

# **TARGET Stroke Rehabilitation System**

## **(Technology Assisted Rehabilitation Giving Enhanced Therapy)**

### **Manual**

**For Research Project User Testing**

<b>Equipment provided</b>	<b>Page 2</b>
<b>Sensor placement</b>	<b>Page 2</b>
<b>Charging sensors</b>	<b>Page 2</b>
<b>Starting the system</b>	<b>Page 3</b>
<b>Putting on the sensors</b>	<b>Page 4</b>
<b>Recording a task</b>	<b>Page 5</b>
<b>Reviewing a previous task</b>	<b>Page 8</b>
<b>Making notes in the on-screen diary</b>	<b>Page 9</b>
<b>Reviewing progress</b>	<b>Page 10</b>
<b>Exiting the programme</b>	<b>Page 12</b>
<b>Turning off the computer voice</b>	<b>Page 13</b>
<b>In case of difficulty</b>	<b>Page 13</b>

**TARGET Stroke Rehabilitation System**  
(Technology Assisted Rehabilitation Giving Enhanced Therapy)

**Equipment provided:**

- Laptop computer with detachable power cable
- Red socket strip for 5 plugs with separate German/English adaptor
- 4 blue sensor boxes (labelled 'wrist', 'upper arm', 'torso', 'spare') each with a dummy charging plug
- 3 charging units
- Receiver module (dongle) to be plugged into the USB port on the laptop
- Arm band, wrist band, vest - all with pocket for sensors

**Sensor placement:**

The arm band should be put on before the wrist band. Both the wrist and arm sensors should have the connector pointing up the arm and the light indicator facing outwards. The arm band is designed to fit the side that is affected whereas the wrist band can fit either right or left so care needs to be taken with the wrist band to ensure it is the correct way up.

The vest sensor should be placed with the connector pointing downwards and the light indicator facing outwards.

**Charging sensors:**

When not in use the sensors should be plugged into the charging units. The light indicators on the sensors will show whether they are on or off, charging, and whether the battery is full or empty as in the table below:

LIGHT INDICATOR	POWER CONNECTION	STATUS OF SENSOR
Continuous Red	Connected to charging unit which is switched on	<b>Charging</b> (See Fig 1)
Blinking Green	Not connected to charger	<b>On</b> (See Fig 2) Transmitting data
No light showing	Not connected to charger (or charging unit switched off)	<b>Battery empty</b> You need to recharge sensor
No light showing	Connected to charging unit which is switched on	<b>Battery full</b>
No light showing	Connected to charging unit which is <u>not</u> switched on (or to dummy charging plug)	<b>Off</b>



Power cable plugged in, red LED on = charging

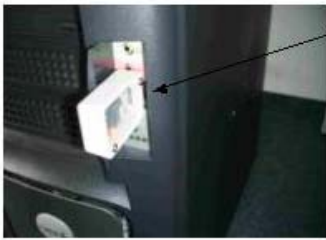


No charging, green LED blinking = transmitting

**Figure 1: Sensor in state 'charging'**

**Figure 2: Sensor in state 'on'**

The receiver unit (dongle) may flash red and green during use – this is quite normal.



Receiver module for PC, reception of data causes green blinking

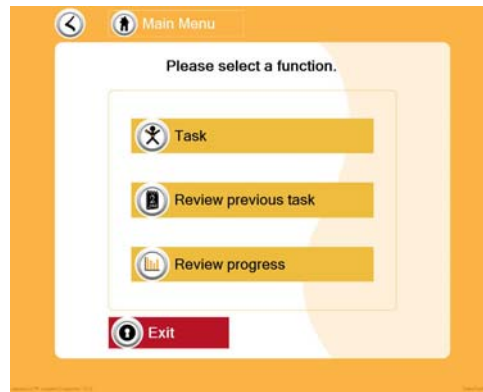
**Figure 3: Receiver module for sensors**

### Starting the system:

1. Connect the laptop to the mains supply using the power cable, red socket strip and adaptor.
2. Connect the receiver module to a USB port of the laptop
3. Switch the computer on with the large round button at the top of the keyboard. The programme will automatically start and display the following screen.



4. Follow the on-screen instructions. This will allow you to a) record a task which will be either 'raising your arm' or 'raising the arm sideways', b) review a previous task or c) review your progress over time.

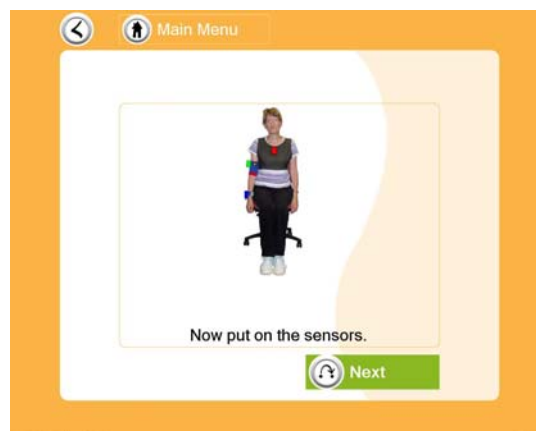


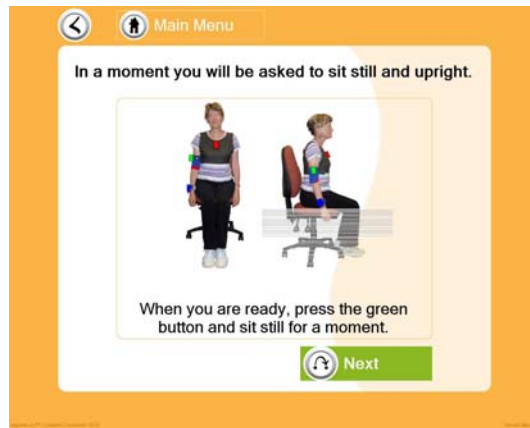
You can at any time return to this menu by clicking on the 'Main Menu' button with the house symbol on top of the screen. All screens have a 'back' button with a symbol '<' on the upper left side of the screen. Clicking on this will take you back to the previous screen.

5. Before you start to do any of the tasks you will be asked some questions about how you are feeling. Only do the exercises if you feel fine.

### **Putting on the sensors**

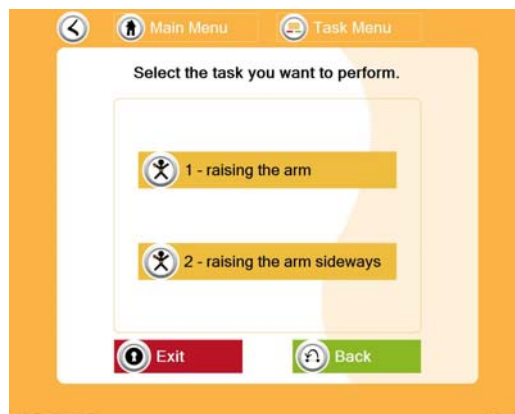
6. You will be given a cue to put the sensors on. The computer will guide you through the set-up to ensure that the sensors are properly positioned.



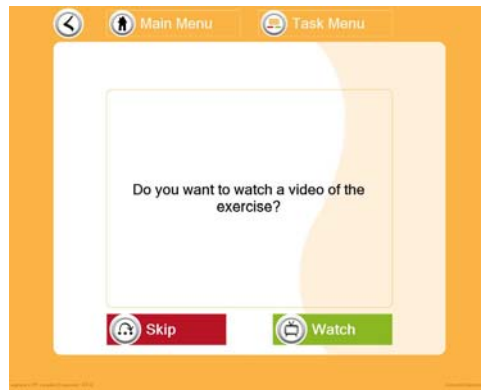


## Recording a Task

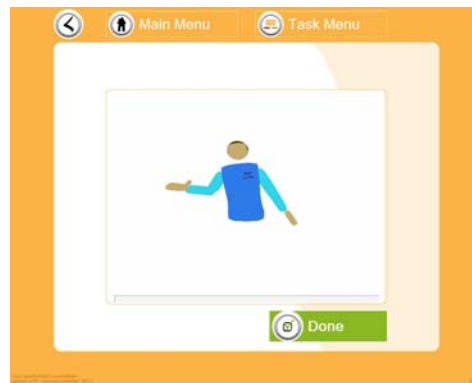
7. Now you can select which task you want to do. You can always return to this Task Menu screen by clicking the button on the top of the screen with the Task Menu icon.



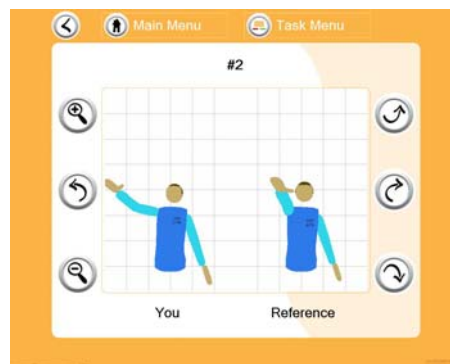
8. You can watch a video of the task to familiarize yourself with what to do. The video will play on a loop until you click the green button to continue.

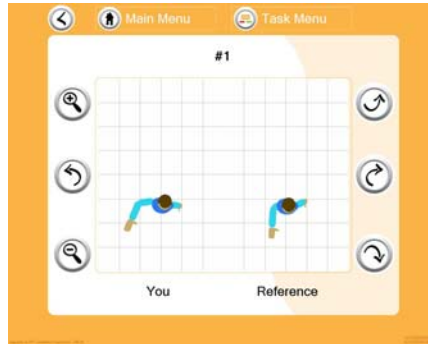


9. You will then be asked to repeat the task after a countdown. You will see a model on the screen which mimics your movement as you do it. The sensors will record your movement at the end of the countdown. You will need to stop the recording by pressing the 'done' button when you have finished the task.

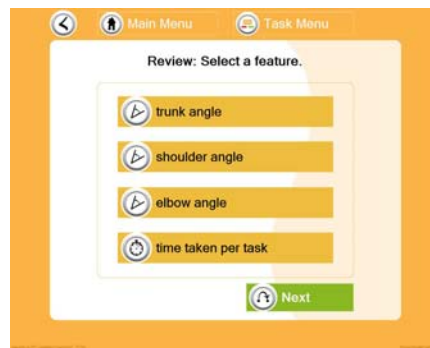


10. After you have completed the exercise, you can review the movement you have just done together with a movement by a reference model showing the ideal movement. You can change the view by clicking on the up/down and left/right buttons on the screen. Furthermore the two buttons with the looking glass 'plus' and 'minus' can be used to zoom in and out of the scene. You can see the movement from each side and from top down.

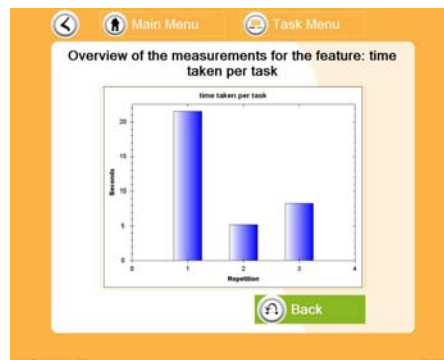




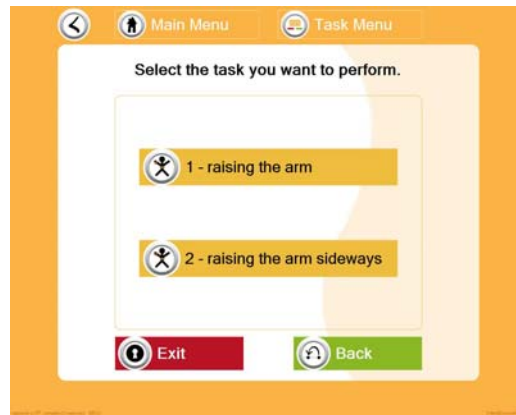
11. You can also look at additional information in a chart showing the range of movement and the time taken for each task. You can select from the menu.



12. When you have looked at a chart you can look at other charts by clicking on the 'back' button. When you want to return to the task menu you can click 'next'. This is an example of a screen showing a chart of the time taken per task.

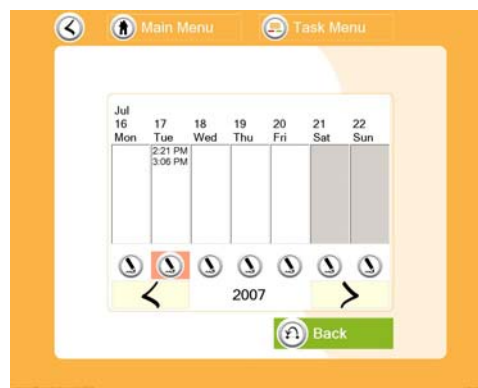


13. You can continue by choosing to record another task. If you want to review a previous task or review progress you will need to press the 'Main Menu' button at the top. If you click 'Exit' you will terminate the programme.

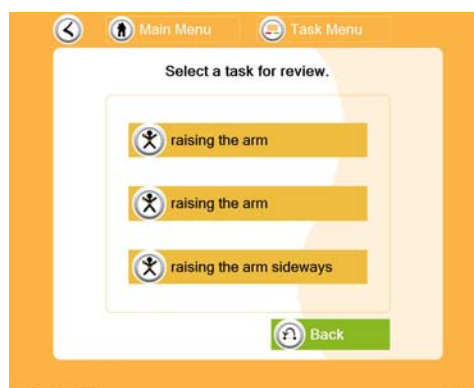


### Reviewing a previous task

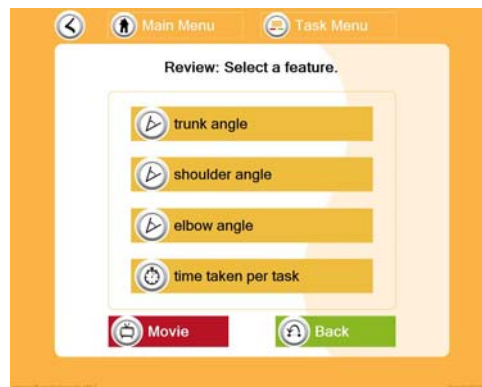
14. If you want to review a previous task you can choose this option from the 'Main Menu' page. This will take you to a weekly calendar with the times of previous recorded tasks. Entries are given as times on the calendar day.



15. Clicking on one of the times shown will open a menu allowing you to choose which task you want to review.

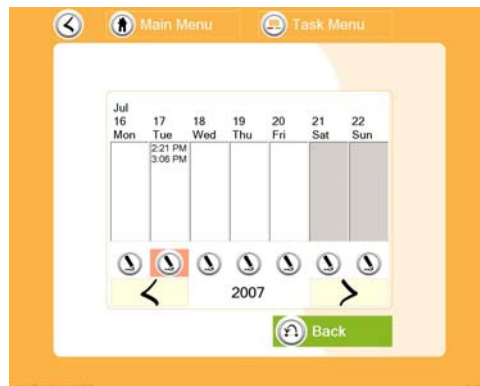


16. Choosing one of the tasks that you have recorded opens another menu that allows either reviewing the task through bar charts, or choosing a movie with the model that replays the motion.



### Making notes in the on-screen diary

17. The weekly calendar screen available from the 'Review previous task' button (see 14 above) will also take you to diary for making notes. You can access this by clicking on the 'writing pen' symbol below each calendar day. When you have made an entry in the diary the writing pen symbol will be shown against a coloured background.

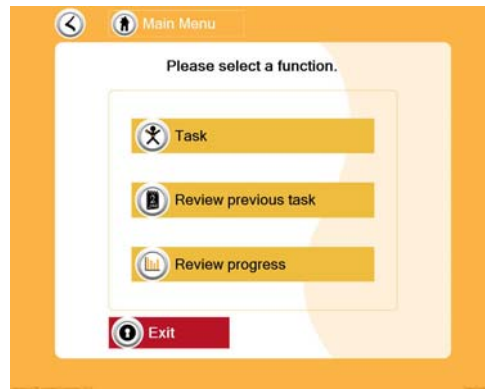


18. When you click on the 'writing pen' you will see a screen keyboard. To write in the diary you can either use this or the actual keyboard on the computer. Don't forget to save what you write using the 'Save' button. You can also click 'Cancel' if you don't want to save any notes and this will take you back to the calendar page.

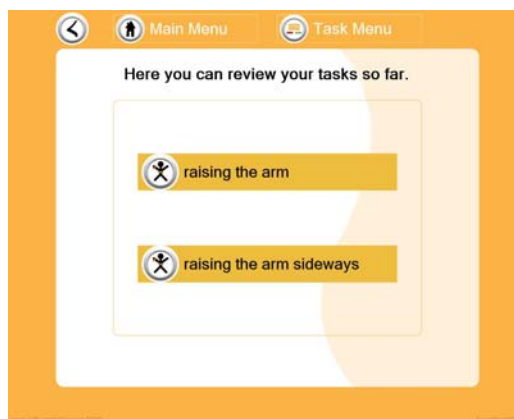


## Reviewing progress

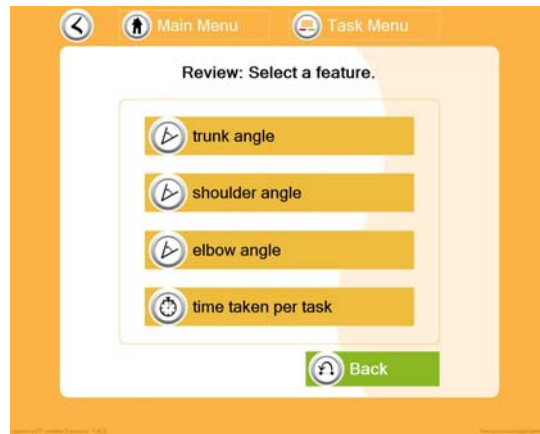
19. From the main menu you can choose to review the progress over the last few days and weeks in the form of bar charts. Click on 'Review progress' in the main menu.



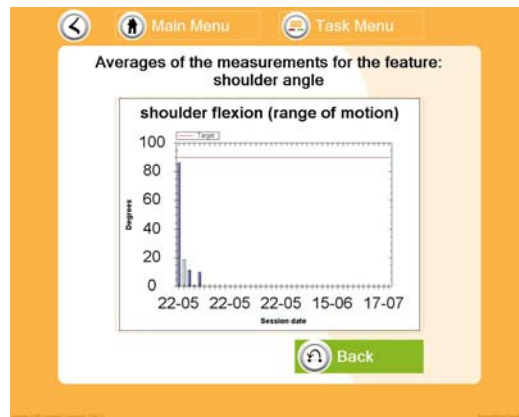
20. You will need to select the task you wish to see on the progress chart.



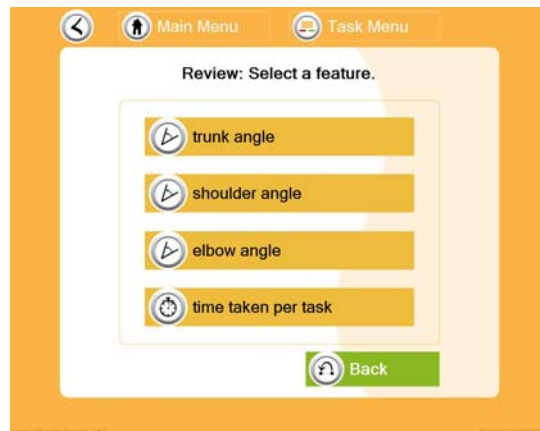
21. Next, a menu is offered for the different available bar charts, showing the long-term progress of the range of motion of shoulder, elbow and trunk, as well as the time taken per task.



22. When choosing a particular feature to display, a bar chart shows the average daily value for trunk, shoulder or elbow extension over time.

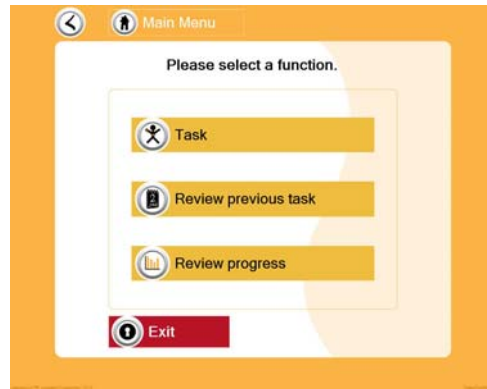


23. Clicking the 'back button' takes you back to the menu where the feature to display (range of motion and time per task) can be chosen.



24. From there, it is possible by another 'back' click to choose another exercise to review the long-term progress. Clicking the 'Main Menu' button on top of the screen takes you back to the main menu.

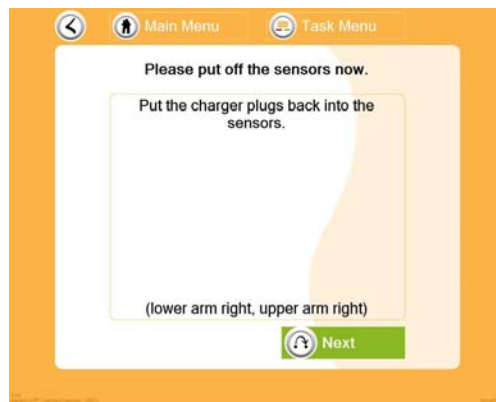
## Exiting the programme



25. Clicking 'Exit' in the main menu starts terminating the programme. You will be asked if you really want to quit using the system.



26. If you want to quit, the system will remind you to take off the armbands and vest and to put the sensors into the charging units. It will be a good idea to keep the sensors in the armbands and vest whilst they are charging. The computer will display the list of sensors that are still 'on' eg lower arm right, upper arm right, torso. Once they have been connected to the charging unit (or dummy charging plug) and are therefore 'off' or 'charging', the screen will display the word 'complete'. Pressing 'Next' terminates the programme. You can turn the computer off using the large round button in the middle at the top of the keyboard.



### **Turning off the computer voice**

27. The text will be spoken by a computer 'voice'. You can turn this off (and on again) by pressing the smaller round button with the loudspeaker icon at the top of the keyboard. This is to the left of the larger on/off button.

### **In case of difficulty**

28. If the programme gets stuck or crashes please make a note of the time and date in the paper diary and add any comments about what you were doing when it crashed.
29. If the computer gets stuck or crashes you can turn the computer off and then on again.
30. If you have any problems at all please ring \*\*\*\*\*

Thank you for testing this equipment for us.

