

New Cortex Software User Guide



Initial Set Up

- Turn on the Cortex and leave to warm up for approximately 15 minutes before calibrating
- Load MSS Toolbox from the desktop



Initial Set Up

- From the toolbox menu select Calibration
- Select Calibration Gases and choose CORTEX calibration gas
- Check the values on the gas bottle and enter in the Vol% O2 and Vol% CO2 the exact values on the bottle (e.g. 17.01 O2 and 5.03 CO2)
- Click save and exit MSS Toolbox

MetaSoft-Studio Toolbox

System Settings
User Data
Test Equipment
Special Settings
Workflows
Reports
Database
Calibration

MetaSoft-Studio Toolbox

Calibration / Calibration Gases

Name	Vol% O2	Vol% CO2	Active
CORTEX Calibration Gas	17.01	5.03	<input checked="" type="checkbox"/>
Fresh Ambient Air	20.93	0.03	<input type="checkbox"/>

Alphabetic sorting

Name
CORTEX Calibration Gas

Vol% O2
17.01

Vol% CO2
5.03

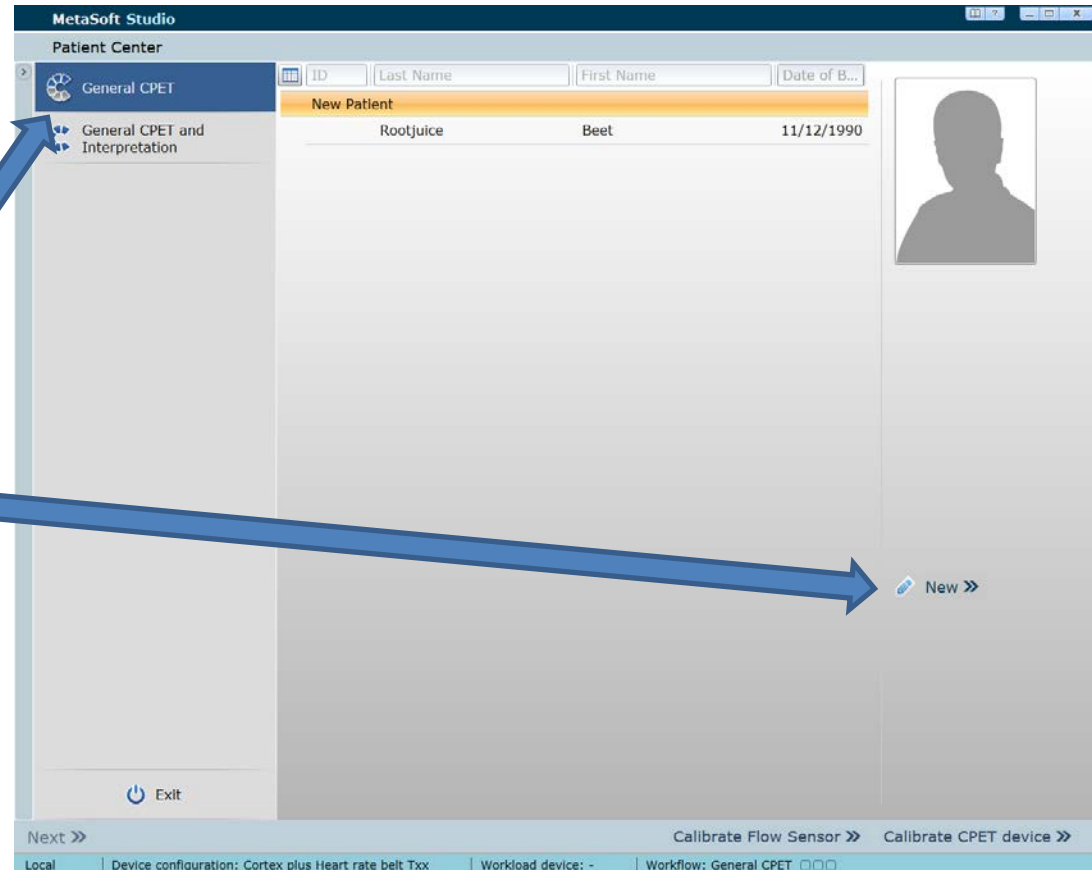
Active

Fresh ambient air is used as gas 1.

Local

Subject Input

- Open Metasoft Studio from the desktop
- Before calibrating a subject will need to be input
- The screen shows the opening page of Metasoft Studio
- On the left hand column, ensure that General CPET is selected
- On the right hand side select New to input a new subject
- Alternatively if you are re-testing a subject simply select from the list and then click Calibrate Flow Sensor (this will enable both the gas and volume calibration to be carried out) before clicking next at the bottom left hand corner of the screen



Subject Input

- Fill out the details of the person you are about to test
- Only the * boxes are required (last name, first name, sex, DOB, height, weight and mask size)
- Click ok at the bottom left to continue

MetaSoft Studio

Edit Patient Patient:

Administrative Data

Biological and Medical Baseline Data

Mask

Height [cm]* Weight [kg]*

Estimated Fitness Level

BMI : -

Hct [%] Hb [mmol/L]

BSA Calculation Method

Dubois & Dubois

ID

Title

Last Name*

First Name*

Name Addition

Sex*

male

female

Date of Birth*

Height [cm... Weight [kg...

Mask*

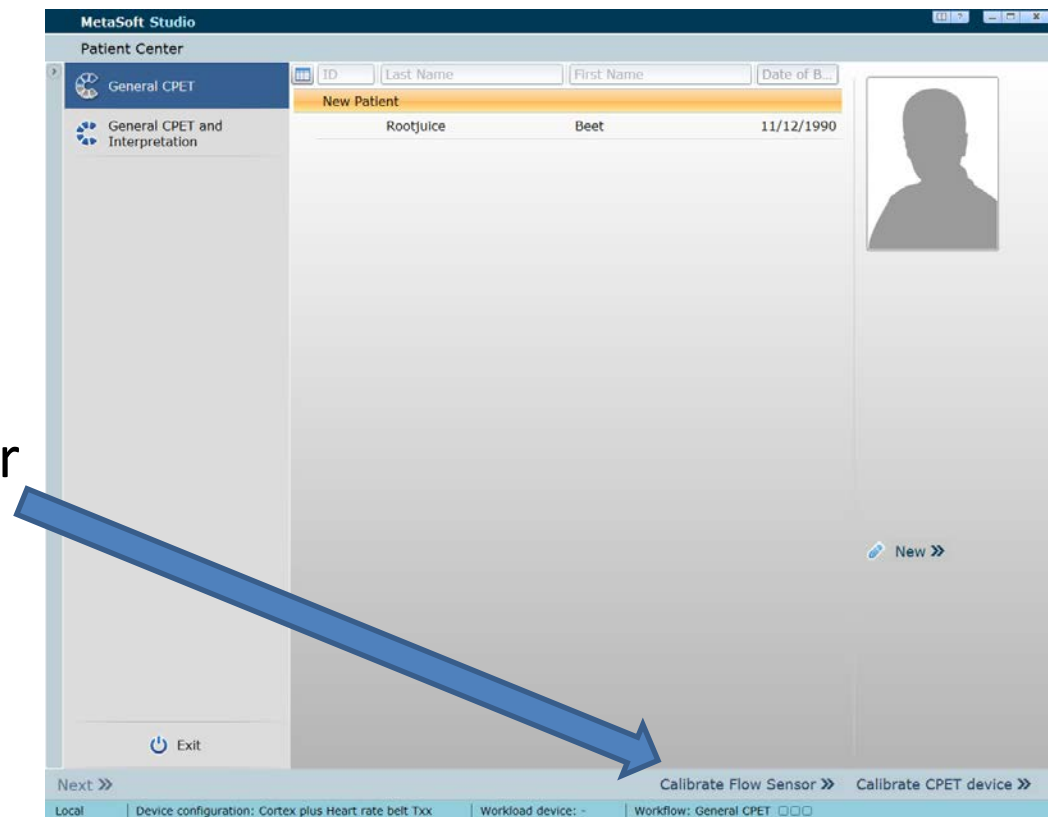
* Mandatory field

<< Cancel OK >>

Local | Device configuration: Cortex plus Heart rate belt Txx | Workload device: - | Workflow: General CPET

Gas sensor and Flow sensor calibration

- Both the gas and flow sensor calibration can be carried out in the metasoft studio software once a subject has been input
- Select Calibrate Flow Sensor



Gas sensor and Flow sensor calibration

- Begin by calibrating the gas sensor
- Ensure that the clear gas sample line is clear of any interference
- Blue and pink dots will appear along the lines
- Run until it automatically stops



Sample line

MetaSoft Studio

Calibrate CPET Device

Devices

Device for CPET

Gas

Gas 1 Fresh Ambient Air (20.93/0.03)

Gas 2 CORTEX Calibration Gas (17.01/5.03)

Step 1/2: Make sure that the sample line inlet is not exposed to breathing or to a draught and start measurement.

Time: 00:00

Start Calibration Step 1

Flow Sensor

Flow Sensor TripleV 1

Calibration

For normal CPET or spirometry test

For BMR/RMR test or CPET test with seriously limited patients

Start Calibration Measurement

Flow [L/s]

Gas Sensor

Gas 1 Fresh Ambient Air (20.93/0.03)

Gas 2 CORTEX Calibration Gas (17.01/5.03)

Step 1/2: Make sure that the sample line inlet is not exposed to breathing or to a draught and start measurement.

Time: 00:45

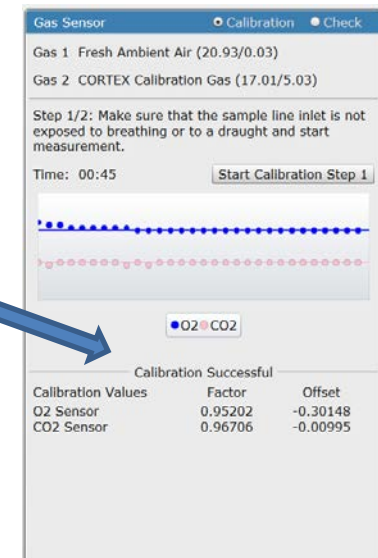
Start Calibration Step 1

Calibration Successful

Calibration Values	Factor	Offset
O2 Sensor	0.95202	-0.30148
CO2 Sensor	0.96706	-0.00995

Gas Calibration

- Once the ambient air measurement has been completed, plug the sample line into the plastic tube on the calibration gas bottle (as shown)
- Click start calibration step 2
- Allow to run through until it automatically stops
- Calibration successful will appear below the calibration graph



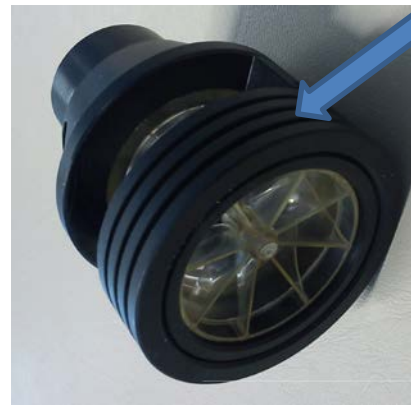
Turbine and Sensor Connection

- To connect both parts, twist the bottom of the turbine until the small ridge at the bottom is almost totally obscured
- Then slide in the sensor and twist the bottom of the turbine once again to lock it in place. Note the groove in the sensor needs to be facing the bottom of the turbine



Locking groove

Sensor



Twist this part

Turbine

Volume Calibration

- Connect Hans-Rudolph device to gas turbine and sensor

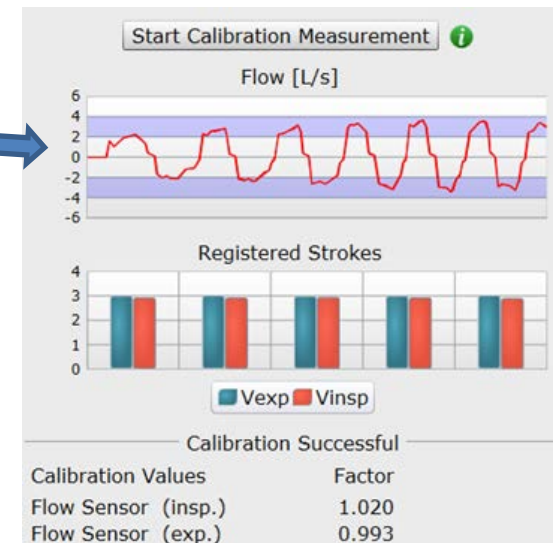
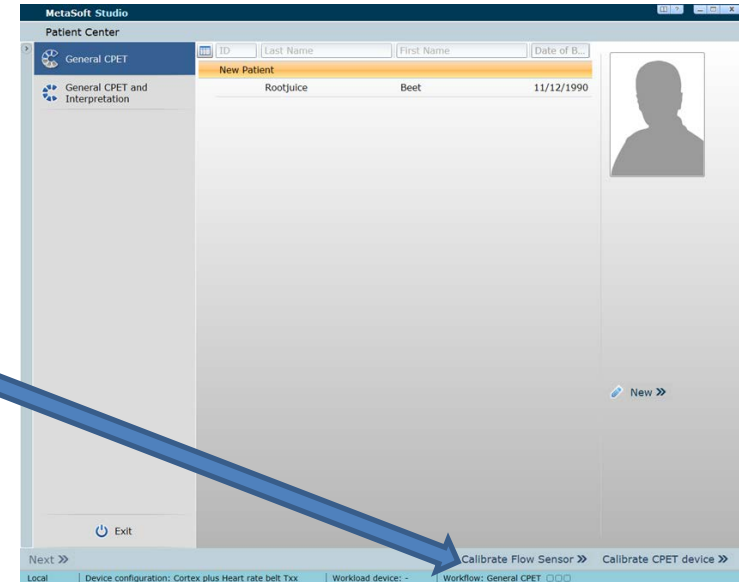


- Insert plug into volume sensor before calibrating volume



Volume Calibration

- After completing the gas calibration, press back to return to the home screen
- Click Calibrate Flow Sensor
- Once the turbine and plug are connected to the syringe, click on start calibration measurement in the flow sensor box
- On the outstroke the line on the graph will need to be in the top purple zone
- On the instroke, it will need to be between the lower purple zone
- This may take several attempts but will come with practice!
- Once 5 good strokes are registered, calibration successful will also appear
- Once complete, click back at the bottom left corner of the screen



Starting a test

- Once the subject has been created and the calibration done, select next in the bottom right hand corner
- Before continuing expand the sensor adjustment box at the bottom right of the screen
- Click start sensor adjustment and wait until calibration successful appears on the screen
- Click next again as nothing needs to be altered here

MetaSoft Studio
CPET Preparation Patient: Rootjuice, Beet

Normal Values

Maximum Oxygen Uptake	Wasserman weight algorithm	3.37 L/min		
Maximum Relative Oxygen Uptake	Based on normal value of maximum oxygen uptake	47 ml/min/kg		
Maximum Oxygen Pulse	Wasserman equation	19 ml		
Maximum Heart Rate	Traditional formula for bicycle test	177 /min		
Maximum Minute Ventilation	Individual normal values, based on MVV or FEV1	157.7* L/min		
Maximum Breathing Frequency	Pollock et al. equation	39 /min		
Maximum Work Rate	Based on normal maximum oxygen uptake	307 W		
Spirometry normal value sets	European Coal and Steel Community (ECSC)			

* The value shown here can be changed by following circumstances:
- is it a bicycle, treadmill or field test
- is the FEV1 value taken from pretest MFVL, entered patient data or normal spirometry data.
(see corresponding settings in the MetaSoft-Studio Toolbox / Special Settings / Predicted Values).


LBW [kg]	BMI
72	20
IC [L]	VC [L]
0	0
FEV1 [L]	MVV Factor
	40

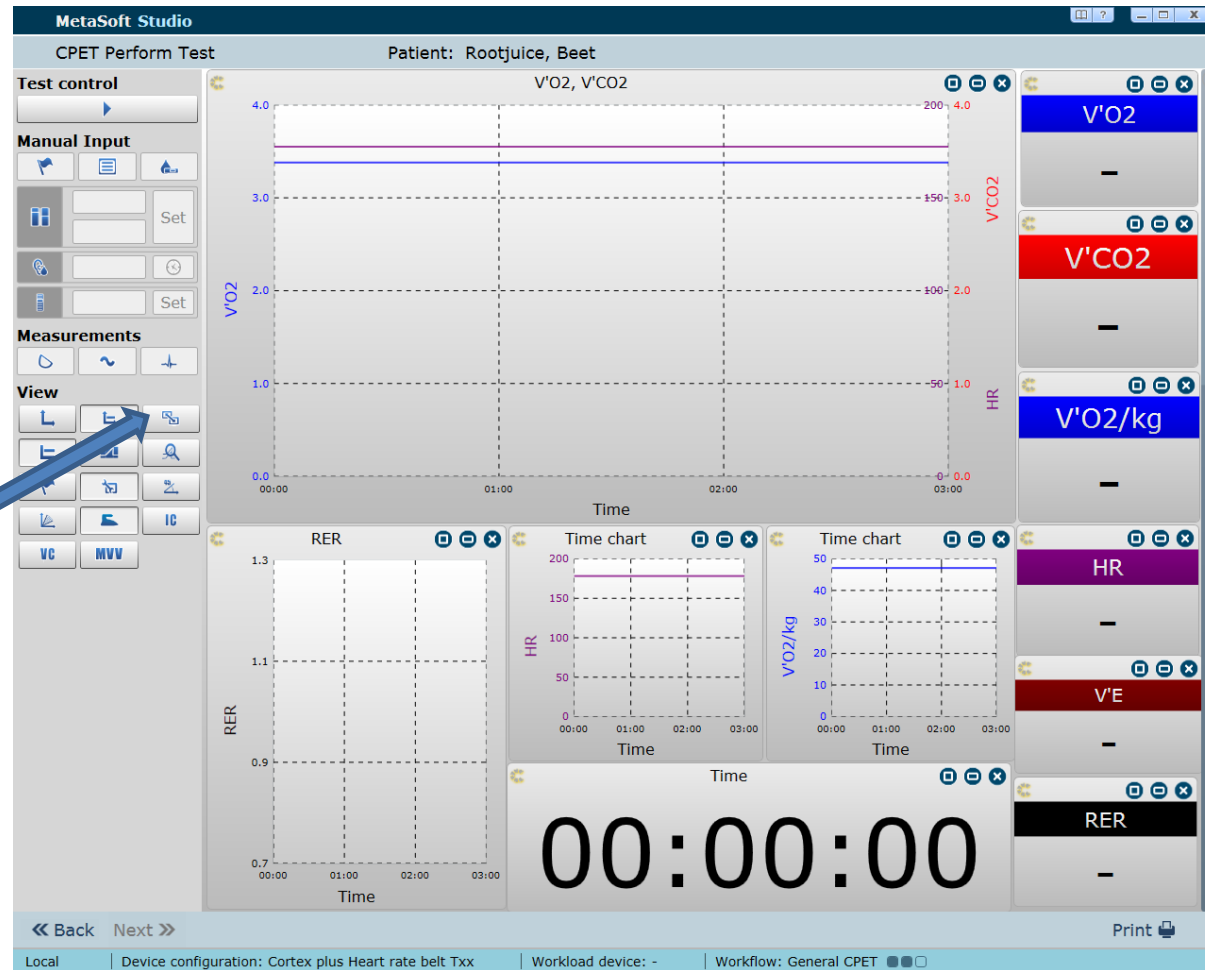
Flow Sensor Calibration | Device Configuration | Sensor Adjustment

<< Cancel Next >>


Device configuration: Cortex plus Heart rate belt Txx | Workload device: - | Workflow: General CPET

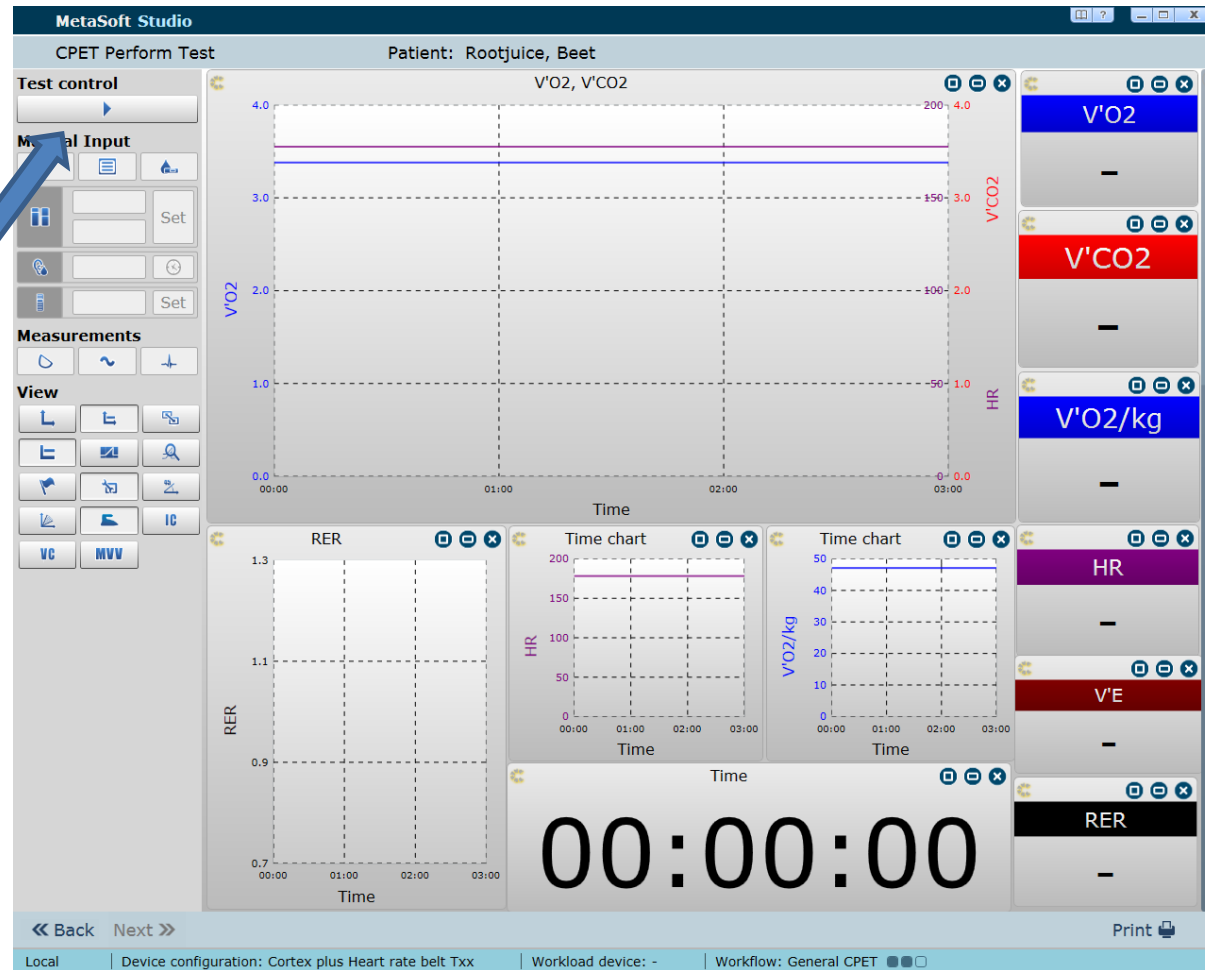
Starting a test

- When you reach the testing page you will need to change the screen to look like the one shown
- Click  and from the list choose 'Student Testing'



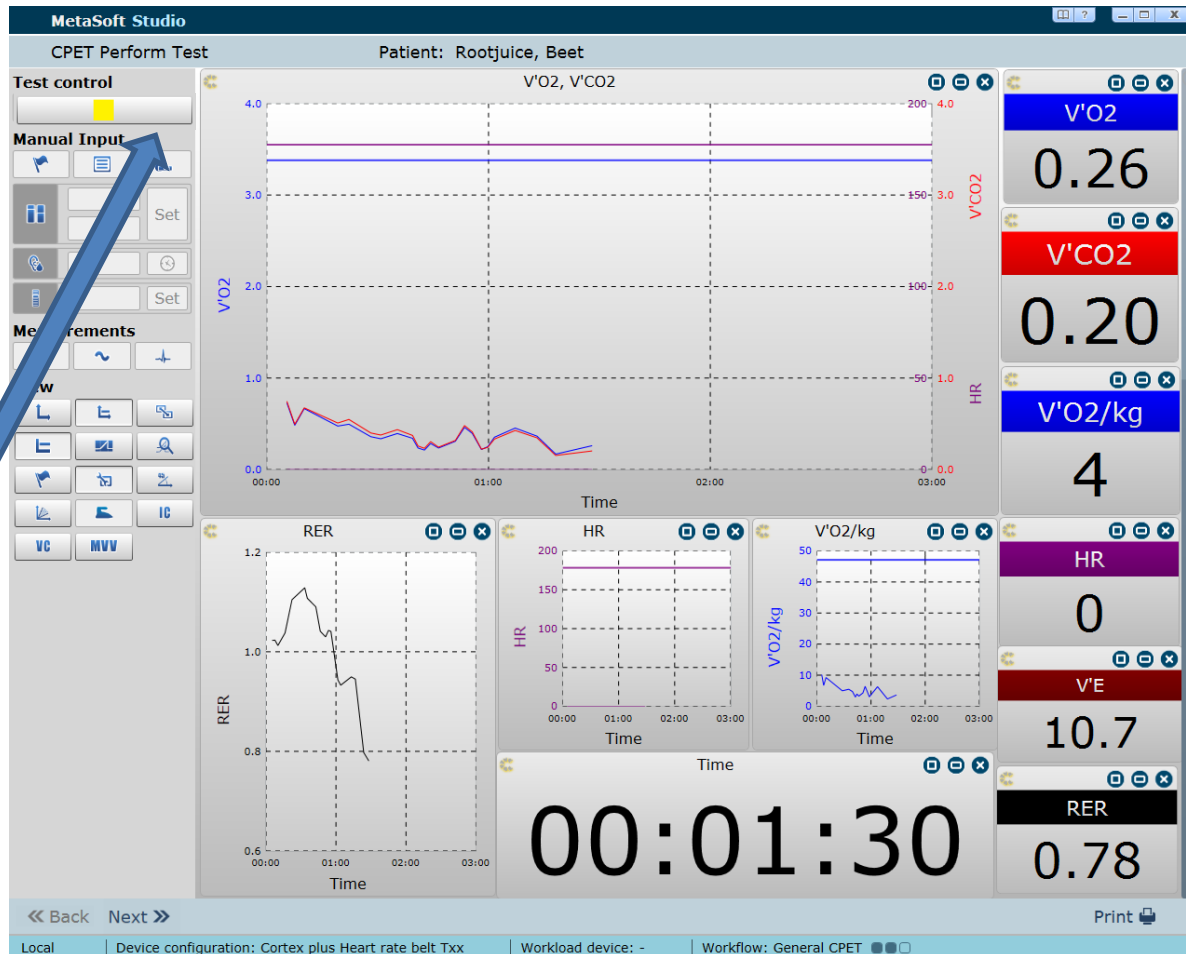
Starting a test

- You are now ready to start the test
- Click  to begin data collection




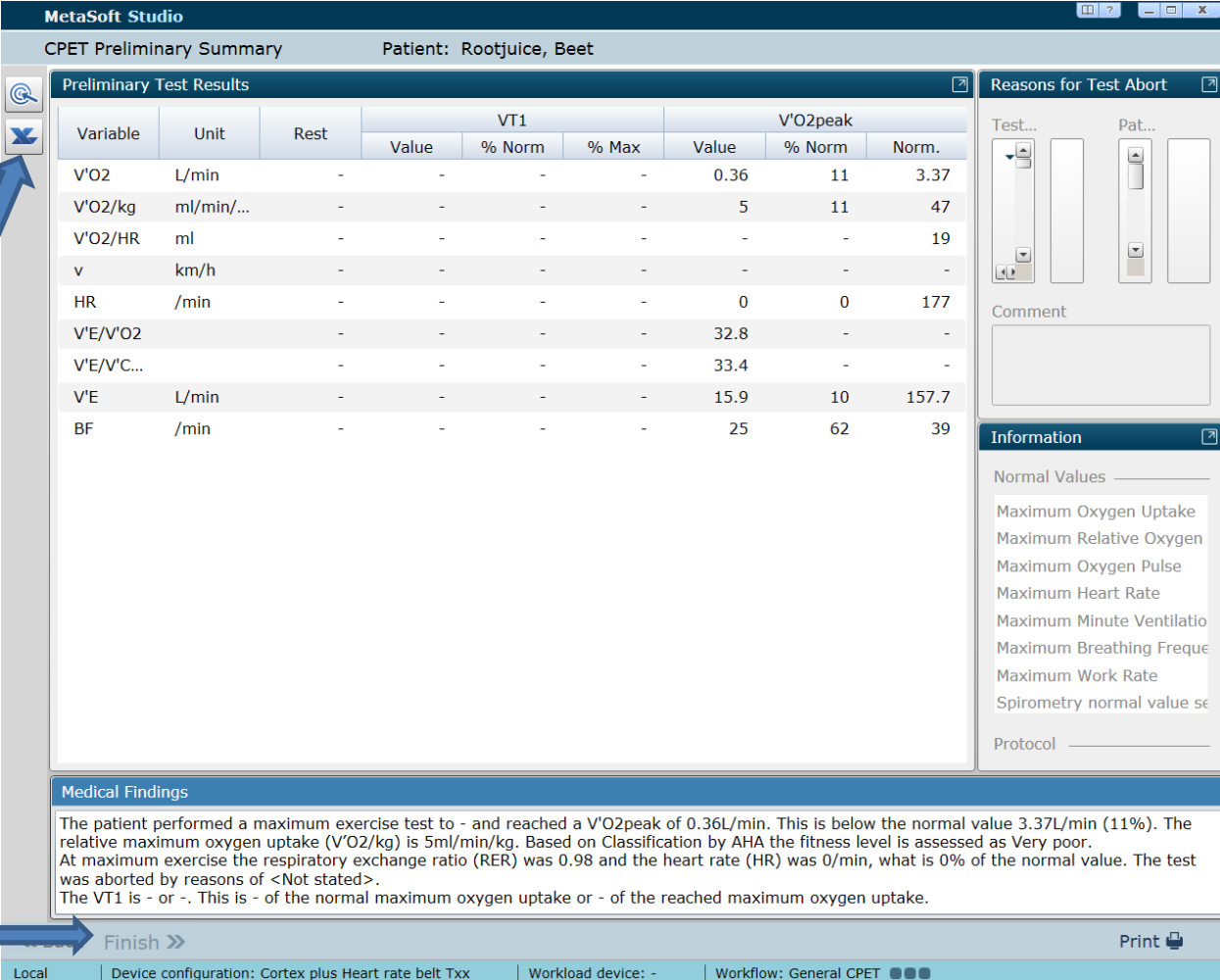
Stopping the test

- Assuming everything is working correctly data should appear on the screen
- To stop the test, press the stop button which is located where the start test button is



Exporting data to Excel

- At the end of the test, whilst still on the test screen click next
- Then click 
- Excel will open, simply save as you would a normal file
- Click finish to exit or start another test



MetaSoft Studio
CPET Preliminary Summary Patient: Rootjuice, Beet

Preliminary Test Results

Variable	Unit	Rest	VT1			V'O2peak		
			Value	% Norm	% Max	Value	% Norm	Norm.
V'O2	L/min	-	-	-	-	0.36	11	3.37
V'O2/kg	ml/min/...	-	-	-	-	5	11	47
V'O2/HR	ml	-	-	-	-	-	-	19
v	km/h	-	-	-	-	-	-	-
HR	/min	-	-	-	-	0	0	177
V'E/V'O2		-	-	-	-	32.8	-	-
V'E/V'C...		-	-	-	-	33.4	-	-
V'E	L/min	-	-	-	-	15.9	10	157.7
BF	/min	-	-	-	-	25	62	39

Reasons for Test Abort

Test... Pat...
Comment

Information

Normal Values

- Maximum Oxygen Uptake
- Maximum Relative Oxygen
- Maximum Oxygen Pulse
- Maximum Heart Rate
- Maximum Minute Ventilatio
- Maximum Breathing Freque
- Maximum Work Rate
- Spirometry normal value se

Protocol

Medical Findings

The patient performed a maximum exercise test to - and reached a V'O2peak of 0.36L/min. This is below the normal value 3.37L/min (11%). The relative maximum oxygen uptake (V'O2/kg) is 5ml/min/kg. Based on Classification by AHA the fitness level is assessed as Very poor. At maximum exercise the respiratory exchange ratio (RER) was 0.98 and the heart rate (HR) was 0/min, what is 0% of the normal value. The test was aborted by reasons of <Not stated>. The VT1 is - or -. This is - of the normal maximum oxygen uptake or - of the reached maximum oxygen uptake.

Finish >>

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