



FITRONiC

FITROsway

OPERATING MANUAL

I. CONNECTING THE STABILOGRAPHIC PLATE TO THE COMPUTER

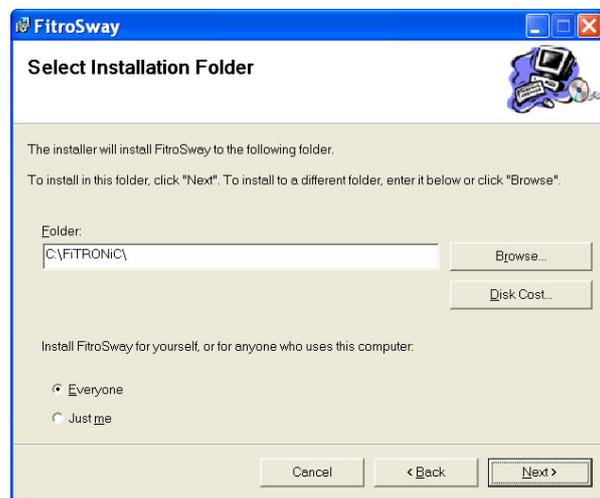
The stabilographic plate connects to the computer by means of type A-B USB cable. Thereby, the system is ready for measurement.

II. INSTALLATION AND RUNNING THE PROGRAM

FiTROsway program installation activates automatically after CD insertion, eventually by running the setup.exe file.



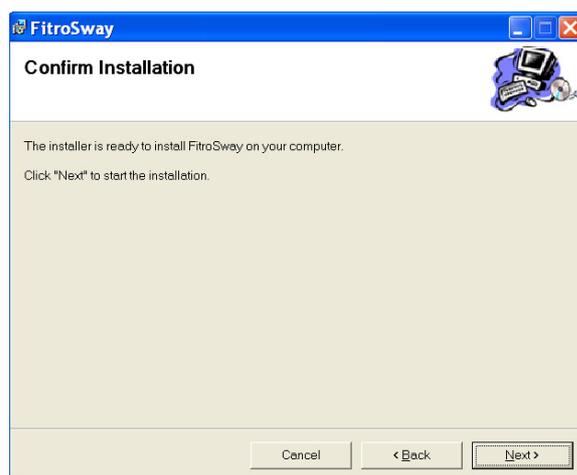
Click Next to start the installation.



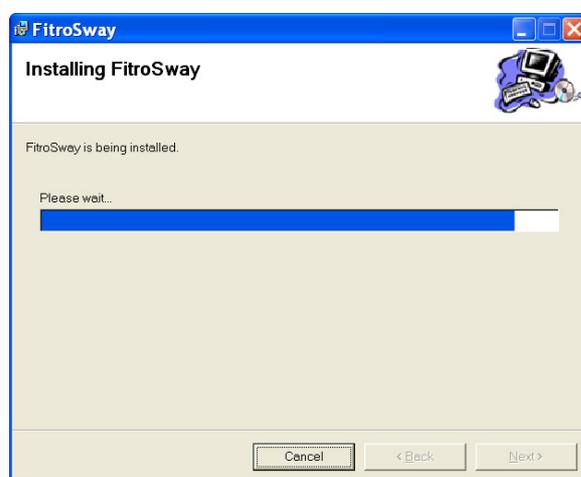
Installation program offers specification of directory to which the program should be installed. Default option is **C:\FITRONIC**

FiTRONiC diagnostic programs use a mutual database of measured subjects and the measured data are stored in the \Fitronic\Data\ folder. Therefore, when installing several programs, it is necessary to select the same folder for installation. It is not recommended to use Windows standard folder for installation of Program Files, because the active protection of Windows Vista and Windows7 does not allow storing user data in this folder.

To continue instalation, click Next.



To confirm instalation, click Next.



Please wait a moment, until installation program copies the files. The installation of USB driver will follow.

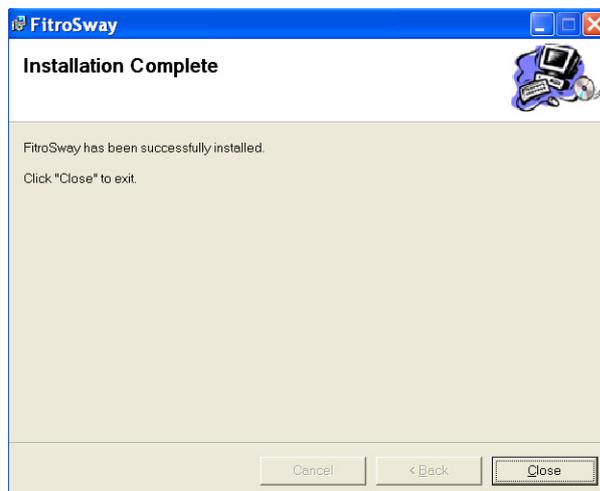


Click Next to continue.

Files of USB drivers have been copied.



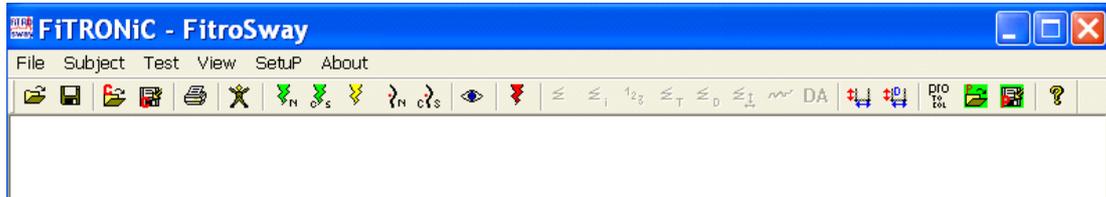
Finish the USB drivers instalation by click on the „Close“.



Click CLOSE to finish the installation procedure. To start the program click on the icon FITROsway on the desktop (alternatively through start/programs/FiTRONiC/FiTROsway (double click on the icon).

III. RUNNING THE PROGRAM

Starting the program opens the main menu on the screen.

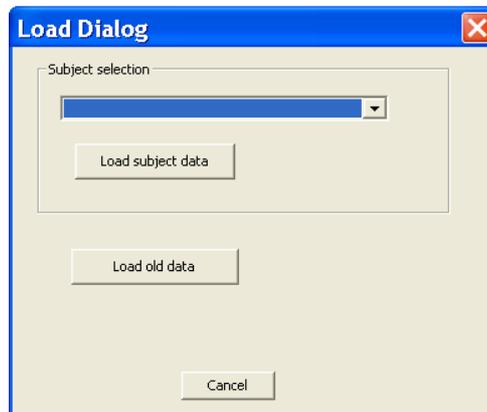


One can run the program (e.g. to process the data stored on the harddisc) also without connecting the force plate, however, it is not possible to use **Test** routine and thus to perform the monitoring of COP movement.

1. FILE

OPEN

Allows to load data stored on the disc for their further processing in a subprogram REPORT. By clicking **Load subject data**, a list of subjects, created through "Subject dialog" appears on the screen. File to be loaded is selected according to the date of measurement. If some data were stored outside of the default set folder for data, it is possible to open them after clicking **Load old data**. Data files use ending .swy.



1.2 SAVE

Stores data from computer memory to disk. Should the name already on the disc be used, the system shows warning (OVERWRITE? Y/N). By confirmation the file overwrites the data from the previous measurements. Clicking "No" enables saving the file under a different name.

1.3 OPEN CFG

Opens the configuration file with setup parameters of the program.

1.4 SAVE CFG

Saves the settings of the parameters and conditions to the configuration file.

1.5 PRINT

Prints the current window with data from the measurement.

1.6 PRINT PREVIEW

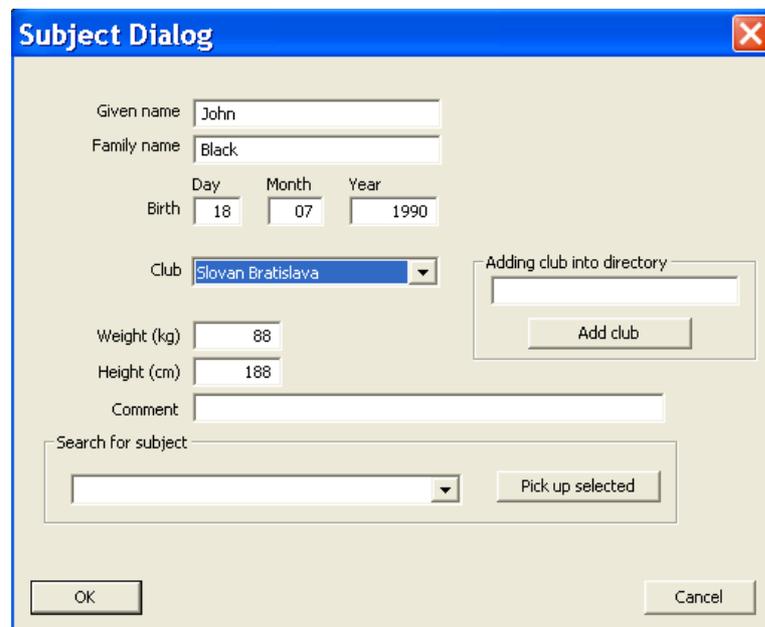
Preview before printing - previews the data on the paper before printing.

1.7 EXIT

Closes the program.

2. SUBJECT INFORMATION

Input of information about a person tested: given name, family name, date of birth, sex, height and weight. There is also a window for your own comment. The information will be stored in the same file with test data into a corresponding folder.



The image shows a 'Subject Dialog' window with the following fields and controls:

- Given name: Text box containing 'John'
- Family name: Text box containing 'Black'
- Birth: Three text boxes for Day (18), Month (07), and Year (1990)
- Club: Dropdown menu showing 'Slovan Bratislava'
- Weight (kg): Text box containing '88'
- Height (cm): Text box containing '188'
- Comment: Text box
- Adding club into directory: Text box with an 'Add club' button below it
- Search for subject: Text box with a dropdown arrow and a 'Pick up selected' button to its right
- OK and Cancel buttons at the bottom

For an easier orientation in the data, a hierarchic arrangement of the data is suggested in FiTRONiC programs. At inserting new subject information, the following items are mandatory: **Given name, Family name and Birth Year**. These entries are used when creating a folder for the tested person. In the example above, a folder Black_John_1990 is created. Next subfolders will be consequently created in this folder for FiTRONiC product applications. In particular subfolders e.g. GATES, AGILITY, JUMPER, PREMIUM etc., a subfolder YYYY_MM_DD will be created according to the date for each testing day, where all files for a given subject measured that day will be stored. In case there are already some data recorded for a given subject, it is necessary to search for it through **Search for subject** window and select it into the displayed dialog by clicking **Pick up selected** so you can retrieve once inserted data for any application. A list of clubs is created as well in the main data folder which can be extended in the **Adding club into directory** window. By inserting the club name and subsequent adding through the Add club button, the club name is added into the list of clubs and can be found and selected again for a corresponding subject in the **Club** window. In the ...\\FiTRONiC\\DATA\\ folder, a clubs.xml file is created, which can be edited when needed.

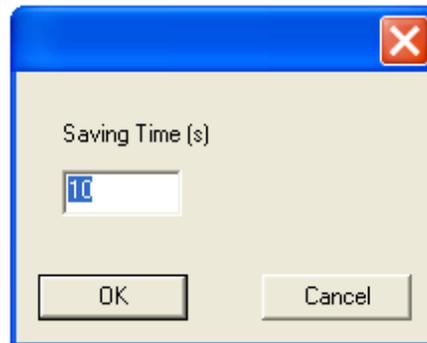
After data insertion one can return to the main menu by clicking OK. Subject information data can be added later - after measurement before saving the data.

3. TEST

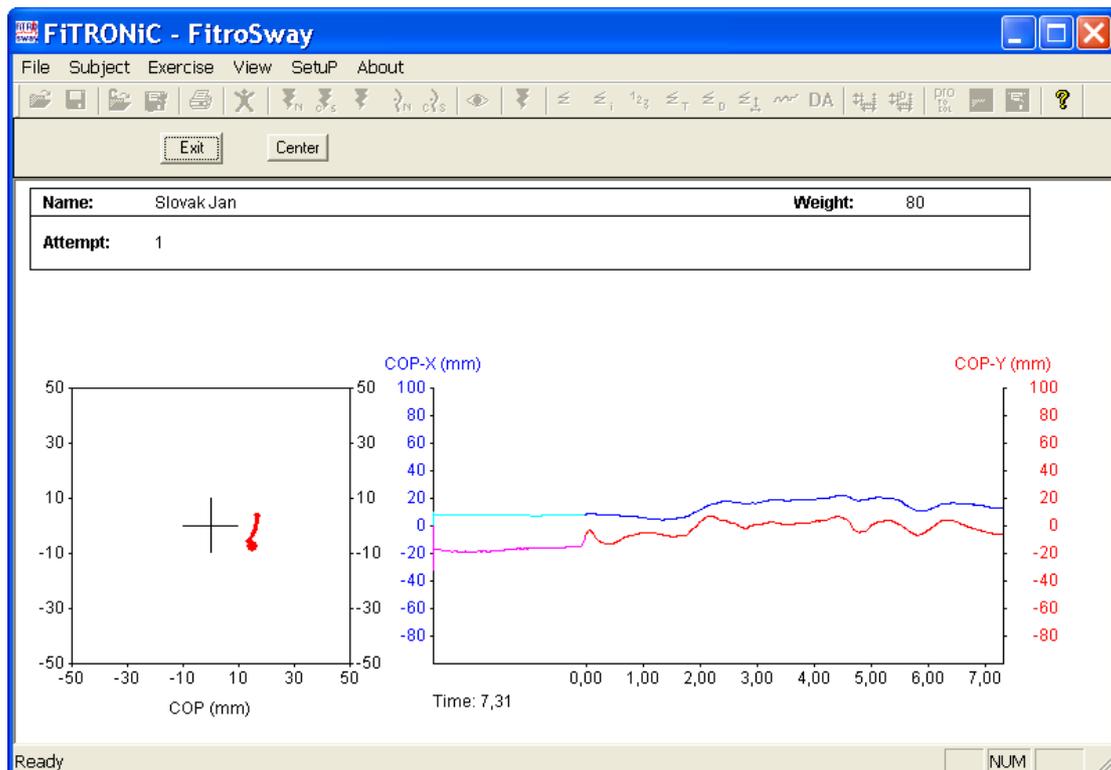
3.1 STANCE TEST



Routine for monitoring the movement of the COP (center of pressure) during quiet stance. Window will appear to enter the time interval for the registration and storage of the data.



Click OK to run the monitoring of current COP position. In the left pane of the screen the current COP position is displayed in the horizontal plane (axis X,Y). In the right pane the current coordinates X and Y are displayed.



Button **Center** serves to centre the COP point into the middle of the chart, click **Start** to start data recording - lines COP-X and COP-Y change color and time data appears on X axis. After the set time interval elapses, system continues to monitor COP. Click **Start** for recording another trial period, or click **Exit** to end the measurement routine.

3.2 CONTINUE STANCE TEST WITH SAME SUBJECT

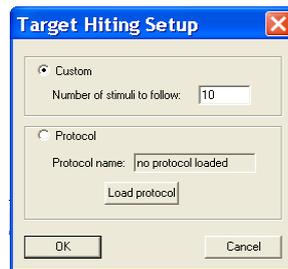
Continues the measurement routine with the same subject. Data from test to follow will be added to those from previous tests (or loaded to computer memory from disc).

3.3 TARGET HITTING TEST

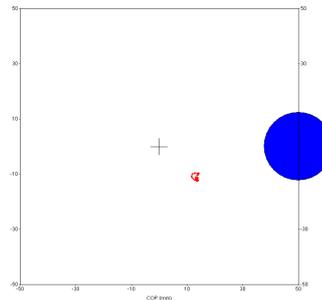
Serves for measurement of the times the subject needs to hit the targets randomly appearing on the screen by shifting his/her COP. Also distance covered by COP from the moment of target appearance to its hit is recorded.

Before the test, the number of targets to be hit is set. Also the kind of target generation (random or programmed) can be specified.

To use “program generation” one has to create and save protocol beforehand. Before the test the protocol must be loaded in a routine „OPEN PROTOCOL“.



By clicking OK, a monitoring window opens in which the COP movement is displayed. Click on the **Center** button, shifts the COP to the middle of the screen. By clicking **Start**, targets are generated.



After the test, a report appears showing the stimulus order, movement direction, distance covered by COP, response time and COP movement velocity.

FITRONIC - FitroSway

Name: Slovak Jan Weight: 80

No (#)	Movement Direction	Distance (m)	Time (ms)	Velocity (m/s)	
1	right	0,263	10080	0,026	
2	rear	0,081	900	0,090	
3	right	0,069	940	0,073	
4	front	0,070	960	0,073	
5	rear	0,095	1010	0,094	
6	front	0,104	1040	0,100	
7	right	0,094	1200	0,078	
8	left	0,088	1100	0,080	
9	front	0,108	1600	0,067	
10	left	0,189	2870	0,066	
Average:		mean value & SD	0,116 SD:0,059	2170 SD: 2690	0,075 SD:0,019

Ready NUM

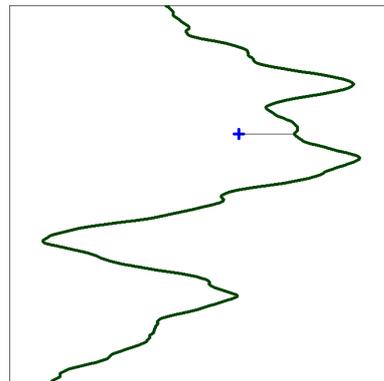
3.4 DRIVING TEST

Test assesses the ability to control the COP position based on visual feedback. The role of the person tested is to stay as close as possible to the line "floating" on the screen in vertical or horizontal direction.

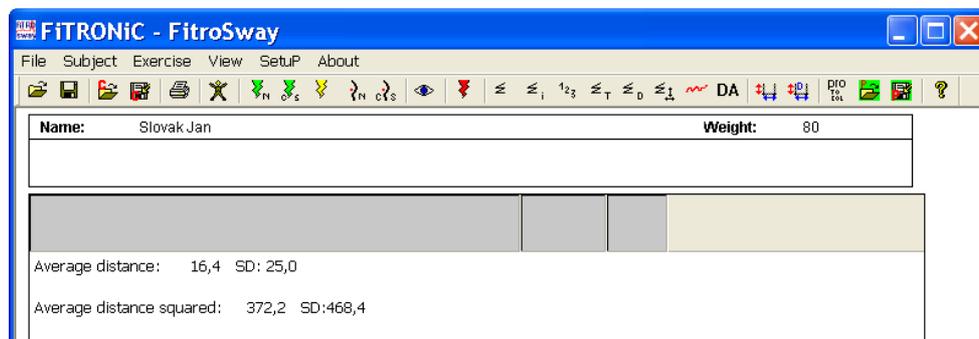
After activation of the routine, window with test parameters appears. Duration of the test is set in the **Test time** window. The choice **End with button Stop** allows you to end the test by clicking **Stop** which is being displayed on the screen during the test. In other parts of the window it is possible to set the direction and velocity of the generated curve.



By clicking OK, a monitoring window opens in which the COP movement is displayed, by the **Center** button, the COP graphically moves to the middle. By clicking **Start**, the curve is generated.



A digital report appears after the test:



Average distance (mean and standard deviation) of the COP from the curve.

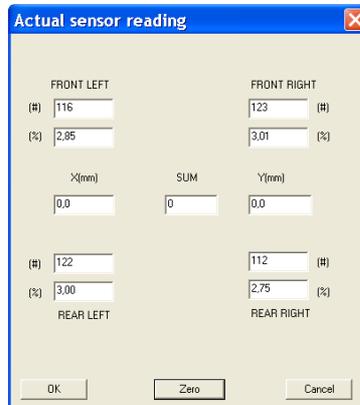
Average distance squared (mean and standard deviation) of the COP from the curve.

3.5 CONTINUE DRIVING TEST WITH SAME SUBJECT

This is used for starting a measurement with the same subject, if we have data from a previous measurement or from an open file in memory. New measured data will be added to the previous, i.e. if there are 3 trials measured, trial no. 4 will follow.

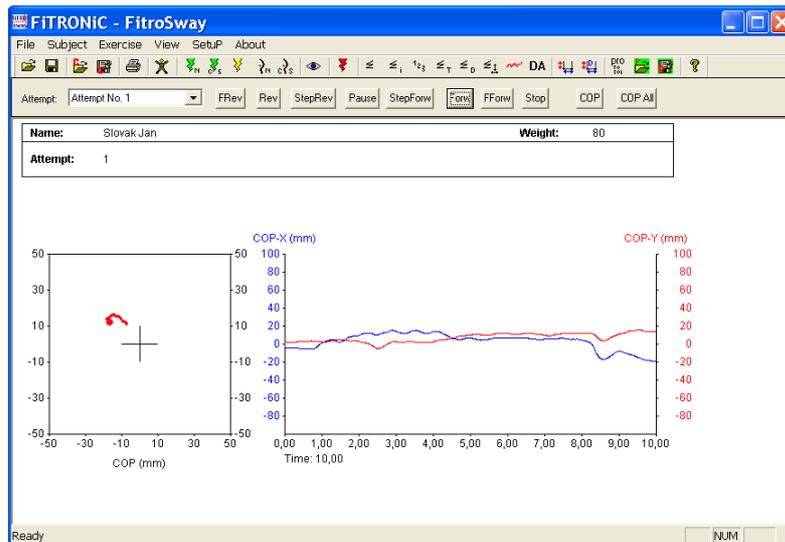
3.6 CHECK

Displays readings of the load on the individual force plate force sensors. If there is not a zero value in the **SUM** window when the plate is unloaded, click **ZERO to** set it to zero. The value is saved to the configuration file. It is not necessary to carry out such control and zeroing before each measurement. On the other hand, it is advisable to check the percentages of the load on the individual corners of the plate on which a tested person is standing. The values of the load should not exceed 90 % for the risk of exceeding the measured range and distortion of the results. It is necessary to "relieve" the overloaded tensiometer by shifting the stance away from the overloaded corner.



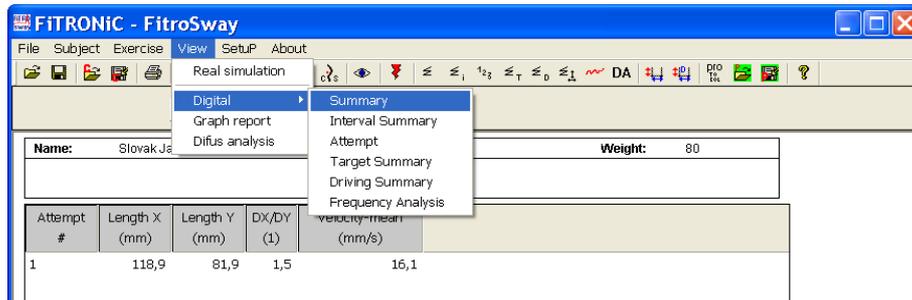
4. VIEW

4.1 Real Simulation



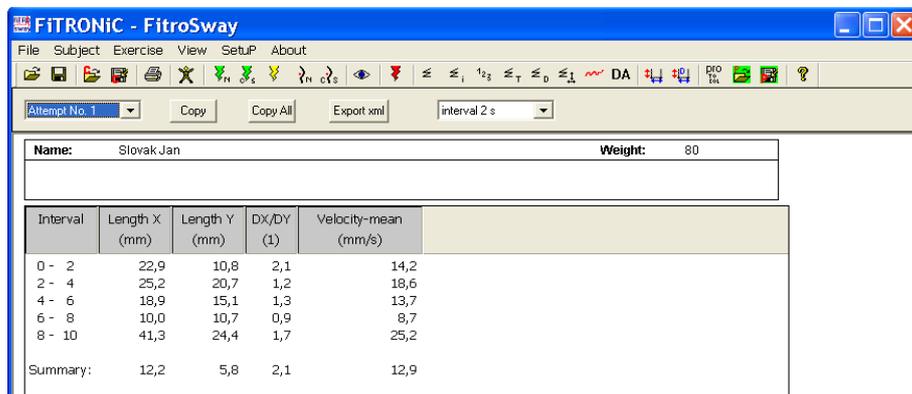
Simulates the measurement - starting the movement of the curves. Click on the buttons above the charts movement of the curve can be specified (fast rewind, normal rewind, step rewind, pause, fast forward, normal forward and step forward).

4.2 Digital- Summary



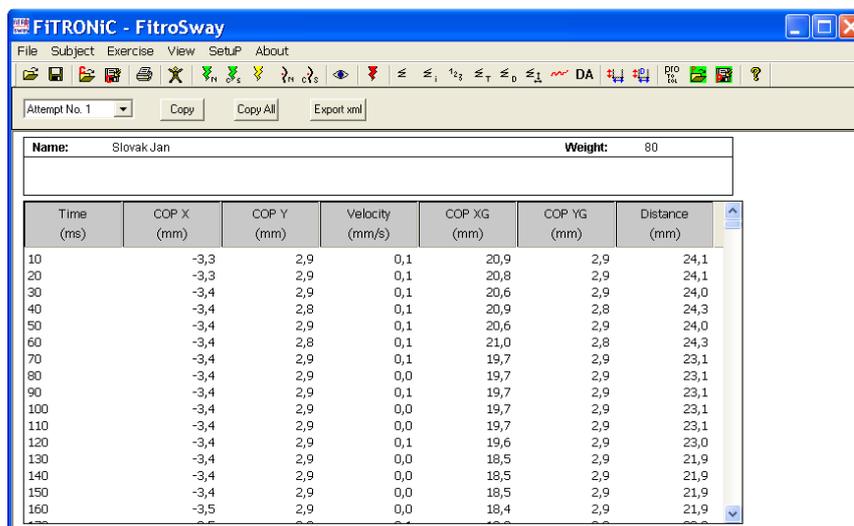
Provides data about the distance in the direction of the X and Y axis, the ratio of the distance in the direction of the X and Y axis as well as the average velocity of the COP during the test.

4.3 Digital- Interval Summary



Provides the same parameters as Digital Summary, but in specified time intervals.

4.4 Digital - Attempt



Provides current values (X and Y coordinates and velocity of the COP movement) in individual time points of registration (every 10 ms).

4.5 Digital - Target Summary

Provides figures from the target hitting test. Values are given for individual responses as well as averages from the entire test, from left to right: order, response reaction, distance, response time and COP movement velocity.

The screenshot shows the FITRONiC - FitroSway interface with a table of test results. The subject is Slovak Jan with a weight of 80. The table lists 10 individual movements with their respective directions, distances, times, and velocities. Summary statistics for the average are also provided.

No (#)	Movement Direction	Distance (m)	Time (ms)	Velocity (m/s)
1	right	0,065	1150	0,057
2	rear	0,096	800	0,120
3	front	0,144	1250	0,115
4	right	0,111	1250	0,088
5	left	0,104	1050	0,099
6	rear	0,076	850	0,090
7	left	0,077	850	0,090
8	right	0,109	1760	0,062
9	front	0,058	650	0,090
10	left	0,085	1040	0,082
Average:	mean value & SD	0,092 SD:0,024	1060 SD: 290	0,089 SD:0,019

4.6 Digital- Driving Summary

The screenshot shows the digital driving summary for Slovak Jan. It displays average distance and average distance squared with their respective standard deviations.

Average distance:	6,2	SD: 11,3
Average distance squared:	64,4	SD: 89,8

Provides results of the “driving test”:

Distance (average and standard deviation) of the COP from the curve.

Square of the distance (average and standard deviation) of the COP from the curve.

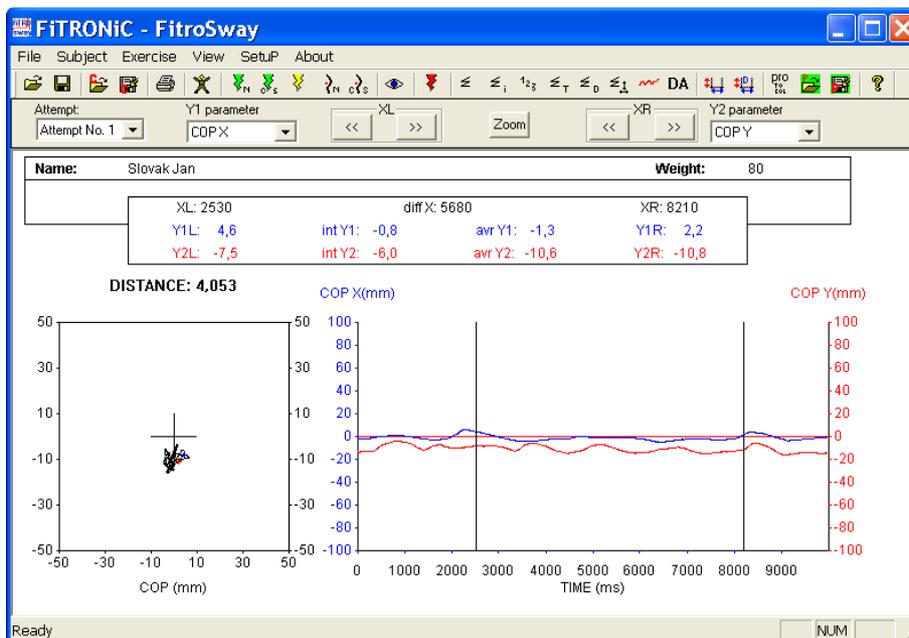
4.5 Digital - Frequency Analysis

The screenshot shows the digital frequency analysis for Slovak Jan. The table lists average and standard deviation for X and Y coordinates for two attempts.

Attempt (#)	Average X (mm)	SD X (mm)	Average Y (mm)	SD Y (mm)
1	9	9,3	14,5	16
2	10	5,8	9,0	12

Provides figures (averages and standard deviations) of continuous movement segments in the direction of the X and Y axis (rapid changes in direction of the movements are characterized by shorter segments and vice versa).

4.6 Graph Report



The graphs show data from one trial (as specified in the upper left of the screen). The left graph shows a curve representing the COP movement in the horizontal plane (X – right-left direction, Y – front-back direction).

The right graph shows the parameters as specified for Y1 and Y2 axis in the top of the screen (position in direction of the X axis, position in direction of the Y axis, movement velocity in direction of the X axis and movement velocity in direction of the Y axis). Movement in the direction of the X axis is possible by means of clicking the arrows above the graph by left as well as right cursor. You can place the cursors in any place by clicking anywhere in the graph (left cursor by left, right by right mouse button). At movement of the cursors, the figures on the X and Y axis are being updated above the graph.

Time interval between the two cursors is displayed in the middle top. The lower part contains the average values and integrals of the parameters for the X1 and X2 axis (or YL and YR) from the time interval between two cursors. Click ZOOM do display only the interval between the two cursors in the graph.

4.7 Diffuse Analysis

DA

Diffuse analysis allows you to calculate the average distances of consecutive position points of the COP from 1. to 10 000.

The curve showing the average distance between the consecutive points consists of two typical phases. In the first distance they increase faster (curve has a steeper slope) in the next the increase is slower.

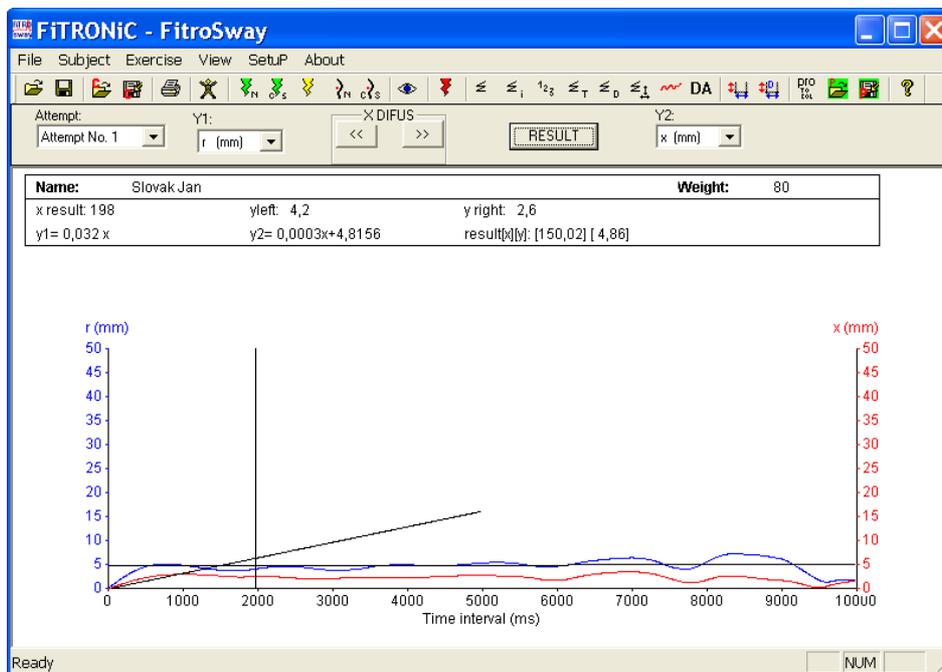
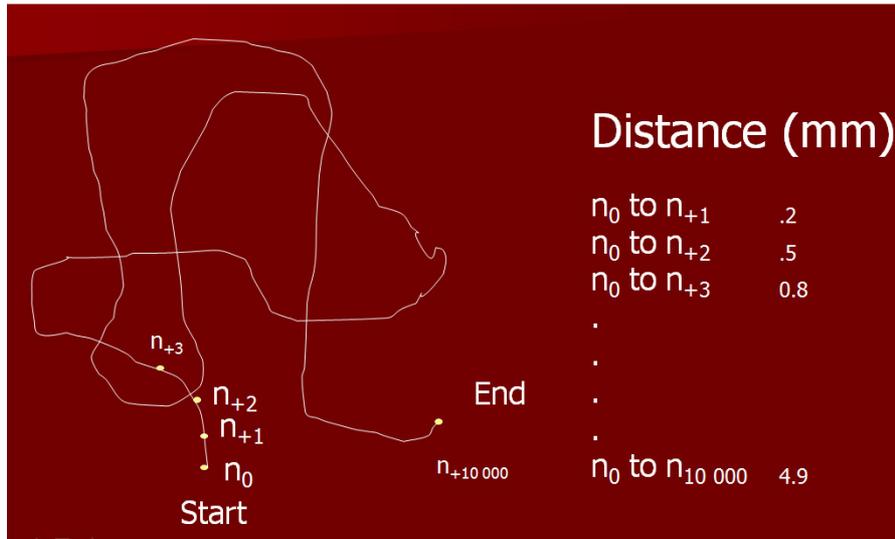
After defining the time point separating the two parts of the curve, the system calculates parameters which characterize:

- The slope of the line increase from the initial segment of the curve.

- The slope of the line increase of the second segment of the curve

- Theoretical shift of the line from the second segment of the curve in the direction of Y axis in time point 0.

- Time point and distance of completion of rapid withdrawing of the consecutive points.

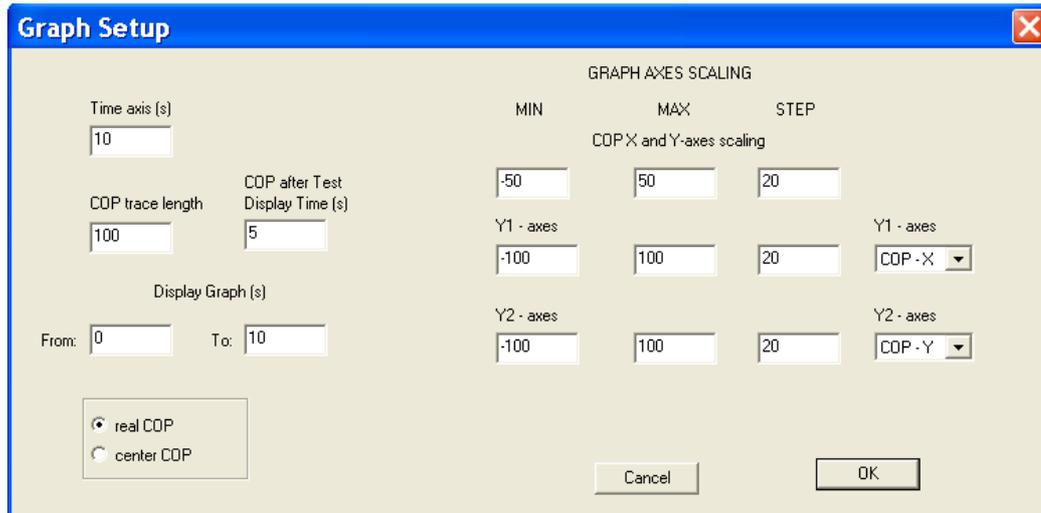


5. SETUP

5.1 Graph Setup



Specifies the graph parameters and evaluation of the static balance test. The time scale for X axis is set in the upper left corner, below it, the COP trajectory length (in points) on the left graph, duration of displaying the COP trajectory after the test (in seconds), time interval of graph display and method of COP display (in a real scale, or in a scale in which a zero point for X and Y axis is the position in the moment of starting the measurement (data collection)).

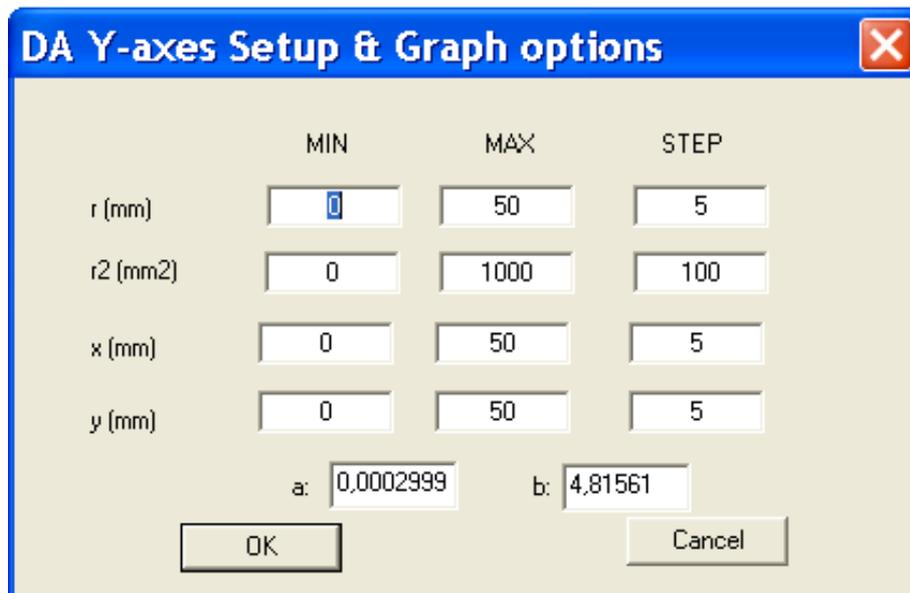


In the right corner, the scaling of the X and Y axis of the graph is set which is displayed in the right of the screen.

In the two lower lines, the scaling of the Y1 /YL and Y2 (YR) axis is set, and the parameters which will be displayed on these axes are specified. The parameter can be modified in the evaluation routine directly on the screen above the graph.

By confirming (click OK), the settings are stored into the configuration file.

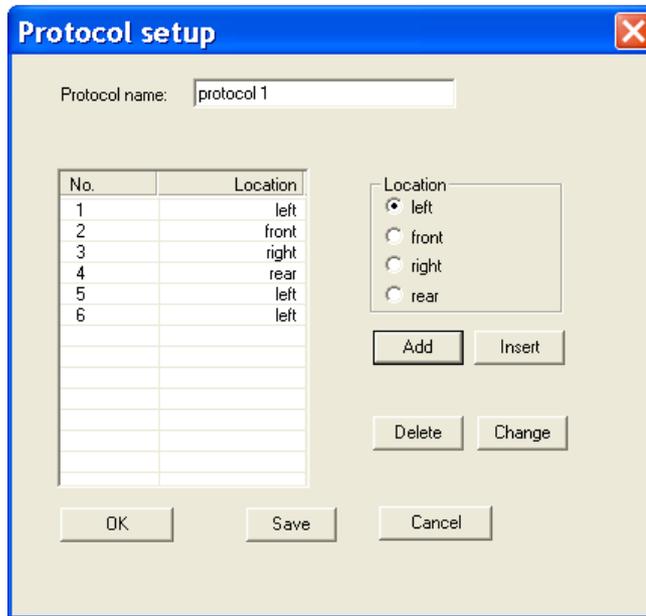
5.2 DA Graph Setup



In the window, the graph parameters for diffuse analysis are set, the minima, maxima, and the step in displaying the average distance of consecutive points (r), or its square (r2), distance in direction of X and Y axis.

5.3 New Protocol

The routine is used for creating a protocol for location of stimuli in the Target hitting test. After entering the name of the protocol, choose the location of the targets (top, bottom, right, left), then add it to the protocol (click ADD). You can either change (CHANGE), or delete (DELETE) any of the stimulus, or add another one (ADD). Click SAVE to save the protocol. Click OK to activate the created protocol in a computer's memory, without its storage.



5.4 Open Protocol

Serves for saving the protocol of the Target hitting test into memory.

5.5 Save Protocol

Serves for saving the protocol of the Target hitting test to a hard disk.

6. About

Information about the program version

