angle with the sagittal plane.

B

Backup - protection copy.

C

C - see CoP.

Clipboard - temporary area of the memory.

Cm - centimetres.

CoF - Center of Force, the center of the forces of a single limb or more commonly the center of thrust of the single limb.

CoP - Center of Pressure, or more commonly the center of gravity.

D

D - see CoF.

DX - Right Foot.

E

EasyCAD Insole® - Software for the design and realization of computerized orthotic insoles through CNC machines.

EMG - Electromyograph.

Evaluation Copy - evaluation copy with demonstration purposes.

F

Phases - frames that make up an analysis.

FPS - frame per second, frames sampled/played per second by the system.

Frame - see phases.

ftp - file transfer protocol, between two PCs.

G

gr - grams.

H

Hardware - physical component of the electronic kind.

Hi Res - High resolution.

I

Index of Romberg (surface) - Relationship between the area of the confidence ellipse with closed eyes and the confidence ellipse with open eyes multiplied by 100.

Index of Romberg (track length) - Calculated as above but on the sway oscillations length.

Index of Romberg (speed) - Calculated as above, but on average speeds.

K

Kg - kilograms.

L

L/L – Latero/Lateral.

LAN - local network of computers.

Lateral - outer portion of the plantar support.

Logo - graphic image that represents the brand of a company or a product.

M

M - see P.Max.

Max - maximum value.

Medial - Inner part of the plantar support.

Min. - minimum value.

mm - millimetres.

ms - milliseconds.

O

OE - Open Eyes.

CE - Closed Eyes.

P

P. Max - Maximum pressure point.

P. Med - Average pressure per square centimetre.

Pixel - Point element that composes an image.

R

R/A% Ratio - load ratio rearfoot/forefoot expressed as a percentage, taking into account only the single limb load.

Rendering - Graphic rendering.

Restore - restoring a backup.

RMS – Root Mean Square

S

S - see CoF.

Skins - in this context defines the look and colours of the program.

Software - program or set of computer programs.

SX - left foot.

T

3D - Three-dimensional.

W

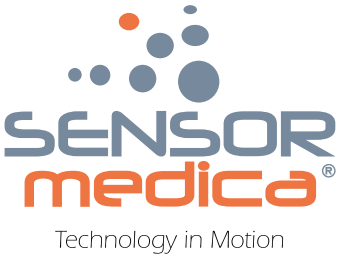
WebService - web program that allows data exchange.

Z

ZIP - compressed archive with the same algorithm.

Zoom - Enlargement.

Copyright information



Sensor Medica USA LLC
919 South Utah Avenue
Idaho Falls, ID 83402
Tel. 208-561-2286
www.sensormedica.com
info@sensormedica.com