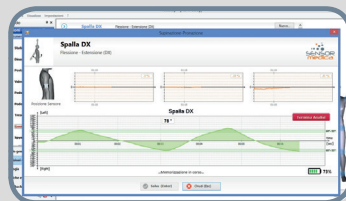
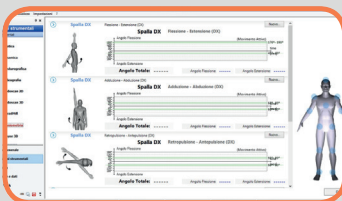


MOOVER



MOOVER
User Manual

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1. Turning on

Once the software FreeStep has been launched, the Moover sensor must be turned on using a lever placed on the side of the object, moving it downwards.

After moving the lever, the Moover will emit an acoustic signal and the LEDs on the front will start to flash.

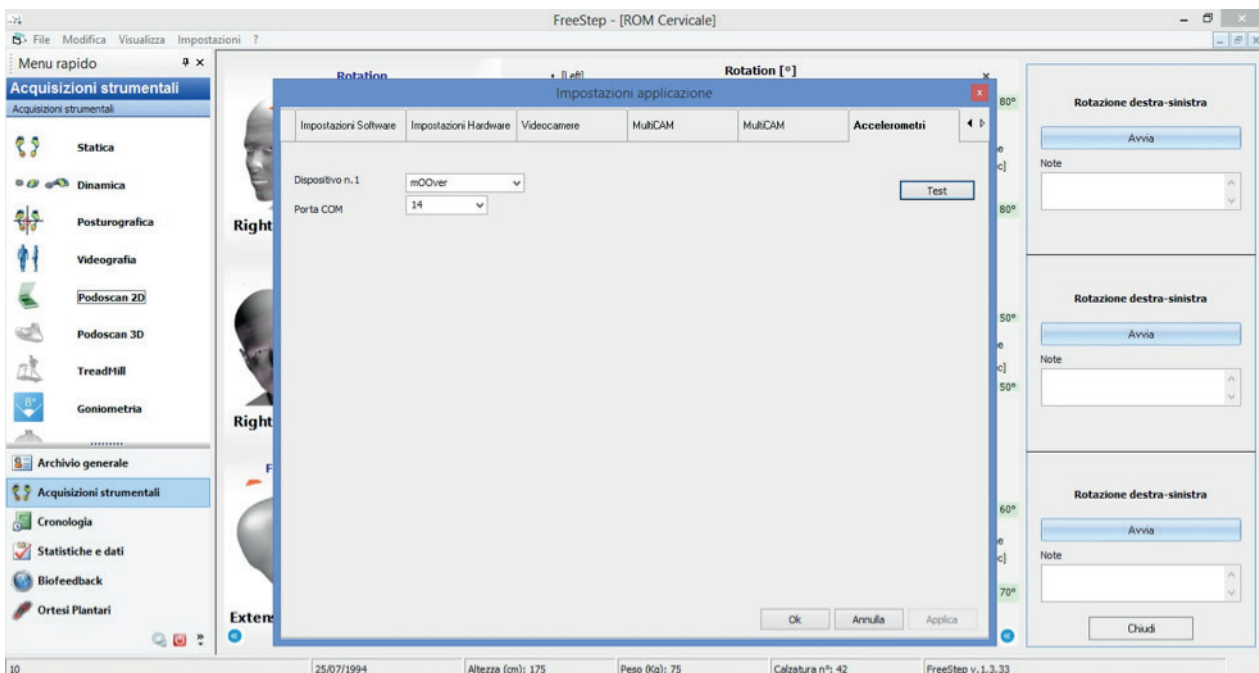
2. Bluetooth transmitter installation 3

Before setting up a Bluetooth device, make sure your computer supports this technology contacting your dealer if in doubt. It may happen that some modules on sale are prepared for Bluetooth but have not installed the required modules. As a second preliminary step, make sure that Bluetooth is integrated into your computer and, if not, equip yourself with a Bluetooth card, a small hardware device to be installed and generally connected to a USB port (also known as "adapter", "radio", "transceiver" or "Bluetooth stick").

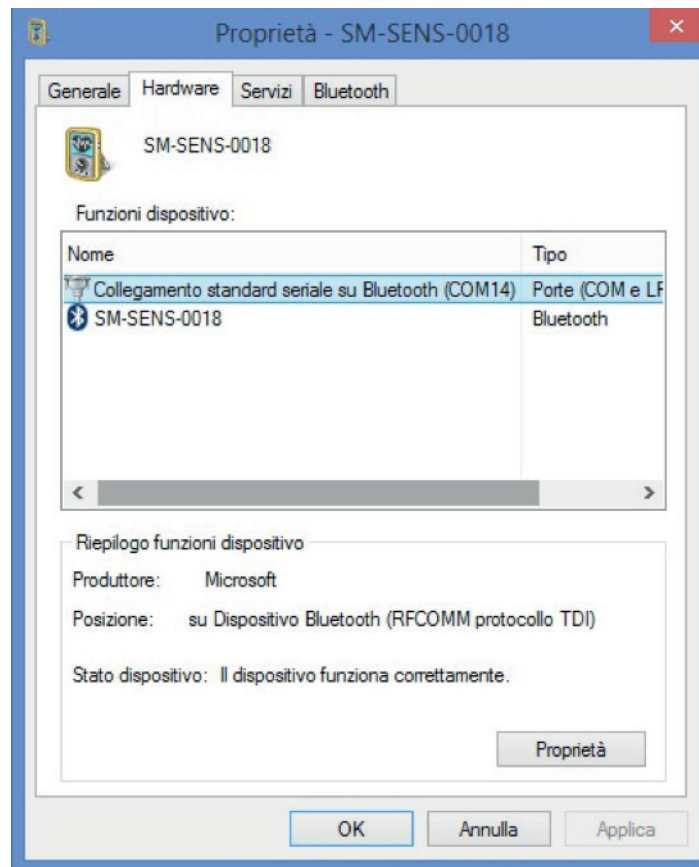
3. Configuration and connection

Once the Moover is installed, you need to check if the FreeStep software has found the sensor on the right COM port.

The path to the screen below is: Settings > Setup Application > Scroll right until the "Accelerometers" window is displayed and click on the window.



From the Application setting screen on the Accelerometers tab, select “mOOver” from the drop-down menu of the Device n.1 and set the related COM port that is displayed on the Windows control panel on the sensor’s properties:





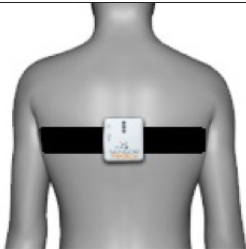


4. Acquisition and carrying out of the test





Once the Moover sensor has been configured, proceed to the acquisition phase through a sequence of three steps.

Sensor positioning

Each test has a typical positioning of the sensor, the table below explains how to position the sensor in relation to the test and the anatomical segment to be tested:

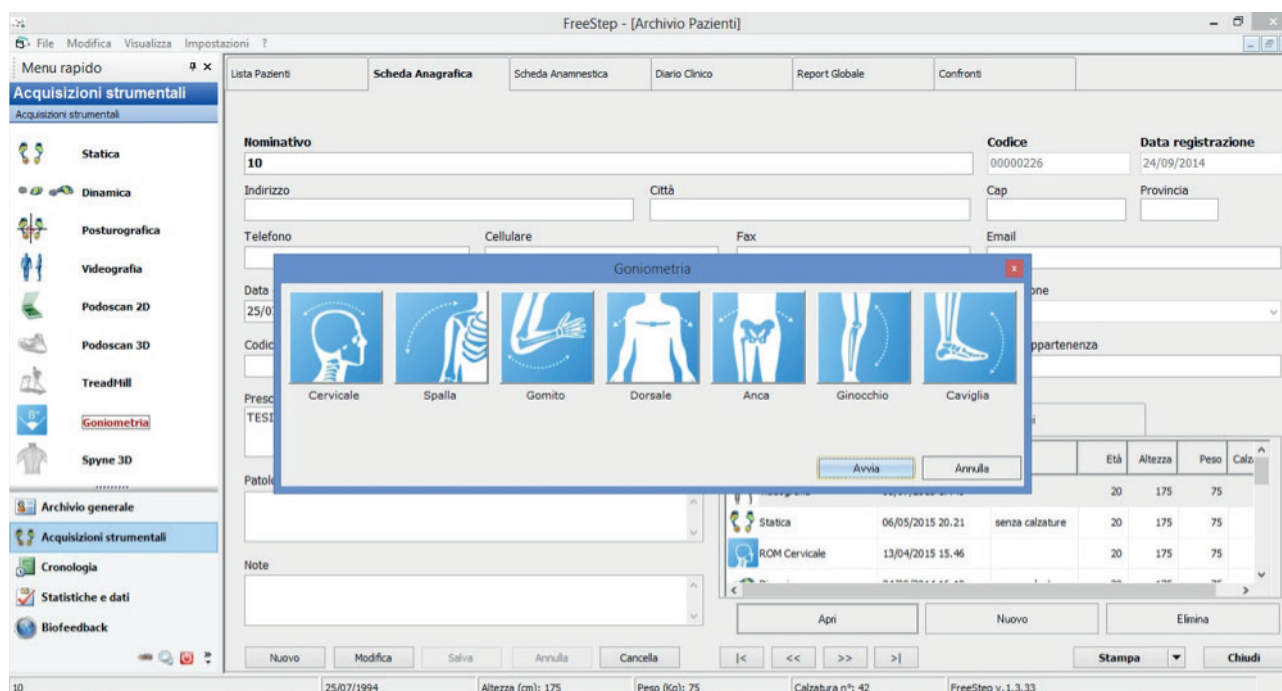
TEST	SENSOR POSITIONING	PICTURE
Cervical area Right-left rotation Lateral tilt Flexion-extension	The sensor must be placed in the middle of the forehead with the LEDs at the top and the Sensor Medica logo at the bottom	
Shoulder Flexion-extension Vertical adduction-abduction Horizontal adduction-abduction	The sensor must be positioned on the middle third of the arm on the lateral and external portion with the LEDs at the top and the Sensor Medica logo at the bottom	
Shoulder Internal-external rotation (Adducted arm) Internal-external rotation (Abducted arm)	The sensor must be positioned on the terminal portion of the forearm, before the wrist joint, on the dorsal and external portion with the LEDs at the top and the Sensor Medica logo at the bottom	
Wrist Flexion-extension Supination-pronation	The sensor must be positioned on the terminal portion of the forearm, before the wrist joint, on the dorsal and external portion with the LEDs at the top and the Sensor Medica logo at the bottom	
Dorsal area Right-left rotation Lateral tilt Flexion-extension	The sensor must be positioned on the dorsal area in the middle of the kyphosis, placed on the dorsal vertebrae between D5 e D7 referring to the most distal portion of the scapulae with the LEDs at the top and the Sensor Medica logo at the bottom	



<p><i>Hip</i> <i>Flexion-extension</i> <i>Adduction-abduction</i></p>	<p><i>The sensor must be positioned on the middle third of the leg on the lateral and external portion with the LEDs at the top and the Sensor Medica logo at the bottom</i></p>	
<p><i>Hip</i> <i>Internal-external rotation</i></p>	<p><i>The sensor must be positioned on the middle distal of the leg, on the lateral and external portion with the LEDs at the top and the Sensor Medica logo at the bottom</i></p>	
<p><i>Knee</i> <i>Flexion</i> <i>Extension</i></p>	<p><i>The sensor must be positioned on the middle distal of the leg, on the lateral and external portion with the LEDs at the top and the Sensor Medica logo at the bottom</i></p>	
<p><i>Ankle</i> <i>Dorsal and plantar flexion</i> <i>Inversion-eversion</i></p>	<p><i>The sensor must be positioned on the tarsal dorsal area with the LEDs at the top and the Sensor Medica logo at the bottom</i></p>	

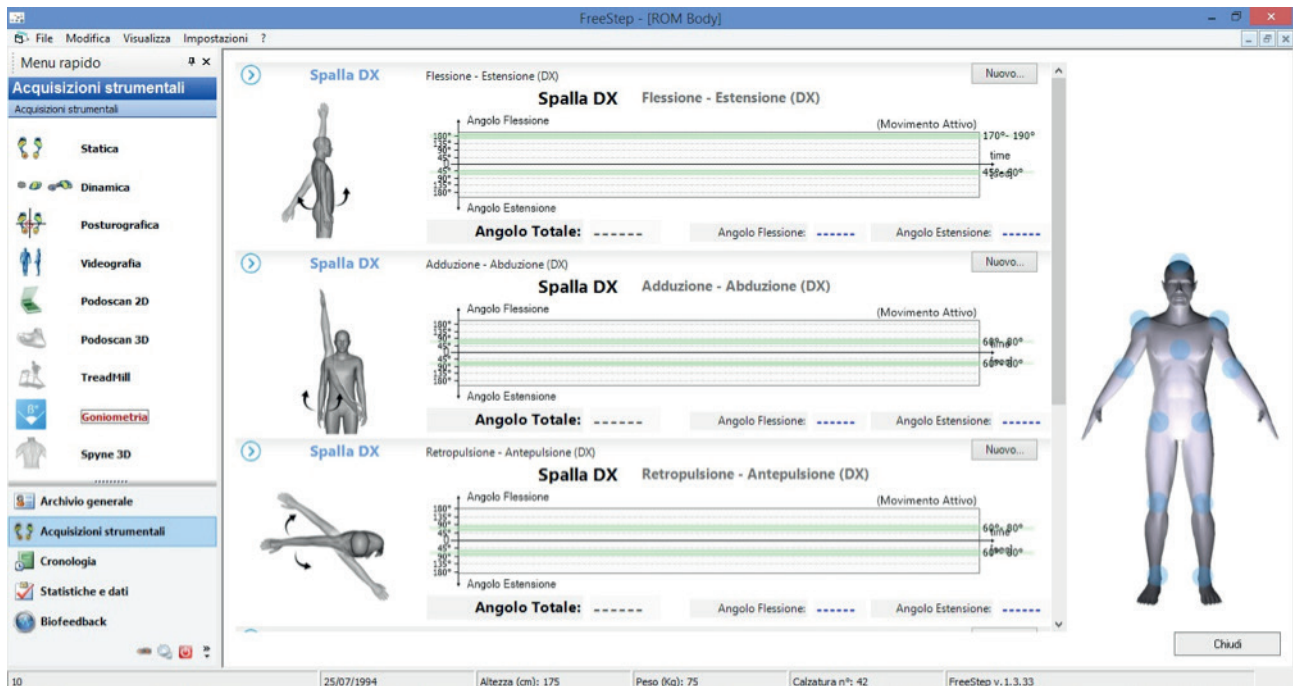
5. Test selection

Once the sensor has been positioned in the correct way for the carrying out of the test, select the item Goniometry from Instrumental acquisitions. Once the selection has been made, a window with the selection of the test to carry out will open.



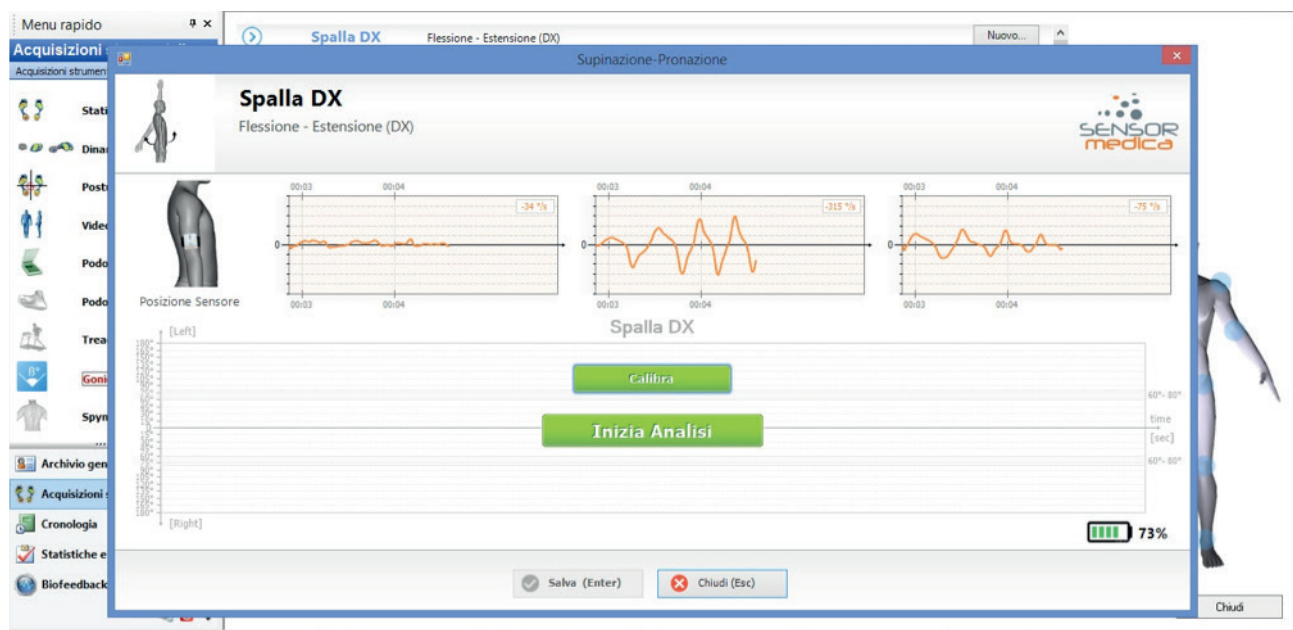
Selecting the Cervical test will only open the acquisition module for the movements of the cervical tract, otherwise, selecting another joint (e.g.. Shoulder) will open the acquisition module for the shoulder movements and on the right side of the screen there will be a lay figure with blue circles through which the operator can move quickly to other joints, thus saving all the acquisitions made during the same test session in a single file.

From this screen, the operator can see where to place the sensor (see previous paragraph) by scrolling the mouse on the pictures of the tests to be performed, that will be replaced by those of sensor positioning.

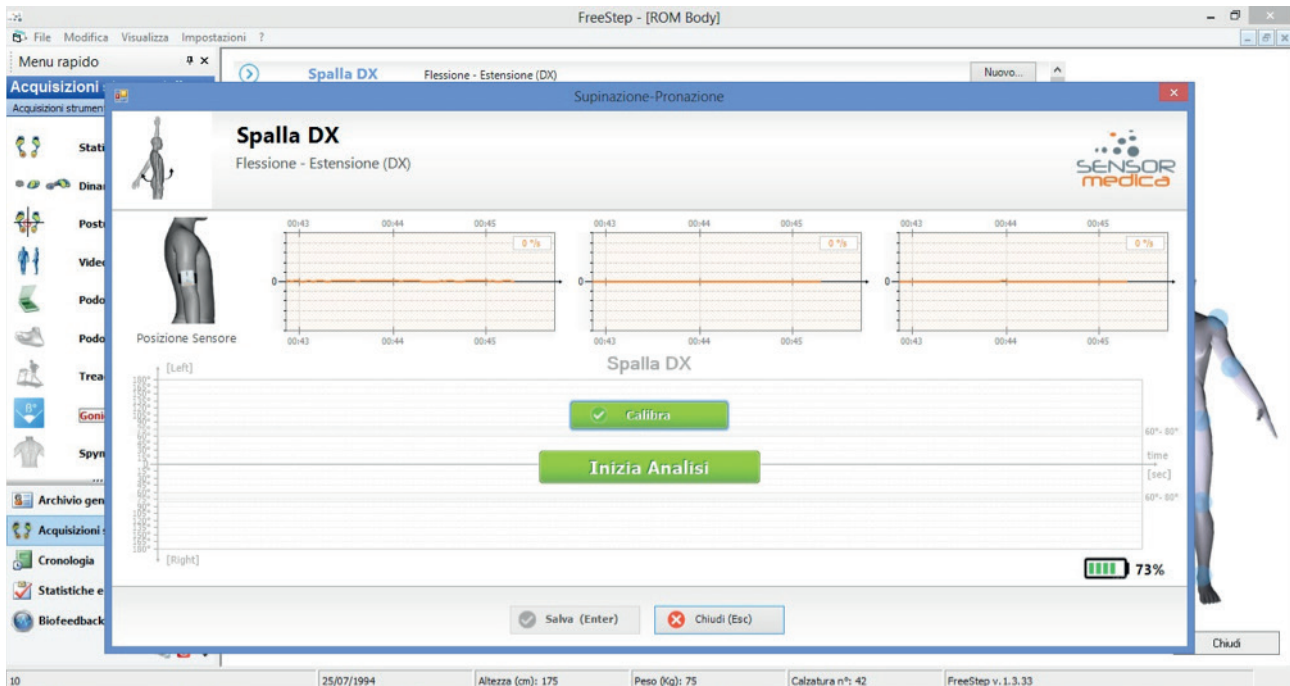


6. Carrying out the test and acquisition

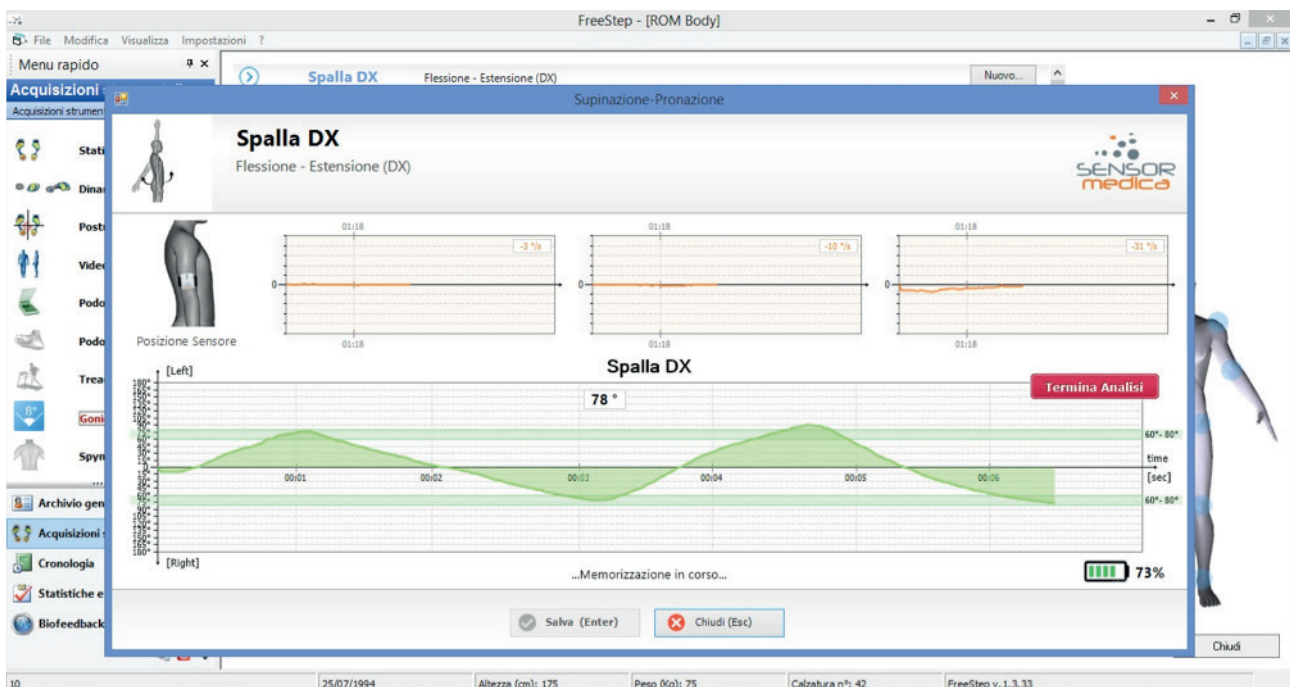
Once the test is selected, click on New and the acquisition screen opens where both the movement to be carried out and the sensor position are reminded. The movements of the sensor on the three planes are displayed live.



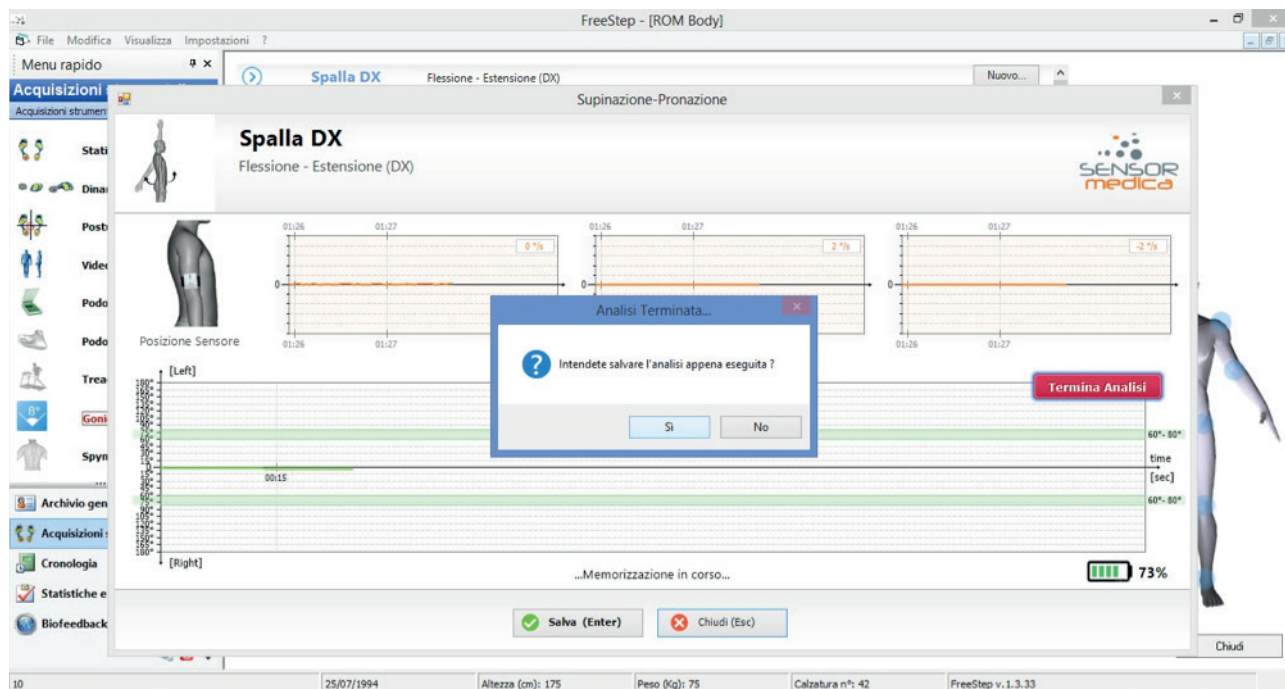
Before acquiring, the sensor must be calibrated. In this phase, the subject must remain still in the starting position of the test and the operator selects the Calibrate button. After this operation a green tick appears on the Calibrate button indicating that the calibration is complete, from this moment on, the sensor stores a “zero point” as a reference of the movement.



After calibrating the sensor, the operator can start the acquisition phase of the test, by selecting the Start Analysis button. The subject will be asked to start the movement only after the operator has started the acquisition screen. This screen displays the live graph of the movements that are being tested.







At the end of the test, the operator selects the Finish Analysis button and the software automatically opens a dialogue box asking whether or not to save the test just acquired. By saving the test, the same is stored and only after the total closure of the acquisition phases the new exam will be created in the patient folder.



7. Display screen of the tests carried out

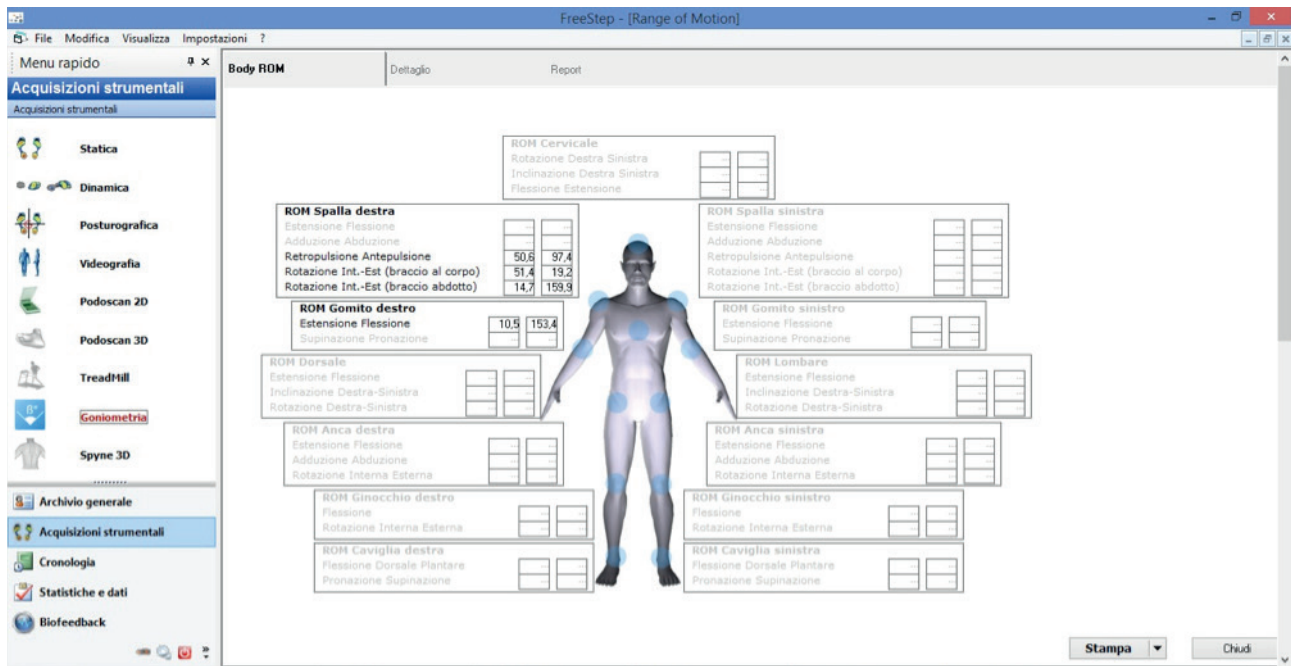
After the tests, that can be viewed in the Performed Tests box, are been performed and stored, it is possible to open an exam by selecting it. Two indications of the stored exams may be present:

1. ROM "joint name": that indicates a test performed on only one joint in the single test session
2. ROM Body: that indicates tests performed on several joints in the single test session

Esami Eseguiti		Appuntamenti		Ortesi			
Tipo Esame	Data e ora	N.	Età	Altezza	Peso	Calza...	
 ROM Gomito	25/10/2015 12.31		32	167	70	38	
 ROM Body	25/10/2015 12.29		32	167	70	38	
 ROM Spalla	25/10/2015 11.55		32	167	70	38	
 ROM Spalla	25/10/2015 11.51		32	167	70	38	
Apri		Nuovo		Elimina			



Once the test selected for the visualisation of the results (e.g. Body ROM) in the middle of the screen we have a lay figure where the tests performed are highlighted in black while the others are inactive.



Test detail and data reading

By selecting and clicking on the test to be visualised, the display screen opens, showing the Detail tab of the tests performed. The screen is divided into important parts :

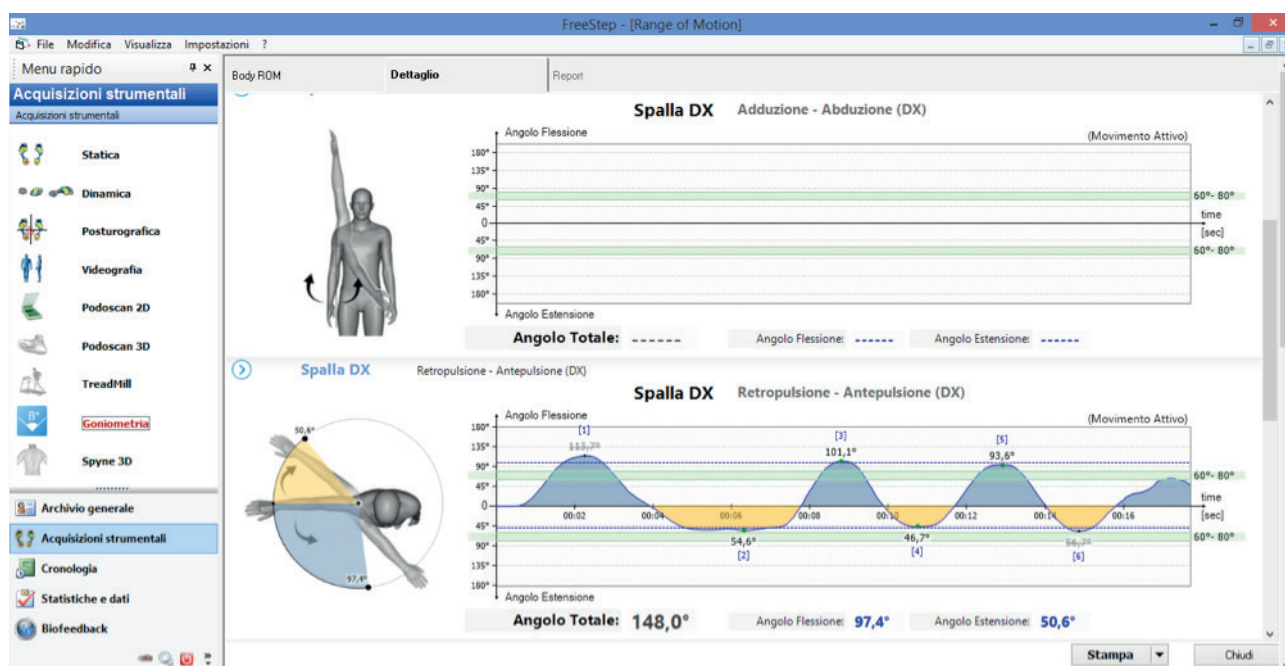
1. At the top is the joint and the movement tested
2. On the left is a global sketch of the movement performed in the tested directions
3. In the middle is a sinusoidal graph of the movements performed over time during the test. The graph is divided into two colours that identify the two opposite directions of the tested movement; it contains a dotted line that indicates the average of the angular movement performed in each direction and a green band that identifies the normality range of the tested movement. The normality values of the joint ranges of movement are extrapolated from the literature.

Bibliographic sources:

- Clarkson H.M. Kinesiological assessment. Examination of joint mobility and muscle strength. Edi-Ermes editore, 2002, second Italian edition.
- Kapandji I.A. Joint physiology. Vol. I, II, III. Maloine Monduzzi Editore, 2006 5th edition.
- Kendall F.P., Kendall McCreary E., Geise Provance P. Muscles. Functions and tests. Verduci Editore, 2002 Fourth edition.
- Pirola V. Kinesiology. Edi-Ermes editore, 2004.
- Russo L., Benis R., Livi S., Falcone A., Ragalmuto N., Bartolucci P., Barni L. Corrective Exercise® Posture, health and performance. ATS - Giacomo Catalani Editore, Arezzo; 2017.



- Below is a very brief summary of the total range of motion and of the average range of motion for each direction tested.

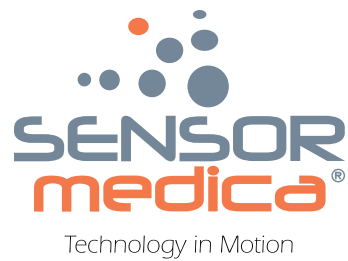


5. Report

The report for each evaluation has three fundamental sections:

- Global picture:** at the top of the screen is provided a global picture that summarizes the global movement performed, highlights the average of the movement in each direction, provides, in green, the normality range of movement
- Numerical summary:** in the central part of the screen is a numerical summary of the maximum and average values for each direction and type of movement
- Written report:** at the bottom of the screen is provided a written report that translates into words what was previously reported into numbers. This report can be modified with further implementations and observations that can be added by the operator.





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