



MCU[™]

Multi-Cervical Unit

USER MANUAL

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Class A Digital Device

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



MCU™
Multi-Cervical Unit

USER MANUAL

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INSTALLATION AND SETUP

I. INTRODUCTION

When you first look at the MCU™, it may be difficult to imagine that a cervical assessment can be so simple. However, once you familiarize yourself with the basic components of the unit and practice its operation following appropriate training, you will wonder how you ever did assessments without it.

This MCU™ Operator's Manual will review the basic components of the Multi Cervical™ Unit. Once you are familiar with the components, you can explore the techniques and protocols for performing a cervical assessment, including range of motion and isometric strength testing.

This Manual will also review the different types of reports that are automatically generated using the information acquired throughout the assessment, as well as the clinical documentation you provide the Objective Documentation Evaluation System (ODES™) computer diagnostic system component.

BTE Technologies recommends that the Multi-Cervical™ Unit be used in conjunction with a certified training program on *The Melbourne Protocol*. Two-day comprehensive training programs are tailored to suit the specific needs of your facility. Refer to Section 10 for more information.

II. MCU™ COMPONENTS

DO NOT CHANGE OR MODIFY ANY COMPONENTS

Any changes or modifications, especially to the wireless components, not expressly approved by BTE Technologies, Inc. could void the user's authority to operate the equipment.

A. MULTI CERVICAL™ STATION

The Multi Cervical™ Station consists of the base, column with weight stack, seat, halo, weight stack pins, ROM stop, (2) head braces, (3) Velcro straps, and (4) RJ45 cables - 2 short and 2 long (Figure 1-1).

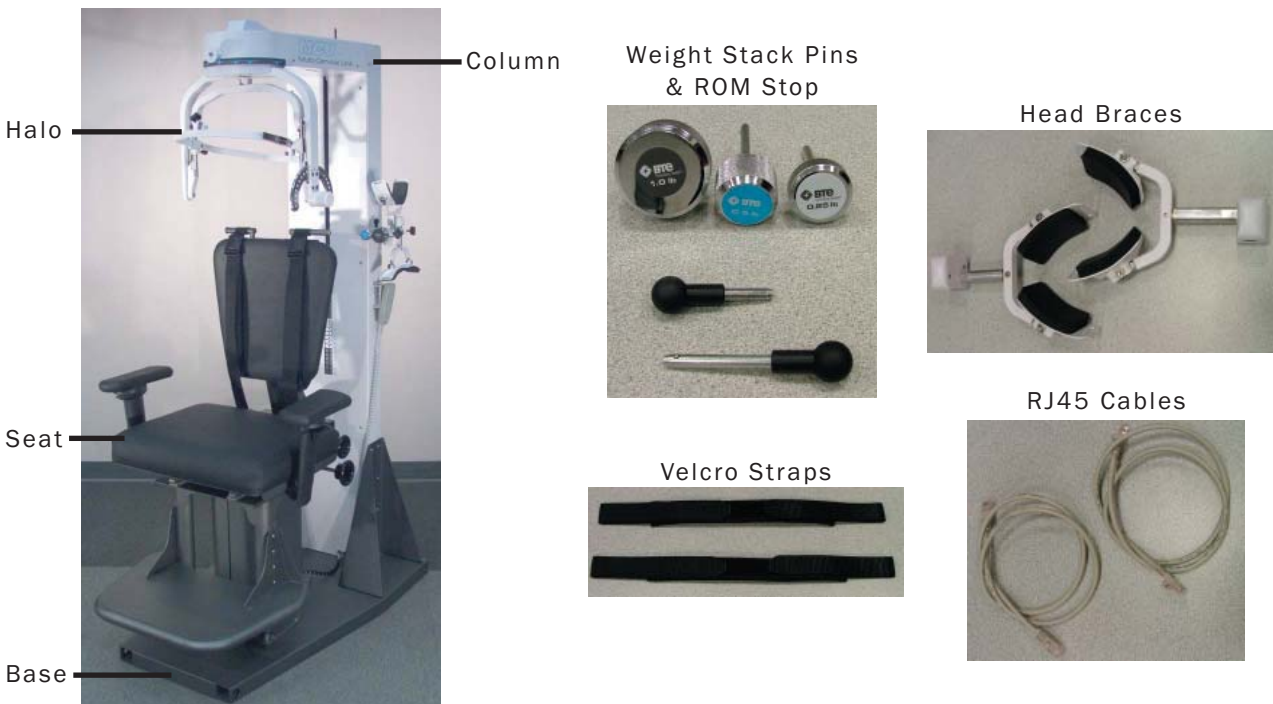


Figure 1-1. Multi-Cervical™ Station

B. CALIBRATION TOOLS

The MCU™ calibration kit consists of (1) calibration block, (1) 10 lb. weight, and (1) 15 lb. weight (Figure 1-2).



Figure 1-2. Calibration Tools

C. COMPUTER EQUIPMENT AND CART

The computer equipment consists of a computer cart, LCD monitor, CPU, printer, speakers, isolation transformer, and a wireless hub (Figure 1-3).

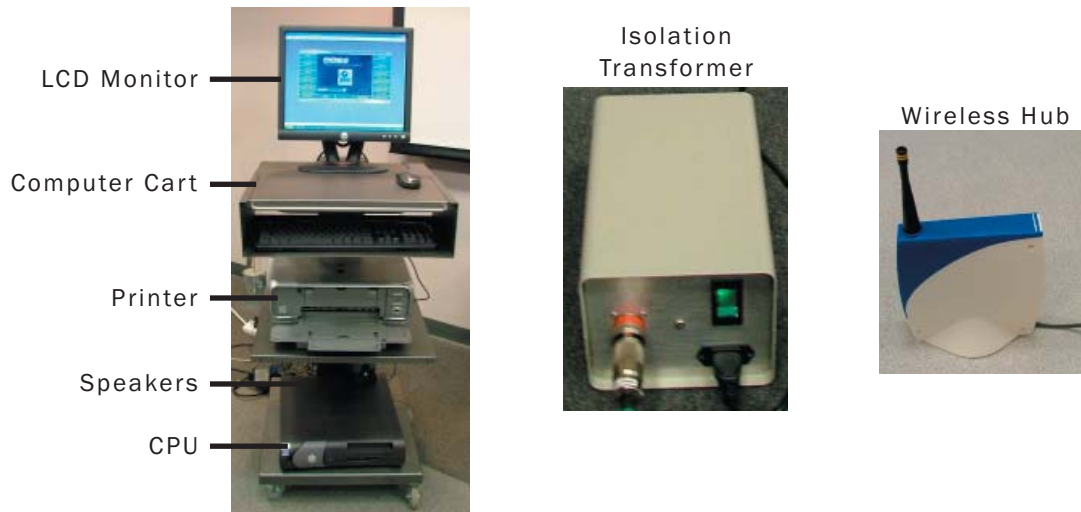


Figure 1-3. Computer Equipment and Cart

III. ASSEMBLY INSTRUCTIONS

Once the MCU™ Station and computer cart have been unpacked, you are ready to start assembling the unit.

A. SETTING UP THE MCU™ STATION

The MCU™ is shipped on casters to provide maximum protection in transit and ease of installation. The caster assemblies provide adjustable ground clearance. The system is shipped in the highest position to clear ramps, curbs, and thresholds, but it can also be lowered to pass under low doorways.

Step 1. Move the MCU™ to the location you wish it to be used. Using a 3/4" wrench, lower each caster a small amount until the MCU™ base is resting on the ground. Once the base is on the ground, remove the casters (Figure 1-4).



Figure 1-4. Lowering and Removing the Casters

Step 2. Locate the weight stack pins and ROM stop pin and place them in the corresponding holes on the calibration plate (Figure 1-5).



Figure 1-5. Location of Weight Stack Pins & ROM Stop Pin

Step 3. Locate the head braces and secure them to the calibration plate (Figure 1-6).



Figure 1-6. Head Braces Secured to Column

Step 4. Locate the Velcro straps and RJ45 cables. These may be placed on the computer cart.

Step 5. Locate the calibration weights and calibration block and place them in the triangular bracket on the base (Figure 1-7).



Figure 1-7. Location of Calibration Tools

Step 6. Locate the 2 antennas and then locate the far-right hole on the top back of the MCU™ station. Insert one of the antennas through this hole and secure it to the PCB (Figure 1-8).



Figure 1-8. Attaching the Antenna

ACCEPTABLE ANTENNA(S)

This device has been designed to operate with the antenna(s) listed below and having a maximum gain of 2.7 dBi. Antennas not included in this list or having a gain greater than 2.7 dBi are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

Acceptable antenna(s) include:

1. Linx Technologies 916MHz 1/4 Wave Whip Antenna (ANT-916-CW-QW)

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication.

Step 7. Locate the arm rests, note which is labeled left and which is right, and attach them to the seat on the appropriate sides (Figure 1-9). Note that the armrest is inserted below the plastic piece that is within the bracket.

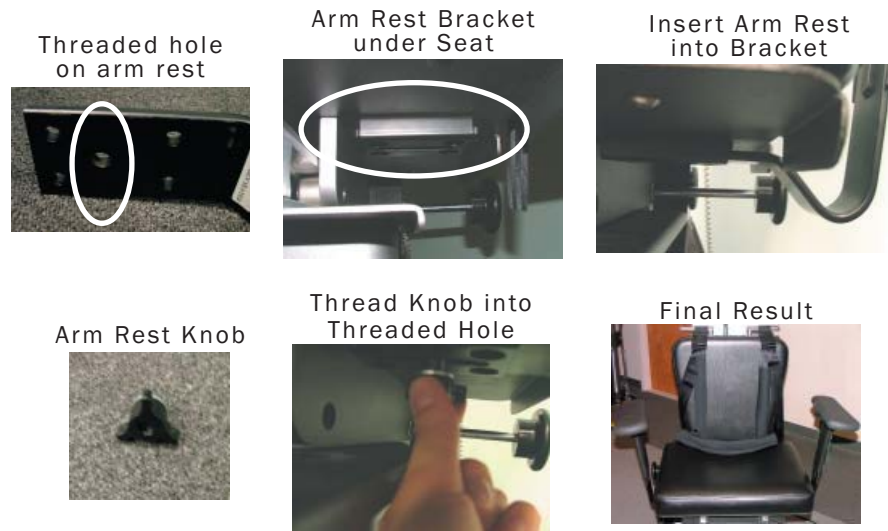


Figure 1-9. Attaching the Arm Rests

Step 8. Plug the power cord, which is located at the bottom back of the MCU™, into the designated wall outlet. Hold your hand above the back of the MCU™, next to the antenna, and verify a red light shines on your hand; this confirms the PCB is receiving power (Figure 1-10).

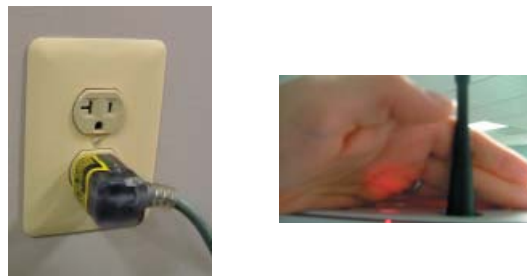


Figure 1-10. Plugging in the MCU

B. SETTING UP THE COMPUTER EQUIPMENT AND CART

1. LCD MONITOR

If you haven't done so, remove the small bag from the top shelf of the computer cart and mount the LCD monitor to the cart (Figure 1-11). Plug the power cord and serial cable into the back of the LCD monitor.

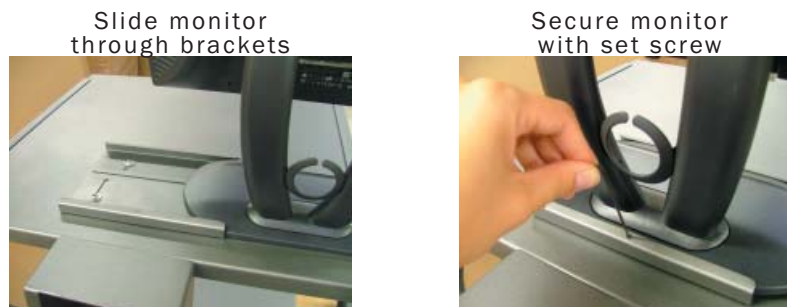


Figure 1-11. Securing LCD Monitor

2. PRINTER

Remove the printer from its box and place it on the 2nd shelf of the computer cart. Following the instructions from the printer box, insert the ink cartridges and plug in the power cord and USB cable. Once the computer is running and the printer is turned on, print a test page.

3. CPU

Remove the CPU (computer tower) from its box and place it on the 3rd shelf of the computer cart. Plug in the power cord, monitor serial cable, and printer USB cable.

4. SPEAKERS

Remove the speakers from their box and place them on the 3rd shelf of the computer cart. Plug the cable from the left speaker into the designated jack on the right speaker. Next, plug the power cord into the designated jack on the right speaker. Finally, plug the speaker cable, which is attached to the right speaker into the CPU.

5. KEYBOARD & MOUSE

Remove the keyboard and mouse from their box. Place the keyboard on the auxiliary shelf of the computer cart and plug the cord into the CPU. Place the mouse on the top shelf of the computer cart and plug the cord into the CPU.

6. WIRELESS HUB

Locate the wireless Hub and place it on the 2nd shelf of the computer cart. Note that inside of the Hub are magnets, which are intended to keep the Hub stable on the shelf. Secure the 2nd antenna (from Step 6 of 'Setting up the MCU Station') to the Hub (Figure 1-12). Plug the USB cable into the CPU.

Note that is important to store the Hub in a location such that its antenna is at least 3 feet from the antenna at the top of the MCU.



Figure 1-12. Placement of Hub

7. ISOLATION TRANSFORMER

Locate the isolation transformer and its power cord and place it next to the designated wall outlet. Attach the computer cart cable, which is located at the bottom back of the cart, to the isolation transformer. Plug one end of the isolation transformer power cord into the isolation transformer and the other end into the designated wall outlet. Turn on the isolation transformer via the green switch (Figure 1-13).



Figure 1-13. Placement of Transformer

The use of extension cords is not recommended. If an extension cord cannot be avoided, use no less than 14 gauge wire. Keep the cord as short as possible, and use only hospital approved plugs. The extension cord MUST complete the ground from the ER power supply cord to the wall outlet.

IV. STRONGLY RECOMMENDED ADDITIONAL PURCHASES

In addition to the equipment shipped to you from BTE Technologies, the purchase of the following items from a local supplier is strongly recommended for adequate protection of your patient data:

- Several “CD-RW” re-writable compact discs for backing up and archiving copies of patient data
- An Uninterruptible Power Supply (UPS) unit providing at least 14 amps as a safeguard against the permanent loss of patient information due to power surge or electrical power failure.

IMPORTANT

In case of a malfunction, your computer can be repaired or replaced, but your valuable patient data can only be restored from copies kept on “back-up” CDs (See Section 2 - General Information).

- Disinfectant wipes to clean the commonly used surfaces on the machine and components.

VI. COMPUTER CARE

A computer’s hard disk is vulnerable to loss of data and “corruption” of data (may not function correctly when you attempt to retrieve patient information) from a sudden change in the level of electrical power. In the event of a power failure, the UPS battery will generate electricity long enough to allow you to shut down the system without damage to your patient data.

Since computers are sensitive to extremes of temperature, do not place equipment close to a direct source of heat or cold (for example, in direct sunlight, next to a radiator or an air conditioner).

Do not install any additional software onto the controlling computer. The BTE Technologies MCU™ system is in constant communication with the computer, so a “clean”, dedicated computer system is crucial to the integrity of this communication system. Lastly, your computer will not be covered under the warranty if any unapproved software has been installed.

IMPORTANT

Handle your computer with extreme care. A drop or a bump, even from a height of 3-4 inches, may cause serious damage, which is not covered by the warranty.

A. CHECK COMPUTER CABLES

Check that all cables are securely connected to the computer. Just about every cable connector is made in such a way that it will only attach in its appropriate location. If the cables are not secured properly, there may be an interruption of the data transmission, resulting in error messages.

B. ENVIRONMENT REQUIREMENTS

The MCU™ is designed to operate within the following environmental conditions:

- Ambient Temperature: 50°F to 100°F (10°C to 40°C)
- Relative Humidity: 30% to 75%
- Atmospheric Pressure: 700hPa to 1060 hPa
- Voltage Supply: 110-120 VAC (International Voltages differ)

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GENERAL OPERATION

I. GETTING STARTED

Ensure that you have carefully read Section 1 of this manual prior to starting up your MCU™.

IMPORTANT

Voltages over 125V can result in eventual damage to the MCU™ electronics and produce frequent error messages. Even if you have a dedicated circuit for your MCU™, have a technician check the outlet with a voltmeter to ensure that the wall voltage does not exceed 125 Volts (U.S. and Canada). If your wall voltage exceeds this voltage, call BTE Technologies immediately.

Damage to your MCU™ resulting from wall voltages exceeding 125 Volts is not covered under the warranty.

Step 1. After making sure everything is plugged in properly, turn on the computer.

Step 2. Once the system is booted and the MCU™ is ready to use, click on the Start Button and select BTE URFIO Config. The URFIO Config screen will appear for 5 seconds and then disappear; however, it is still running in the background. Refer to Section IV-C on how to access the URFIO Config screen through ODES.

Step 3. Open the software by double-clicking the ODES icon, which is located on the “desktop” of the computer monitor.

II. BASIC SOFTWARE NAVIGATION

The BTE Technologies MCU™ is controlled through its own unique software. Use this section as both an initial primer and a to-the-point, quick reference guide to your ODES software.

A. THE WINDOWS XP ENVIRONMENT

As a new user of MCU™, it is important for you to first acclimate yourself to the Microsoft Windows XP operating system.

Familiarize yourself with these basic functions:

Desktop – Once Windows loads up, the entire screen is taken up by the ‘desktop’. Double-clicking the ODES ‘shortcut’ icon, which is located on the desktop, launches the ODES software.

Minimize – Clicking this button ‘hides’ the open program and reduces it to a button on the start bar (Figure 2-1).

Maximize/Restore – Expands the program window to fit the size of the entire screen. If the program is already expanded, clicking this will shrink the screen to a smaller window (Figure 2-1).

Close – Closes the active program window (Figure 2-1).

Scrollbars – Click the small black “up” and “down” arrows on the bar at the right of a given window to scroll up and down in screens.

Start bar - This horizontal bar located at the bottom of your screen displays a button of every open program. Clicking a program name here switches you to that program.

Start button – This button is used to launch nearly every program and function of Microsoft Windows (Figure 2-2).

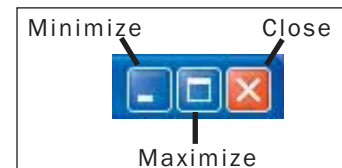


Figure 2-1. Minimize/Maximize/Close



Figure 2-2. Start Icon

B. USING THE ODES SOFTWARE

Once you are comfortable with Windows XP, take some time to familiarize yourself with the general layout and functioning of the ODES software. Doing this now will maximize your efficiency down the line.

To access ODES, click on the ODES icon, which is displayed on the computer’s desktop. You will be prompted for a username and password (Figure 2-3). The username is **odes** and the password is **bte** (both lower case); the username and password may be modified through the Administration Menu if you choose to do so later.

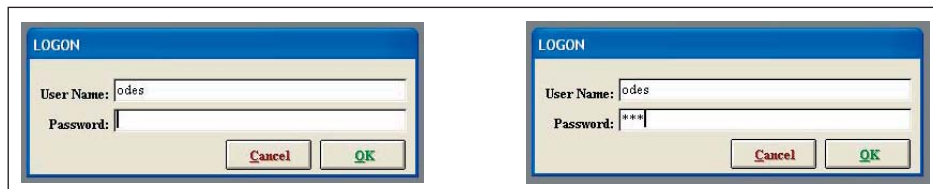


Figure 2-3. ODES Username and Password

Upon entering ODES, you will notice the following elements are used throughout:

Title Bar – The narrow blue strip located at the top of the screen which displays the database into which the data is being stored.

Taskbar – Located at the top of the screen under the title bar; while in the home screen, this bar includes the menus: File, Calibration, Statistics, Snapshots, Forms, Utilities, Calculators, Digital Capture, Patient Standing and Sitting icons, and Help. This bar changes depending on which area of the software you are using.

Taskbar items – Items listed under each menu title which allow you to perform an operation or to pull up a report.

Text fields – Text and numerical values are entered into “fields”. To enter text or an integer into a field, click the field, and a blinking black cursor will indicate that the field is active. Type in the required information.

Check boxes – A checkbox is like a switch; click one to activate a setting and click it again to de-activate the setting.

Drop-down menu – A text field with an arrowhead pointing down. When the arrowhead is clicked, the menu drops down to show a list of options available.

III. HOME (START-UP) SCREEN

The first active screen you will see when the ODES program is initiated is the Home Screen (Figure 2-4). From this screen, all of the settings, patient information, and protocols may be accessed.

Note that the sections on Self Reports, ROM Tests, Strength Tests, and Exercise Program are covered in this manual; however, these sections are also comprehensively covered in the training program on *The Melbourne Protocol*. Refer to Section 10 for more information on this training program.

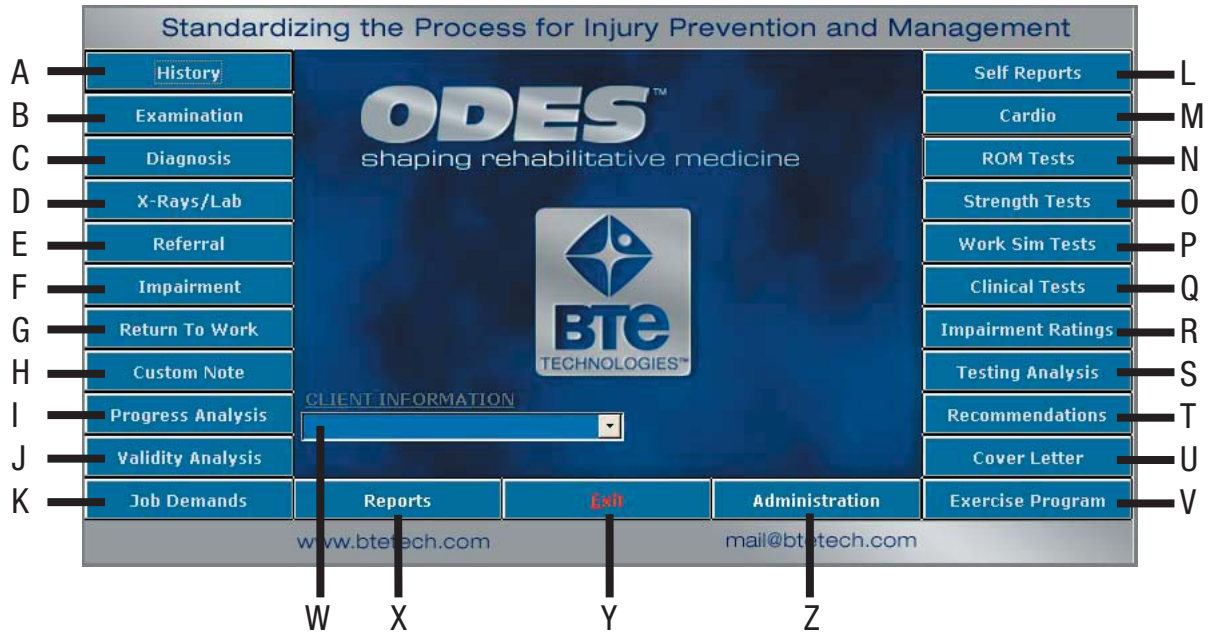


Figure 2-4. ODES Home Screen

- A. History** – Patient History Templates
- B. Examination** – Patient Examination Results Templates
- C. Diagnosis** – Patient Diagnosis Templates
- D. X-Rays/Lab** – Patient X-Ray and Lab Results Templates
- E. Referral** – Patient Referral Letter Templates
- F. Impairment** – Patient Impairment and Disability Templates
- G. Return To Work** – Patient Return To Work (RTW) Letter Templates
- H. Custom Note** – Blank Template for Customized Notes
- I. Progress Analysis** – Patient Progress Analysis Templates
- J. Validity Analysis** – Comparison of Actual Results vs. Expected Results
- K. Job Demands** – Comparison of Job Demand vs. Ability Demonstrated
- L. Self Reports** – Patient-Filled Questionnaires
- M. Cardio** – Cardiovascular Measurement Protocols
- N. ROM Tests** – Range of Motion Protocols
- O. Strength Tests** – Muscular Strength Protocols
- P. Work Sim Tests** – Work Simulation Protocols
- Q. Clinical Tests** – Clinical Analysis of Pain Protocols
- R. Impairment Ratings** – Patient Impairment Ratings
- S. Testing Analysis** – Analysis of the Test Results Templates
- T. Recommendations** – Recommendation Letter Templates
- U. Cover Letter** – Cover Letter Templates
- V. Exercise Program** – Pre-programmed Exercises to add to a case
- W. Client Information** – Create and find clients and cases; display the current client
- X. Reports** – Create, edit, and print reports
- Y. Exit** – Exit the ODES software
- Z. Administration** – Clinic and Practitioner Personalization Settings, Software Settings, Heart Rate Comments, and Protocol Settings

IV. ADMINISTRATION MENU

From the Administration Menu you can control several types of settings, templates, and protocols as well as remove cases (Figure 2-5).



Figure 2-5. Administration Menu

A. CLINIC INFORMATION

This screen allows you to personalize the reports with your clinic’s information and logo (Figure 2-6).

Add a clinic by clicking **New**.

To enter a clinic logo, double click on the Clinic Logo blank field. Locate the saved logo file on your hard drive.

The logo can be in any graphic file format (.jpg, .gif, etc.) and should be 3.2” x 0.8”, so that it doesn’t become distorted when attached to a report.

Edit a clinic’s information by pulling up the clinic’s screen, modifying the necessary information, and then clicking **New**, **Previous**, **Next**, or **Close**.

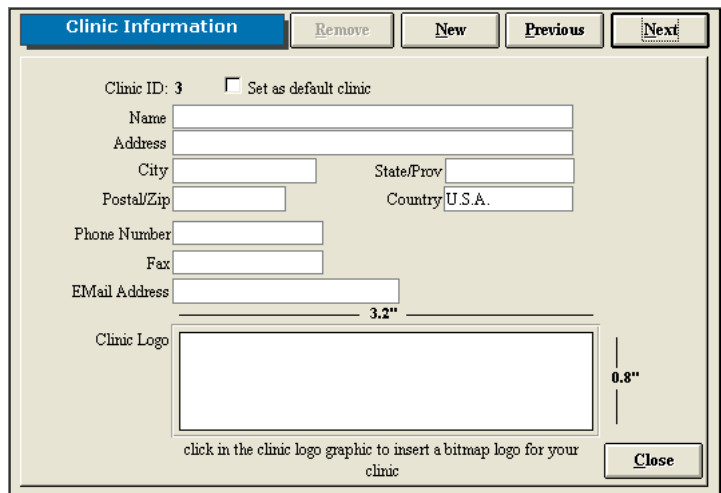


Figure 2-6. Clinic Information

Remove a clinic by clicking **Remove**.

Change the default clinic by clicking **Next** or **Previous** to select the correct location and then checking the ‘Set as default clinic’ box. Note that a default clinic cannot be removed until another clinic has been assigned as the default.

When a report is printed, the default clinic and logo are included on the report.

B. PRACTITIONER INFORMATION

This screen allows you to personalize the reports with the practitioner’s name and digital signature (Figure 2-7).

Step 1. Type in the name and demographics of the practitioner.

Step 2. To add a digital signature, you must first scan the signature and save it to your hard drive in a graphic file format (.jpg, .gif, etc.).

Click the 'allow digital signature' box, enter a password (optional), and double click the icon in order to locate the signature file on your hard drive.

Step 3. Click **Add** to include the practitioner to the database. The name will now appear at the bottom of the screen.

Edit the health practitioner information by highlighting the name from the list and then clicking **Edit**. A practitioner may also be replaced by another within the Edit screen. Once the changes have been made click on **Add**.

Remove the health practitioner information by highlighting the name from the list and then clicking **Remove**.

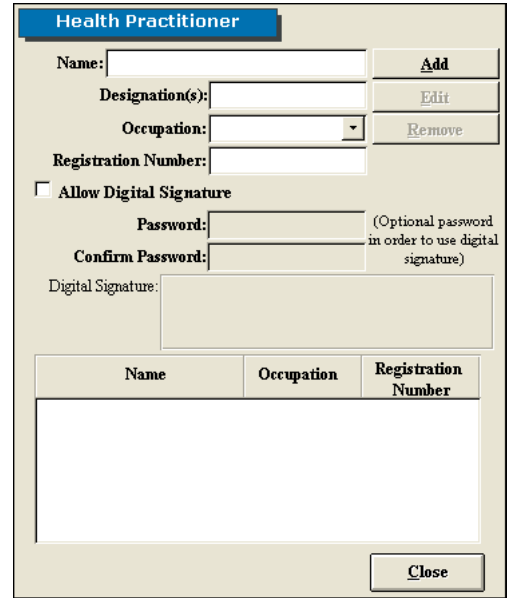


Figure 2-7. Health Practitioner

C. ENVIRONMENT SETTINGS

This screen allows you to set up communication between your wireless hub and computer, change how you interface with the software, set up reminders, and monitor the wireless configurations (Figure 2-8).

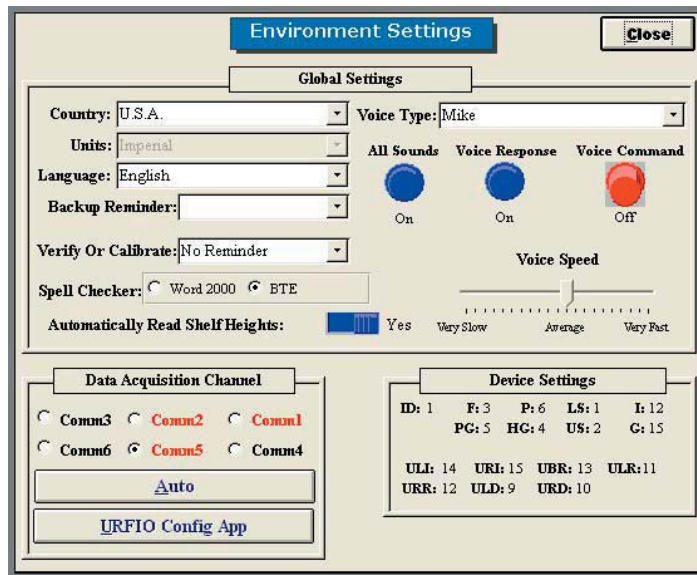


Figure 2-8. Environment Settings

1. DATA ACQUISITION CHANNEL

Click **Auto** to ensure the wireless hub is communicating properly with the computer (Figure 2-9). If there is a problem, an error message will appear stating that ODES cannot communicate. Otherwise, if everything is working properly, a message will appear stating the data acquisition box has been set up successfully.

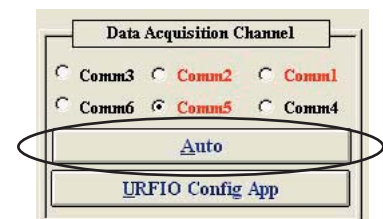
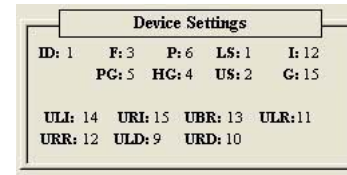


Figure 2-9. DAQ Channel

2. DEVICE SETTINGS

The Device Settings section indicates which channel various tools are being read from based on the set-up the software (Figure 2-10). This section is most helpful for troubleshooting.



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for

Figure 2-10. Device Settings

3. GLOBAL SETTINGS (FIGURE 2-11)

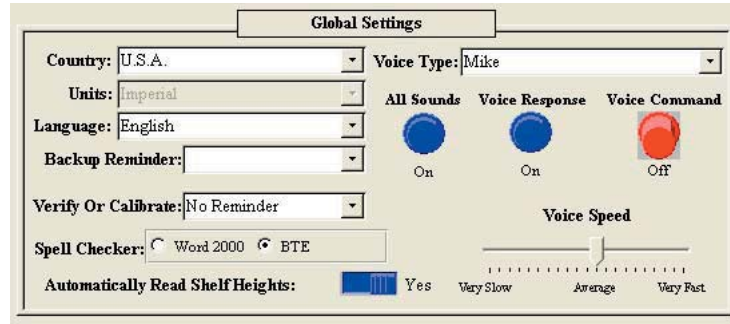


Figure 2-11. Global Settings

Country, Units, and Language – Specify the country, language, and the units of measurement to be used in printed reports.

Backup Reminder – Set reminders for backing-up your data. The recommended amount of time between back-ups is 7 days. The backups should be saved on floppy disks, CDs, or ZIP disks and kept separate from your system in case of fire, theft, or other equally damaging events.

Verify or Calibrate – Set reminders for calibrating and verifying the equipment. The recommended amount of time between calibrations is 7 days, and the unit should be verified before each day of testing to ensure your tools are accurate. The accuracy of your equipment is extremely important, particularly if your reports will be used in litigious cases. In addition, the Reminder can be set up as ‘Remind only’ or ‘Must Be Done’.

Spell Checker – Spell check your documents using Microsoft Word or the provided Medical Spellchecker.

Automatically Read Shelf Heights – This is not used for an MCU™ system.

Voice Type – Change the type and speed of the voice interface. You may also turn the sounds and voices on and off by clicking on the knobs.

4. URFIO CONFIGURATION APPLICATION

The URFIO Configuration Application is the portion of the software that monitors the wireless configurations of the system (Figure 2-12).

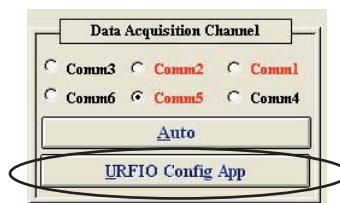


Figure 2-12. DAQ Channel

Clicking on the URFIO Configurator icon brings up the URFIO Configuration Tool Mapping screen (Figure 2-13). This screen displays which wireless channel the system is operating on and which tool is mapped to that current wireless channel. This screen should only be used when a new tool needs to be mapped or for troubleshooting purposes.

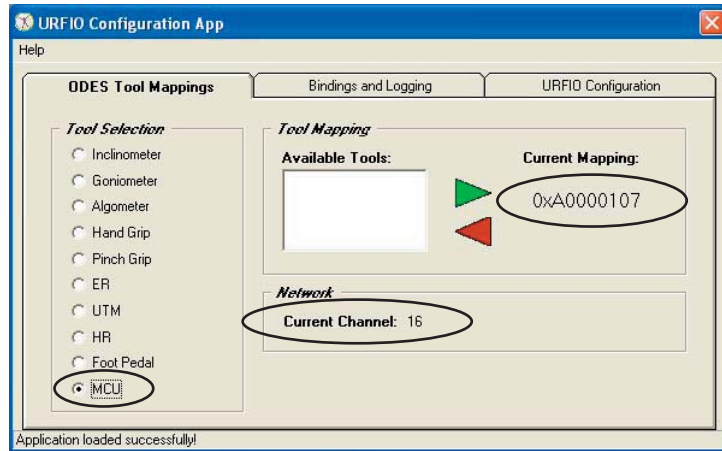


Figure 2-13. URFIO Configuration Tool Mapping

If a tool needs to be mapped: click on the tool name under Tool Selection, highlight the tool’s serial number under Available Tools, and then click the green arrow to map the tool; the serial number should appear under Current Mapping. To unmap a tool, click on the tool name under Tool Selection (the serial number must appear under Current Mapping), click on the red arrow; “Not Mapped” should appear under Current Mapping.

D. USER MANAGER

This screen allows you to add, edit, and remove users as well as set each user’s level of rights to the software (Figure 2-14).

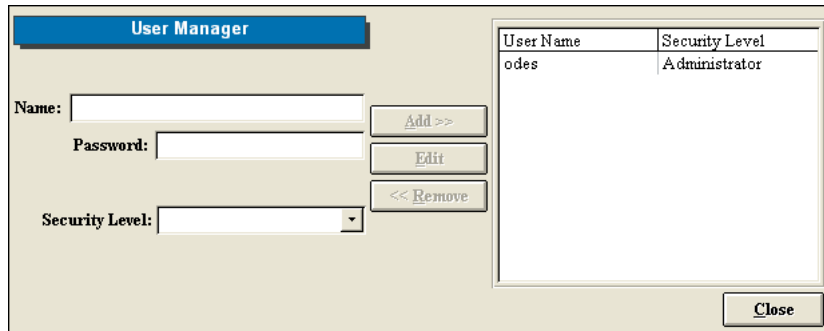


Figure 2-14. User Manager

To add a new user, enter a user’s name, password (case sensitive), and select a security level from the drop-down menu. Click **Add** to include the new user.

When the user signs into the software, he or she will use the name and password assigned in this screen.

Edit a user’s information by highlighting their name on the right hand side of the screen and clicking on **Edit**. Once the changes have been made, click on **Update**.

Delete a user by highlighting their name and then clicking on **Remove**.

Descriptions of the security levels:

Administrator – All rights

High – All rights except User Manager

Medium High - All rights except User Manager and removal of cases

Medium - All rights except Administration

Low Medium - All rights except Administration, Reports, removal of assigned protocols to a client, and deletion of tests

Low - All rights except access to client notes, Administration, Reports, and unable to edit, delete or create tests

Lowest - Only access to client information and client case information

E. IMPORT, EXPORT & ARCHIVE DATA

This screen allows you to import and export data with varying degrees of detail (Figure 2-15).

Step 1. Click **Browse** to locate the database you wish to import or export the data from. Highlight the desired database and click **Open**. The database information will be now listed. You will be prompted to include the ODES Database Password if you are importing or exporting from an ODES database that is in a zipped format.

Note that the imported/exported database cannot share the same name as an existing database. Rename the file and try again.

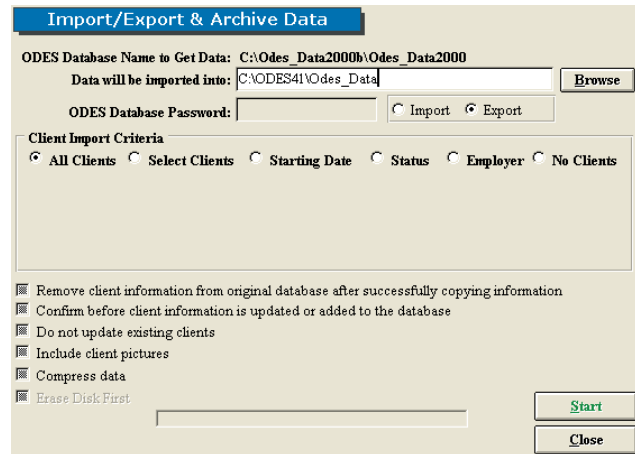


Figure 2-15. Import/Export & Archive Data

Step 2. Select whether you would like to import to your current database or export data from your current database to another.

Step 3. Select the Client Import Criteria:

All Clients – import/export all clients; new templates, custom tests, and super protocols are imported/exported as well

Selected Clients – import/export select clients; new templates, custom tests, and super protocols are imported/exported as well

Starting Date – import/export according to clients’ start date; new templates, custom tests, and super protocols are imported/exported as well

Status – import/export according to clients’ status; new templates, custom tests, and super protocols are imported/exported as well

Employer – import/export according to clients’ employer; new templates, custom tests, and super protocols are imported/exported as well

No Clients – import/export only new templates, custom tests, and super protocols

Step 4. Choose how you would like the data handled by clicking on the boxes next to the options.

Step 5. Once all of the parameters are set to your preferences, click **Start**.

Note that when an import/export is processed, the software will run a check of the tests. If any changes have been made to the standard tests, the software considers this as a new test and will include copies of both. You may wish to store the duplicates under protocol hibernation or delete them. However, be aware that deleting a test also deletes the data from that test in all patients’ files.

It is recommended that if you will be importing data obtained off-site to your main database, you should export the main database (no clients) to the local database you will be using. Therefore, when you import the data from your local database back to the main database, there will be no test duplicates since the software recognizes these as the same databases.

A progress screen will appear and then a notification will indicate whether the import/export was successful or not.

F. JOB DEMAND TEMPLATES

This screen allows you to create, edit, delete, and print Job Demand Templates (Figure 2-16). These templates can be used within the Job Demands screen that is accessed from the Home Screen.

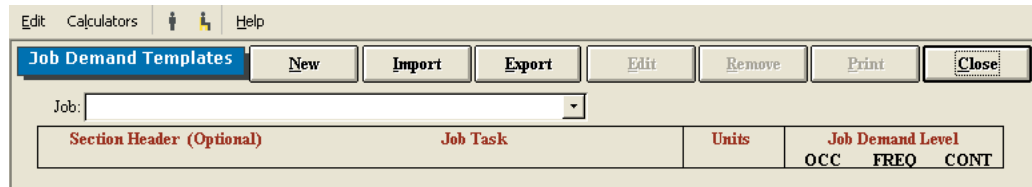


Figure 2-16. Job Demand Templates

Add a new Job Demand Template by clicking **New**. Enter the job title and source of the information (i.e. Job Site Analysis, Dictionary of Occupational Titles, Self Report, etc.).

The Section Header is optional; however, if Section Headers are used, the Job Demand Templates will be grouped by Section Header (i.e. lifting, positional tolerance, mobility, etc.) whenever the templates are printed.

Include details on job tasks, units of measurement, and the job demand level (OCCasional – 1-33%; FREQuent – 34-66%; CONstant – 67-100%). Click **Save** once you have added all the needed information.

Import templates by clicking **Import** and selecting the directory from which you will be retrieving the templates and the directory into which you will be importing the templates. You must also indicate whether you will be importing all the templates in the source ODES database or just the current template.

Print the Job Demands Templates by clicking **Print**. The report can also be printed by clicking **Export** to create the report as a Word document (if you have Microsoft Office installed on your computer), or by creating a report Snapshot (see the Snapshot section of this manual).

Edit a Job Demand Template by selecting the job from the drop-down menu, clicking **Edit**, and making any required changes.

Remove a Job Demand Template by selecting the job from the drop-down menu and clicking **Remove**.

Access a Job Demands Template within the Job Demands screen by selecting the job from the drop-down menu and clicking **Populate**. This will add the header, job task, job demand level, units, and information source to the appropriate fields. Complete the Ability Demonstrated fields, and determine whether there is a job match or not.

Add a Job Demand template from the Job Demands screen by clicking on **Add to Template**.

G. SUPERFICIAL TENDERNESS REPORTS

This screen allows you to create, edit, and delete Superficial Tenderness Templates. These templates can be accessed through the Superficial Tenderness protocol within the Self Reports screen (Figure 2-17).

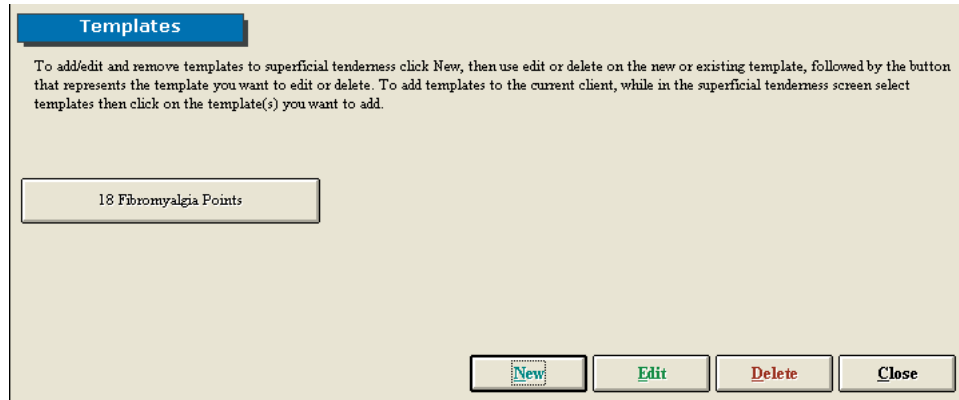


Figure 2-17. Superficial Tenderness Templates

Add a new template by clicking **New**.

Edit an existing template by clicking **Edit** and then selecting the template.

Remove an existing template by clicking **Remove** and then selecting the template.

H. PROTOCOL HIBERNATION

This screen allows you to place protocols, which may not be used often, in hibernation as well as remove protocols, which may be needed, from hibernation. Moving protocols in and out of hibernation does not delete the data or testing information. Note that protocol hibernation can also be accessed through the protocol pages (Figure 2-18).

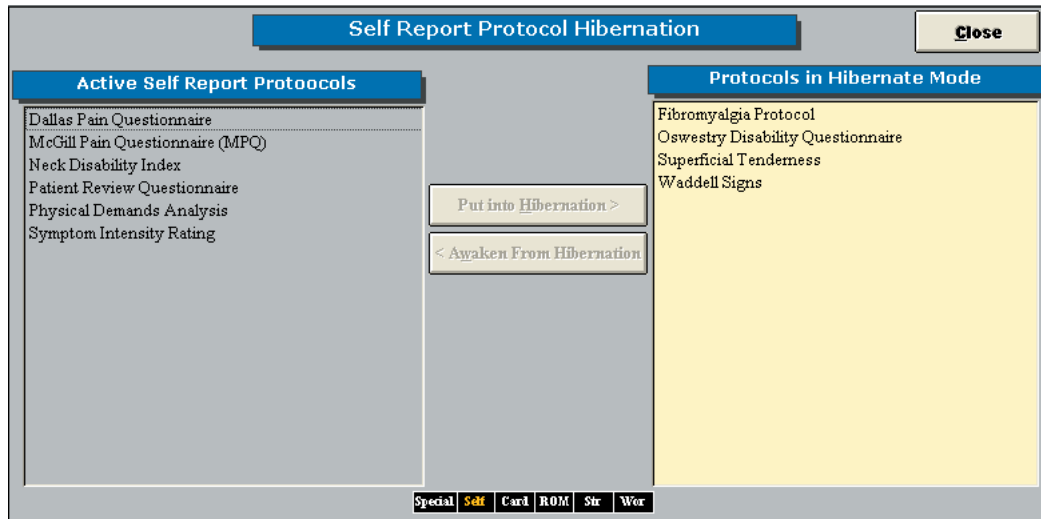


Figure 2-18. Protocol Hibernation

Hibernate a test by highlighting the test on the left hand side of the screen and then clicking **Put into Hibernation**. The test should now appear on the right screen and not the left one.

Bring a protocol out of hibernation by highlighting the test from the right hand side of the screen and then clicking **Awaken From Hibernation**. The test should now appear on the left screen and not the right one.

I. REMOVE CURRENT CASE

This screen allows you to delete the client case that has been selected from within the home screen. Note that once a case has been deleted, it cannot be retrieved.

Step 1. Remove the current client case by clicking **Remove Current Case**.

Step 2. A warning will appear prior to deleting data. Click **Yes** to remove the case.

V. TASKBAR (FIGURE 2-19)



Figure 2-19. ODES Taskbar

A. FILE DROP-DOWN MENU

1. DATABASE UTILITIES

This screen allows you to open a database, create a new database, rename an existing database, and remove an existing database (Figure 2-20).

Open a database by locating the database, double clicking the name in the Search Results field, and then clicking **Open**. After confirming that you would like to open the database selected, the home screen will appear with the selected database available to use. The blue title bar at the top of the screen should now read the opened database.

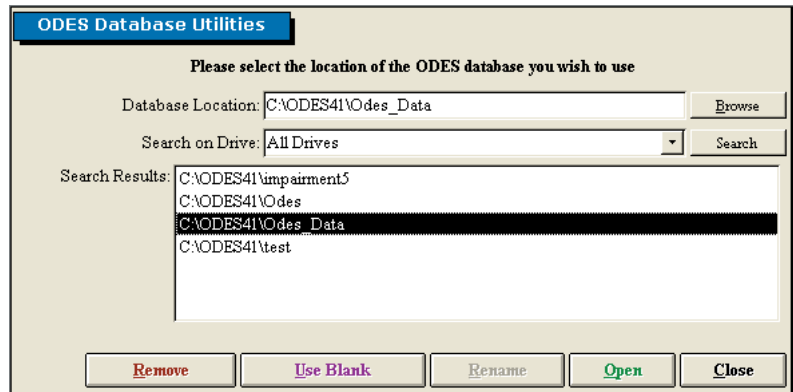


Figure 2-20. Database Utilities

Create a new database by typing in the new database name within the Database Location text field, clicking **Use Blank**, and then confirming you would like to create this new database.

Rename an existing database by locating the database you would like to change, double clicking the name in the Search Results field, modifying the name within the Database Location text field, clicking **Rename**, and then confirming you would like to rename this database.

Remove a database by double clicking the name in the Search Results field, clicking **Remove**, and then confirming you would like to delete this database.

Note that once a database has been removed, it can not be recovered by you or BTE Technologies.

2. COMPACT & REPAIR DATABASE

This screen allows you to repair any small errors that may occur due to networking (Figure 2-21).

Repair the database by clicking on **Compact & Repair**. A screen will pop up confirming you would like to repair the database currently in use.

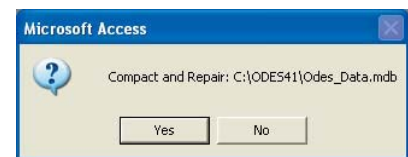


Figure 2-21. Compact & Repair Database Message

Another screen will appear once the repair is successful.

It is recommended that you compact and repair your database every one to two months.

3. BACK UP DATABASE

This screen allows you to back up your databases; this is highly recommended in the case your hard drive becomes irrecoverable and you cannot access your files (Figure 2-22).

Back up a database by locating the directory you would like to save the database to, selecting whether or not to use a password, selecting whether or not to back up the impairment ratings, selecting whether or not to erase the disk, and then clicking **Start Back up**.

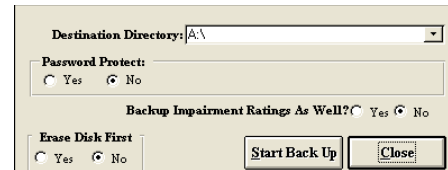


Figure 2-22. Back Up Database

Note that BTE Technologies cannot recover any lost or forgotten passwords that have been used for back ups.

It is highly recommended that you back up your database to a floppy disk, CD, or ZIP disk at the end of each day. A back-up reminder can be set within the Environment Settings Screen.

If you are using a laptop or will be transporting your computer, we recommend backing up your database prior to moving the system.

4. RESTORE DATABASE

This screen allows you to restore a previously backed up database (Figure 2-23).

Restore a database by locating the directory you would like to restore the database from, entering the password if necessary, selecting whether to keep the original name or not, selecting whether to restore the impairment ratings or not, and then clicking **Start Restore**.

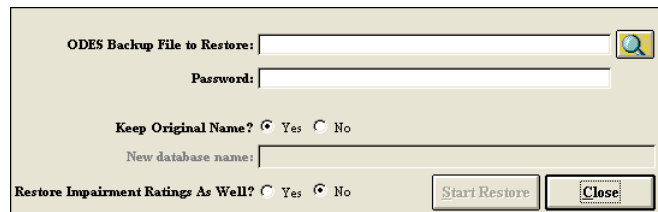


Figure 2-23. Restore Database

Note that if you choose to restore with a name that is the same as another database, the other database will be overwritten by this new restore.

After you restore a database, you must use the Database Location field to find the newly restored database.

5. LOG OFF AND EXIT

The Log Off option is to be used if you are going to be using ODES on and off throughout the day. By logging off rather than exiting, the speed of ODES will be enhanced.

It is recommended you exit the program at the end of each day and shut down the computer.

B. CALIBRATION DROP-DOWN MENU

This section is covered in Section 5 - Calibration & Verification.

C. STATISTICS DROP-DOWN MENU

1. EMPLOYER INFORMATION

Provides a summary of all Employers that are stored within the Case Information section of the ODES database. The report can be printed, exported to a snapshot file format, or exported to Microsoft Word (if Word is installed on the computer).

2. PATIENT STATUS INFORMATION

Provides a summary of all Client Statuses. If the status of a client has been added to the database in the Client Case page, the client will be added to this report. You may sort by last name or by the status of the client. The report can be printed, exported to a snapshot file format, or exported to Microsoft Word (if Word is installed on the com-

puter).

3. PATIENT INFORMATION

Provides a summary of all client information that has been added to the database. The report can be printed, exported to a snapshot file format, or exported to Microsoft Word (if Word is installed on the computer).

4. REFERRAL INFORMATION

Provides a summary of all referral sources that have been entered into the database. The report can be printed, exported to a snapshot file format, or exported to Microsoft Word (if Word is installed on the computer).

5. INSURANCE INFORMATION

Provides a summary of all insurance companies that have been entered into the database. The report can be printed, exported to a snapshot file format, or exported to Microsoft Word (if Word is installed on the computer).

6. STATISTICAL QUERIES

Allows you to query for information regarding existing clients by searching various criteria (Figure 2-24):

- Case Manager
- Employer
- Physician
- Attorney
- Referral Source
- Insurance Company
- Supervising Practitioner
- Status
- Pre/Post off of employment
- Start/End Date
- Injury Locations

The report provides detailed information on length of treatment, common injuries, and the number of clients being referred from a specific source.

Under report type, select 'Detailed' to obtain a list of the clients, and select 'No Details' to obtain the summary without client names.

Figure 2-24. Statistical Queries

The report can be printed, exported to a snapshot file format, or exported to Microsoft Word (if Word is installed on the computer).

7. REAL TIME ANALYSIS

Allows you to analyze the data from each individual client in detail. It also allows you to compare individual or multiple trials of any strength test that is recorded in the database. Real Time Analysis is useful for research, analyzing job demands, and client progress/tracking (Figure 2-25).

Step 1. Select the protocol to analyze.

Step 2. Select the test range.

Step 3. Specify whether you wish to analyze a specific trial or the average of the trials relating to the specific protocol for a specific client.

Step 4. Specify which position you would like to graph.

Step 5. Indicate the time frame you would like to analyze (optional).

Step 6. Click **Analyze** and a graph of the real time analysis will appear.

Figure 2-25. Real Time Analysis

8. EXPORT CERVICAL DATA

Allows Multi-Cervical users participating in International research with the Melbourne Protocol to export raw data into a program outside of ODES. This allows the user to work with the data in a spreadsheet format if so desired (Figure 2-26).

Step 1. Select the type of testing data you wish to export.

Step 2. Select the fields you wish to include when exporting.

Step 3. Specify your target population (including client status, gender, and age range) or target dates.

Step 4. Select a file name and a directory – your data will be saved as a text file here.

The file name that you chose will now be written in the ‘File Name to Export Into’ line.

A confirmation message will appear once the export is successful.

In order to locate the exported data, close ODES and return to the Windows Desktop. Open the program into which the data was exported (e.g. Excel). Click on the **Data** tab, select **Import External Data** and then **Import Data**. Locate the text file which was just exported, open the file, and follow the directions given. The exported data should now appear in the spreadsheet.

Figure 2-26. Export Cervical Data

9. EXPORT ADMIN INFORMATION

Allows you to export the administrative information related to the various protocols, super protocols, and templates (Figure 2-27).

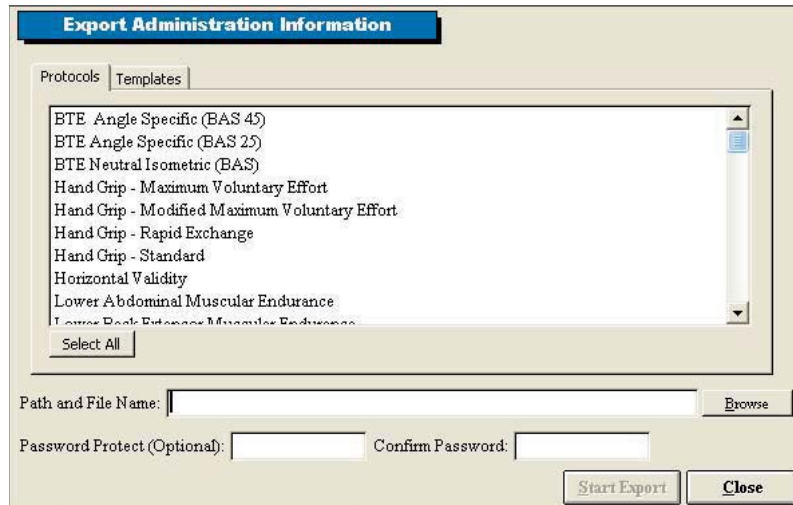


Figure 2-27. Export Administration Information

- Step 1.** Select which protocols, super protocols, or templates you would like to export.
- Step 2.** Click **Browse** to find the directory you would like to export into.
- Step 3.** Enter a password (optional) and click **Start Export**.

10. IMPORT ADMIN INFORMATION

Allows you to import the administrative information related to the various protocols, super protocols, and templates (Figure 2-28).



Figure 2-28. Import Administration Information

- Step 1.** Locate the directory you would like to import from.
- Step 2.** Enter the password if needed and click **Start Restore**.

D. SNAPSHOTS

This screen allows you to create PDF-like files from reports so that they may be emailed without compromising the validity of the document (Figure 2-29). A snapshot viewer executable file is bundled with the report file, which will allow individuals without ODES (e.g. insurance companies and manufacturing plants) to view the reports.

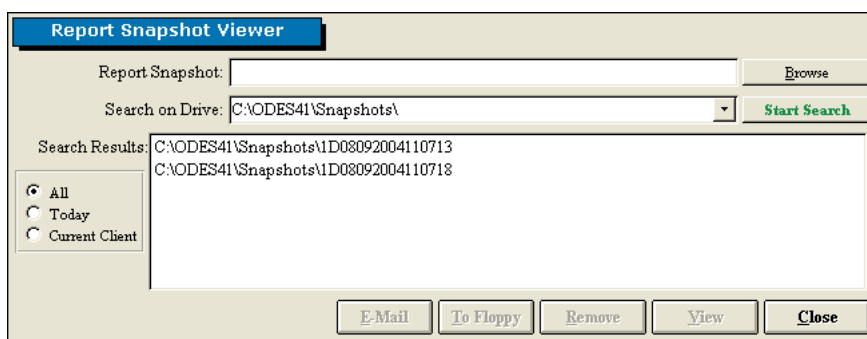


Figure 2-29. Report Snapshot Viewer

1. CREATING A SNAPSHOT

Step 1. Click on **Reports** within the Home Screen.

Step 2. Preview the report you would like to snapshot.

Step 3. Within the taskbar, select **Export** then **Create a Report Snapshot**.

The report will now be exported into a report snapshot, and a message will appear once the save is successful.

2. EMAILING, SAVING, REMOVING, AND VIEWING A SNAPSHOT

Step 1. From the Home Screen taskbar, click on **Snapshots**.

Step 2. Locate the snapshot you wish use. Double click on the file name within the Search Results field, and the file name should appear within the Report Snapshot text field.

Step 3. Click on whichever operation (**Email, To Floppy, Remove, or View**) you would like to perform.

If you choose to email the snapshot, a message will appear asking if you would like to include the snapshot viewer. If the email recipient does not have ODES or has never viewed a snapshot before, you must email the viewer. Make sure the recipient is aware that the viewer is included with the email and it must be used to view the report.

E. FORMS DROP-DOWN MENU

This menu offers a variety of questionnaires and forms available for printing. The client can fill out these forms and the information can be entered manually into the software.

F. UTILITIES DROP-DOWN MENU

1. STANDING/SITTING TOLERANCE REPORT

Using the standing and sitting icons within the taskbar, you can track a client’s tolerance of standing and sitting and with respective to time (Figure 2-30).

Click on either the standing or the sitting icon to begin the timer. Once the client can no longer tolerate the chosen option, click **Stop**.



Figure 2-30. Standing/Sitting Tolerance

The Standing/Sitting Tolerance Report tabulates the date and time started, the position of the client, the duration of time the client was able to stand or sit, the total amount of time standing or sitting, and the percentage of total standing vs. total sitting. Note that the duration of time is rounded to the closest minute.

G. CALCULATORS DROP-DOWN MENU

1. CALCULATOR

Calculator for basic arithmetic needs

2. DEVIATION CALCULATOR

Calculator for finding the standard deviation of at least two values

H. DIGITAL CAPTURE

This screen allows you to insert a variety of pictures with accompanying headings and comments. This feature is useful for showing clients how to perform tasks or exercises (Figure 2-31).

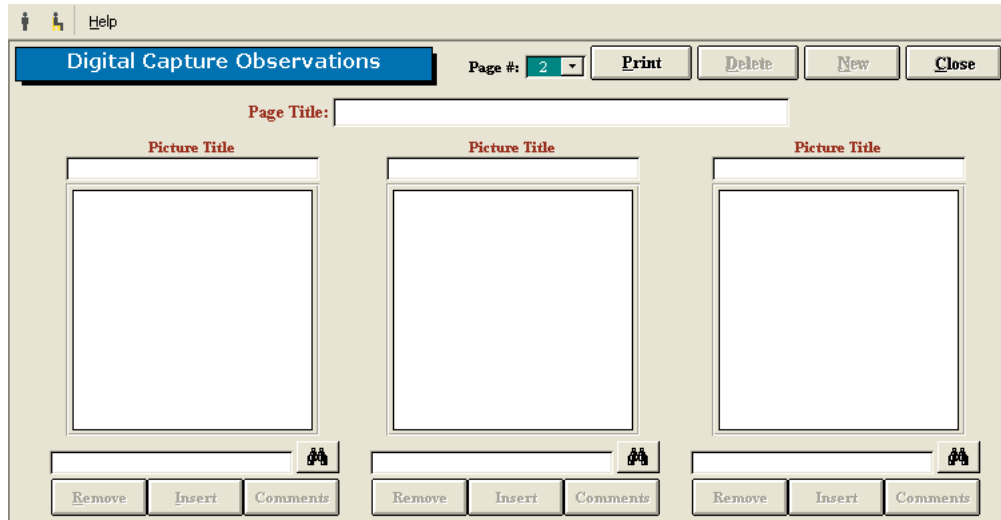


Figure 2-31. Digital Capture

- Step 1.** Take the picture with a digital camera.
- Step 2.** Download the picture to your hard drive using your camera software.
- Step 3.** Within the Digital Capture Observations screen, click on the binoculars icon to locate the picture in the directory it was saved and click **Open**.
- Step 4.** Click **Insert** and the picture should appear in the large box.
- Step 5.** Enter a picture title and any comments if desired. The comments are included when a page of pictures is printed.
- Step 6.** A picture may be removed by clicking **Remove** below the file name text field.
- Step 7.** An entire page of pictures may be printed, deleted, and created by using the **Print**, **Delete**, and **New** icons at the top of the screen.

I. HELP DROP-DOWN MENU

1. HELP MANUALS

A PDF version of this MCU™ manual is located here. If you have loaded the Adobe Acrobat Reader and the help manuals onto your hard drive, you will be able to access the manuals directly. However, if you have no loaded software and manuals, you will be prompted to insert the ODES CD in your disk drive. You can load Adobe Acrobat Reader for free at www.adobe.com.

2. ABOUT

A screen showing the attributes of your specific MCU™ and ODES software. This is a helpful screen to view whenever you need to call customer service.

03 - CLIENT INFORMATION

Introduction 3

Adding a Client 3

Adding a Case 4

 Adding a Family Physician/Specialist/Attorney/
 Referral Source/Insurance Company/Employer 4

 Adding Current Medications 4

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 Start/End Time 5

 Evaluator 1 and 2 5

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Adding and Removing Tests 6

CLIENT INFORMATION

I. INTRODUCTION

The client information screen can be accessed from the center of the home screen, just above the client drop-down menu (Figure 3-1).



Figure 3-1. Client Information Icon

ADDING A CLIENT

In order to utilize the software, a client must first be entered. It is recommended to start by creating a sample client in order to get familiarized with the software without having to worry about losing valuable information (Figure 3-2).

 A screenshot of a 'Client Information' form. The form is titled 'Client Information' in a blue header bar. Below the title is a 'File Number:' field. The form is divided into several sections:

- General Information:** Includes fields for Title (dropdown), First, Middle, and Last names. It also has radio buttons for Gender (Male/Female), an Address field, City (dropdown), State (dropdown), Zip Code, and Country (dropdown, currently set to U.S.A.). There are also fields for Home Phone and Work Phone (with an Ext. field).
- Identification Information:** Includes fields for Health Card Number, SSN, Version Code, and Birth Date (with a calendar icon).
- Personal Information:** Includes radio buttons for Marital Status (Single/Married/N/A), a text field for Allergies, radio buttons for Dominant Hand (Left/Right), a dropdown for # of dependents, and a dropdown for Race (currently set to Caucasian).
- Emergency Contact Information:** Includes fields for Contact Name and Contact Phone, and a red 'Emergency Information:' label.

 A 'Close' button is located at the bottom right of the form.

Figure 3-2. Client Information

Step 1. Click on **Client Information** within the Home Screen.

The Client Information screen will appear.

Step 2. Click on **New Client**.

Step 3. Enter all the demographics of the client.

The required information includes the name, gender, birth date, and dominant hand. This data is required for tests which compare the client's objective measurements with a normative database.

Step 4. Click **Close** once all the information is entered.

The client is now stored in the database and should appear in the drop-down menu within the Client Information screen.

III. ADDING A CASE

All clients must have a case associated with their file.

Within the Client Information screen, click **New Case**.

The Client Case Information screen allows you to enter information regarding the client's physician, medications, referral sources, employment, insurance, ICD-9 codes, etc. (Figure 3-3).

Figure 3-3. Case Information

A. ADDING A FAMILY PHYSICIAN/SPECIALIST/ATTORNEY/REFERRAL SOURCE/INSURANCE COMPANY/EMPLOYER

Enter a new contact by double clicking on the white text box. A new window will appear that allows you to add in the contact information. After entering in the information and closing the new window, the contact's name will appear in the drop-down menu for that particular contact type. This data will be saved in your database so the information will only have to be entered once.

B. ADDING CURRENT MEDICATIONS

A list of client medications can be added by double clicking in the white text box. The Current Medications screen will appear and this allows you to enter in the name of the medication as well as a description of its purpose and usage. If the client is taking a medication that has previously been entered, select the name of the medication from the drop-down menu and enter the remaining information by either typing it in or selecting it from a drop-down menu. Once all the information has been added, and the screen is closed, the Current Medications text box will be populated with all of the medication names.

C. CLIENT PHOTOS

This screen gives you the ability to add a client's picture into his or her file, and this in turn will be incorporated into that client's reports. You must first take a picture with a digital camera and then save the picture to your hard drive. Once that is done, click on the large white box in the upper right hand corner of the Client Case page or click on **Picture** at the bottom right hand corner of the page. Click **Browse** to locate the picture and then

click **Insert** to add the photo.

D. CLIENT STATUS

The client status field is useful for keeping track of the amount and type of assessments you have completed. Client status can also be used as a criterion under Statistical Queries. The drop-down menu should already be populated with status options, but you can also add, edit or remove status information by double clicking on the blank text field.

E. START/END TIME

The assessment start time and date are automatically logged on the Client Case page when you click on New Case in the Client Information Screen. In order to record an end time, simply double click in the corresponding blank field once the assessment is completed, and the current time will be entered into the field. You may also manually enter a time by typing in the text field. The evaluation times will be displayed on the cover sheet of your report.

F. EVALUATOR 1 AND 2

The Evaluator 1 and 2 fields allow the evaluator(s) to enter their name and credentials into the Client Case page. Enter a new Evaluator by double clicking in text field. A screen will pop up which will allow you to enter in the Evaluator's name, designation, occupation and registration number. This information will be included in the front of the report and beneath the signature sign-off line (if a signature is requested when printing the report). Please note this is not a feature of all reports printed in ODES. Click the Allow Digital Signature checkbox if you would like to add your signature to the software; this is a useful tool if you are anticipating e-mailing reports. See Section 2-IV-B on directions for adding a digital signature.

G. ADDING IN ICD-9 CODES

ICD-9 codes can be stored within ODES for later use. Double click the blank ICD-9 Codes box on the Client Case page, and a screen will pop up allowing you to select the proper codes. To assign an existing ICD-9 code to your client, select the code from the Codes in Database drop-down menu and click **Add**. Create new codes by double clicking on the ICD-9 Codes in Database field and entering in the code and description. Once an ICD-9 code has been added to the database, it will be available from the drop-down menu for future clients. In addition, once a code is entered, it is available for use in the note templates.

H. AREAS OF COMPLAINT

A client's areas of complaint may be obtained from his or her responses to the Pain Diagram or the Ransford Pain Diagram. To enter the information into the database, double click on the large Area of Complaint Information box or click **Add** in the Area of Complaint Information section of the Client Case page. A pain diagram will be displayed, which will allow you to enter in location information and pain descriptions. After clicking on the diagram location where the client presents a complaint, complete the chart that is below the body diagrams. Once you have entered all the information, click **Add**, and it will appear on the Client Case page.

I. LOCKING CASES

This feature allows the evaluator to prevent other individuals from modifying a case. In order to access a locked case, a password must be entered. Please note that it is your responsibility to remember this password. If the password is forgotten, our technical support/customer service staff at BTE Technologies, Inc. will not be able to help you retrieve it. Lock the case by clicking **Lock Case** at the bottom of the Client Case page. A screen will

appear prompting you to enter and confirm a password. Click OK when you are done. Once locked, you will see the Lock Case icon change to Unlock Case.

Once the Client Case page is complete, you may click the **Close** button located at the bottom right hand corner of the page; this will bring you back to the Client Information page, and a case number will now be associated with your client. Click the **Close** button in order to return to the Home Screen. The new client will now be listed in the drop-down menu underneath the Client Information button. To quickly access a client's information screen, double click on the client's name. You can also quickly access the client's case information by double clicking on the case number under the client name drop-down menu.

III. FINDING A CLIENT/CASE

ODES allows you to search for a client or case using various probes. Within the Client Information screen, click on **Find a Client** or **Find a Case** to access these options (Figure 3-4).

You may search using any of the fields. Remember that the more fields which are selected, the narrower the search. If you're having trouble finding a case or a client, try selecting only one or two fields to broaden the search.

Once you have populated the fields you wish to search by, click on the binoculars icon to retrieve the search results.

Open a client or case file by clicking on the arrow button to the left of the name or case number.

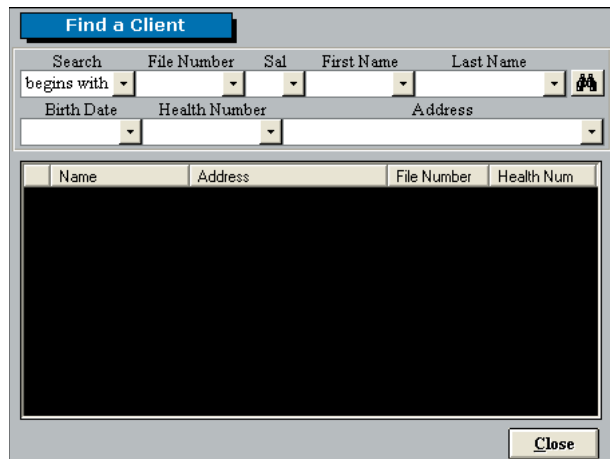


Figure 3-4. Find a Client

IV. ADDING AND REMOVING TESTS

Once you had added your client into ODES you can assign tests to the client.

From the Home Screen, click on Self Reports, Cardio, ROM Tests, Strength Tests, Work Sim Tests, or Clinical Tests. The same basic screen appears for each icon: the box on the left lists the tests related to the icon you selected, and the box on the right lists all the tests assigned to the client (Figure 3-5).

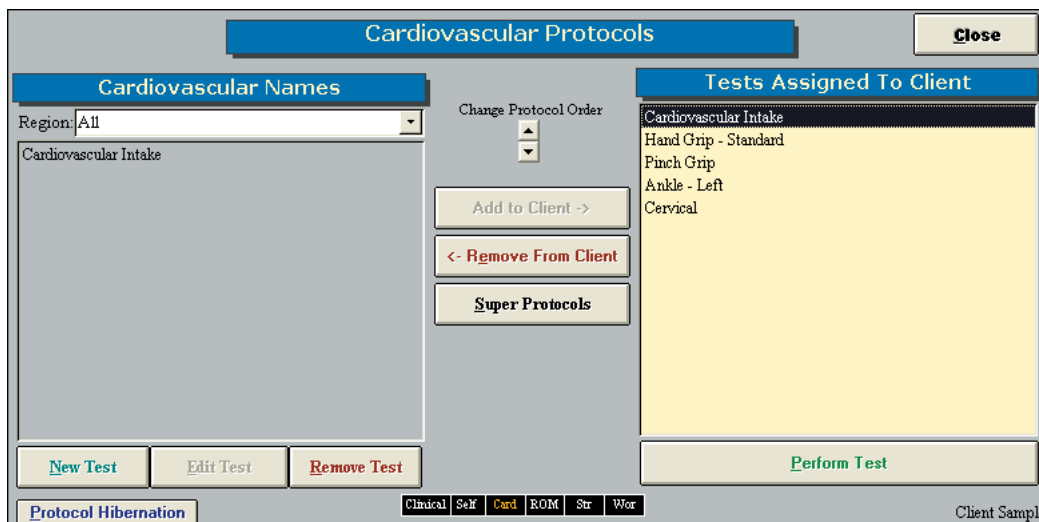


Figure 3-5. Adding and Removing Tests

Add a new test to the client by either highlighting the test name in the left box and clicking **Add to Client** or by double clicking on the test name in the left box.

Once the test has been assigned to the client it will appear in the right box.

Change the order the tests will be completed in by highlighting the test in the right box and use the up and down arrows under Change Protocol Order.

Perform the test assigned to a client either by highlighting the test in the right box and clicking on **Perform Test** or by double clicking on the test in the right box.

Remove a test from a client by highlight the test in the right box and clicking **Remove From Client**.

You can access the other types of tests without having to go back to the Home Screen every time by clicking on the desired test-category box displayed at the bottom of the Protocol Screen.

04 - TEMPLATES

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TEMPLATES

Each of the Notes pages in ODES has a template section that allows you to create any number of templates. This feature allows you to specify which client information you would like to include on each report and in which location. For example, the client's name, date of injury, and injury locations could be inserted in the upper left hand corner of a report. This feature speeds up reporting time, improves efficiency, and hence, profitability.

You can find pre-programmed templates or create your own templates within the following Home Screen categories:

- History
- Testing Analysis
- Custom Note
- Impairment
- X-Rays/Lab
- Examination
- Recommendations
- Progress Analysis
- Return to Work
- Referral
- Diagnosis
- Cover Letter

I. PRE-PROGRAMMED TEMPLATES

To access the pre-programmed templates, click on one of the categories listed on the left side of the Home Screen. Click on the template icon in the lower right hand corner of the screen (Figure 4-1).



Figure 4-1. Template Icon

This will bring you to the main Templates screen (Figure 4-2).

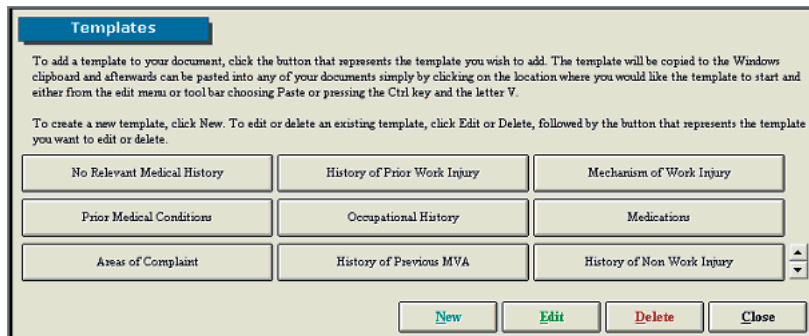


Figure 4-2. Main Templates Screen

Step 1. To view or edit a template, first click on **Edit**; the Edit icon should change to Cancel Edit. Next click on the pre-programmed template you wish to use.

A screen will appear with the generic template code (Figure 4-3).

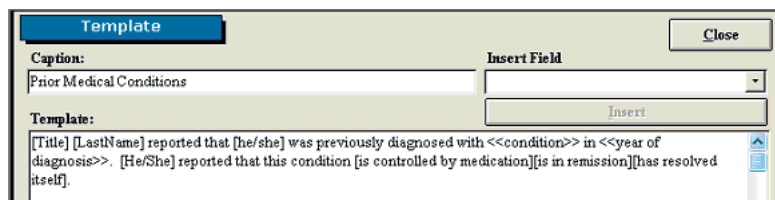


Figure 4-3. Generic Template Code

Step 2. Highlight the code and either press **CTRL-C** on your keyboard or pull down the Edit menu in the taskbar and select **Copy**. This will copy the code to your clipboard.

Step 3. Click the **Close** icon within the pre-programmed template's screen. This will return you to the main Templates screen.

Step 4. Click **Cancel Edit** and then select the template you just viewed. This will bring you to the corresponding screen (Figure 4-4).

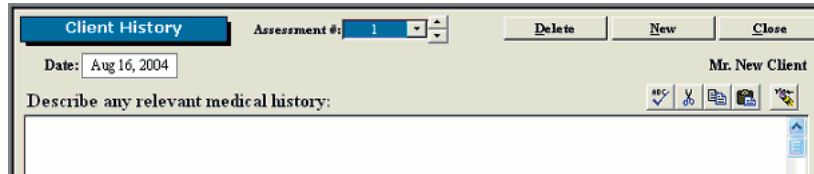


Figure 4-4. Blank Notes Screen

Step 5. While in the home template screen, click within the white text box to place the cursor and paste in the code. You can paste by either pressing **CTRL-V** on your keyboard, clicking on the **Paste** icon within the home template screen, or pulling down the Edit menu in the taskbar selecting **Paste** (Figure 4-5).

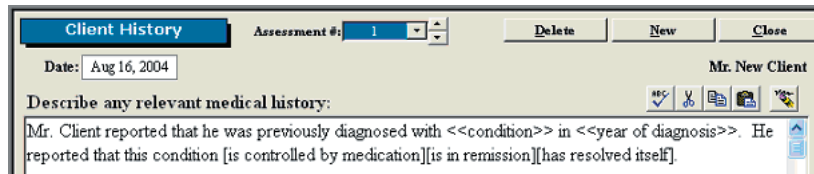


Figure 4-5. Updated Template Code

The code will be updated with the client's information, but you must still populate the fields with carets and select which bracketed options apply.

Note that any client demographics within brackets - [] - will automatically be populated with the client's information that has been entered in the client information and case screens (i.e. title, name, gender). All other information which is bracketed but isn't available from these screens will remain intact until deleted. This is typically used when there are several options to describe the situation and you must pick the most applicable one (i.e. condition is either controlled by medication, in remission, or has resolved itself). Any text within carets - << >> - is intended to alert the evaluator to fill in the information (i.e. name of the condition and year of the diagnosis).

Edit a pre-programmed template by clicking **Edit** in the main Templates screen and selecting the template you wish to modify. You can then add fields by selecting the desired field from the Insert Field drop down menu and clicking **Insert** or delete fields using the delete key on your keyboard. The text may also be modified as you see fit.

To **delete** any template, first click the **Delete** icon in the main Templates screen; the Delete icon should change to Cancel Delete. Next click on the pre-programmed template you wish to delete.

II. CUSTOM TEMPLATES

To create or access a custom template, click on one of the categories listed on the left side of the Home Screen. Click on the template icon in the lower right hand corner of the screen (Figure 4-5).



Figure 4-6. Template Icon

This will bring you to the main Templates screen (Figure 4-7).

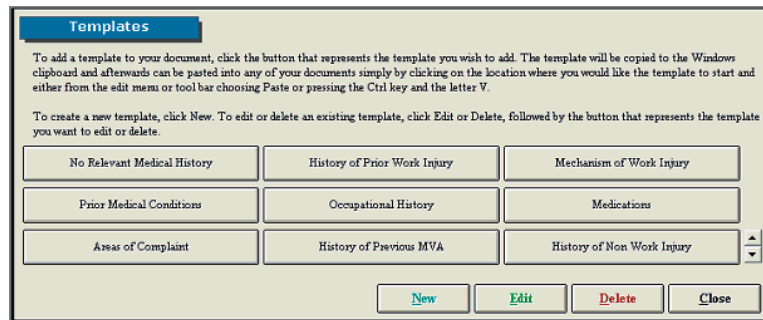


Figure 4-7. Main Templates Screen

Step 1. Create a new template by clicking on **New**. A new icon will appear within the main Templates screen.

Step 2. To view the template, first click on **Edit**; the Edit icon should change to Cancel Edit. Next click on the template you just created.

A screen will appear with a blank text box (Figure 4-8).

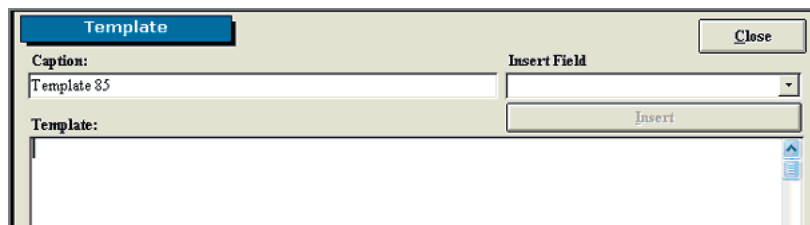


Figure 4-8. Blank Template

Within this screen you can change the name of the template as well as create the generic code by inserting fields and typing text.

Step 3. Begin by writing what you wish to include in the report, but use the merge fields when you would like information automatically populated. The software already includes multiple pre-programmed merge fields which are listed under the Insert Field drop down menu.

Insert a merge field by selecting the field from the Insert Field drop down menu and clicking **Insert**. The merge field will be inserted where the text cursor is located. The merge field should have brackets - [] - around the text.

You may create your own merge fields by typing the options you would like to include and placing brackets around each one. This is useful when there are several options to describe the situation and you must pick the most applicable one (i.e. "client arrived [early][on time][late] for the assessment...").

You can also include characters which alert you to personalize a field for the client. This is useful when you need to include information which is different for every client but must be included in the report (i.e. "client has been diagnosed with <<Enter Diagnosis>> on <<Enter Date>> by a <<Enter Specialist>>..."). The pre-programmed templates use carets - << >> - to bring your attention to the field, but you may use any characters you like (Figure 4-9).

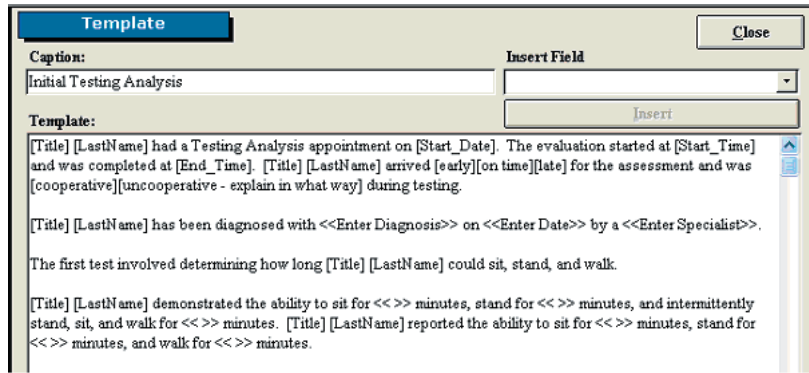


Figure 4-9. Custom Template Code

Step 4. Once you have finished creating the code, highlight the code and either press **CTRL-C** on your keyboard or pull down the Edit menu in the taskbar and select **Copy**. This will copy the code to your clipboard. Next, click the **Close** icon within the custom template’s screen. This will return you to the main Templates screen.

Step 5. Click **Cancel Edit** and then select the template you just viewed. This will bring you to the corresponding screen (Figure 4-10).

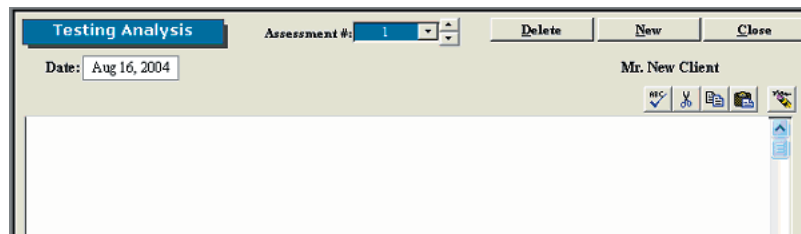


Figure 4-10. Blank Notes Screen

Step 6. While in the home template screen, click within the white text box to place the cursor and paste in the code. You can paste by either pressing **CTRL-V** on your keyboard, clicking on the **Paste** icon within the home template screen, or pulling down the Edit menu in the taskbar and selecting **Paste** (Figure 4-11).

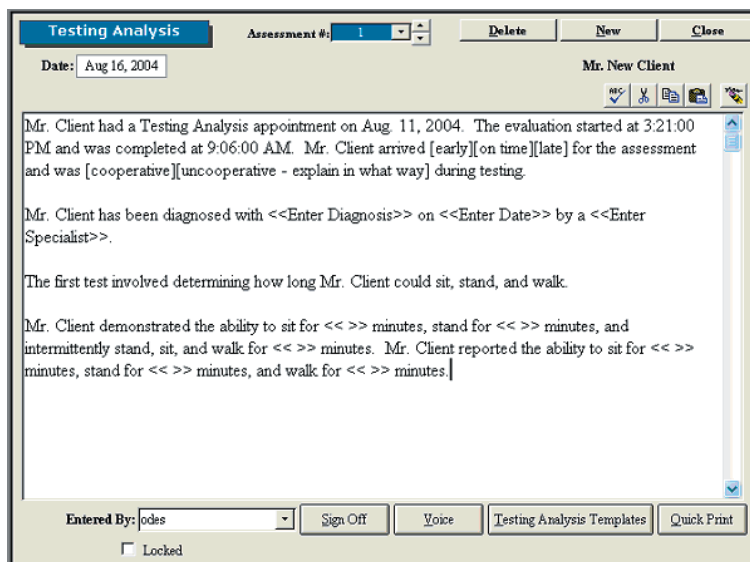


Figure 4-11. Updated Custom Template Code

The code will be updated with the client’s information, but you must still populate the fields

with carets and select which bracketed options apply.

Edit a custom template by clicking **Edit** in the main Templates screen and selecting the template you wish to modify. You can then add fields by selecting the desired field from the Insert Field drop down menu and clicking Insert or delete fields using the delete key on your keyboard. The text may also be modified as you see fit.

To **delete** any template, first click the **Delete** icon in the main Templates screen; the Delete icon should change to Cancel Delete. Next click on the pre-programmed template you wish to delete.

05 - CALIBRATION & VERIFICATION

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CALIBRATION & VERIFICATION

I. INTRODUCTION

Calibration is an important component of the Multi-Cervical™ system. Since one of the main attributes of the system is the ability to track the progress of your patients, it is essential that the equipment is always giving accurate feedback. Therefore, we recommend calibrating every 7 days and verifying the beginning of every day.

As shown in Section 2 under the Administration Menu overview, reminders may be set for calibrations and verifications. There is also an option of requiring that the calibration and verification must be done.

II. PERFORMING THE CALIBRATION

Calibration may be performed for the head braces, halo (2 locations), and the seat.

Access the Calibration Screen by selecting **Calibrate FOCUS & MCRP** from the Calibration drop-down menu, which is located in the taskbar (Figure 5-1).

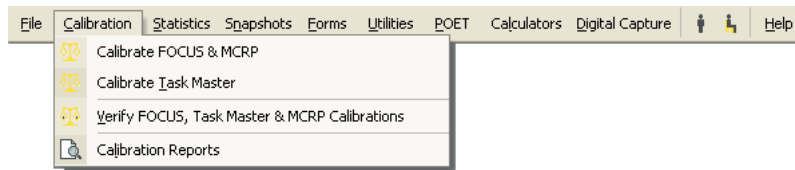


Figure 5-1. Calibration Drop-Down Menu

The main calibration screen will appear (Figure 5-2). Make sure that under Calibration Type, which is located in the upper left of the screen, Manual is selected. The calibration screen also has the Detail On feature, which allows you to directly view the voltage values of any tool that can be calibrated; this is useful when troubleshooting.

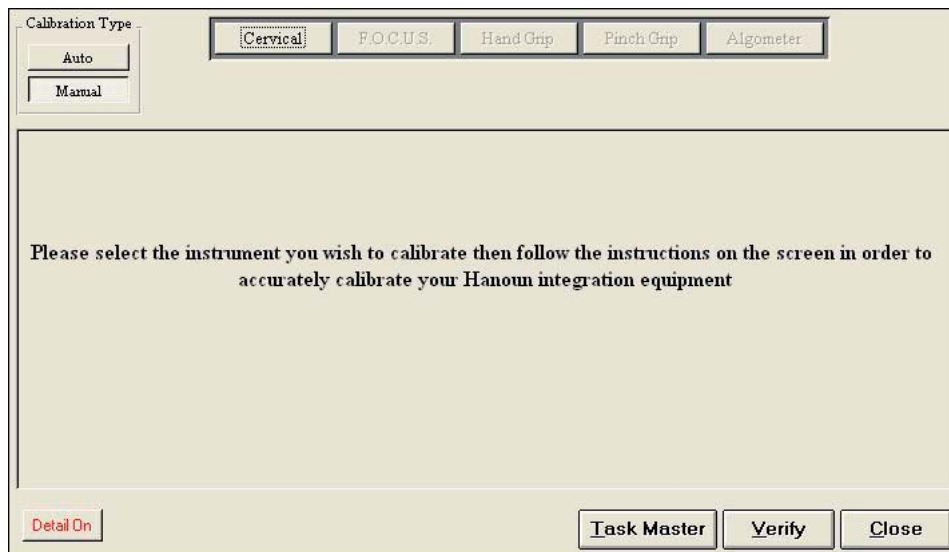


Figure 5-2. Main Calibration Screen

Select the **Cervical** icon from the main calibration screen to bring up the MCU™ calibration screen (Figure 5-3).

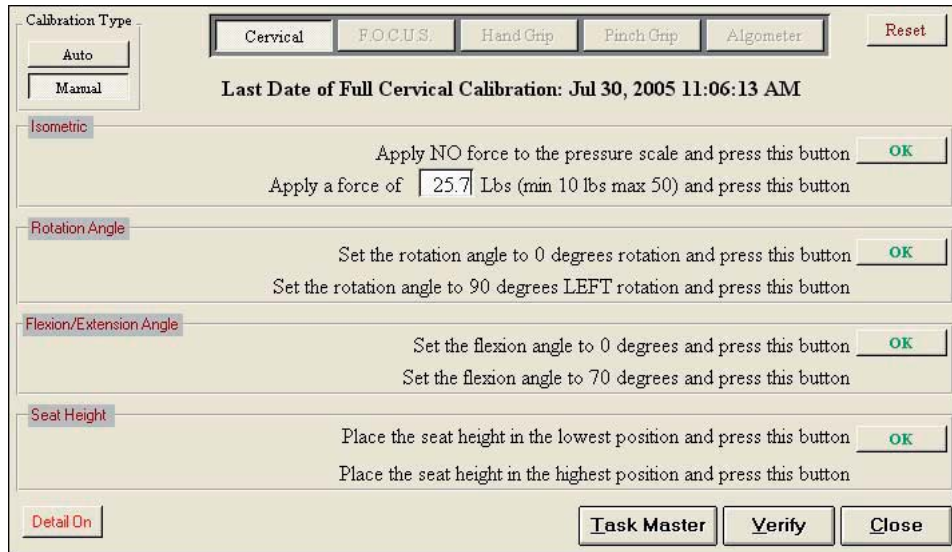


Figure 5-3. Cervical Calibration Screen

The screen will always indicate the last day of successful calibration in addition to the amount of weight used for the last calibration.

Step 1. Secure the head brace you wish to calibrate to the calibration plate. Make sure the RJ45 cable is plugged into the head brace as well to the jack closest to the front of the unit on the top of the MCU™ (Figure 5-4). Click the first **OK** on the calibration screen.



Figure 5-4. Preparing Head Brace for Calibration

Step 2. Place the calibration block on the head brace (Figure 5-5).

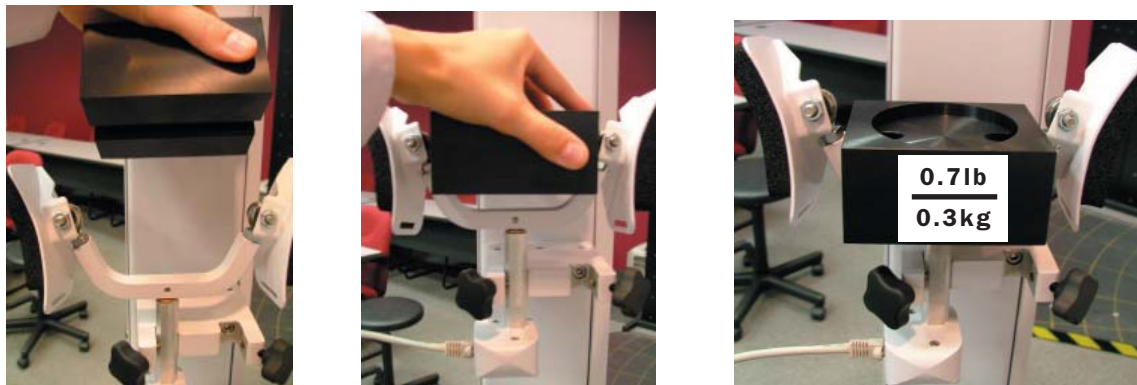


Figure 5-5. Placing Calibration Block on Head Brace

Step 3. Place the calibration weight(s) on the calibration block (Figure 5-6). Enter the amount of weight you are using to calibrate (remember to add the weight of the calibration block, which is 0.7lb/0.3kg) in the calibration screen and then click **OK**.



Figure 5-6. Calibrating the Head Brace

Step 4. Remove the calibration weights from the calibration block before proceeding with the rest of the calibration.

Step 5. If it isn't already, set the halo rotation to 0 degrees (Figure 5-7). Click **OK** on the calibration screen.



Figure 5-7. Halo at 0° Rotation

Step 6. Unlock the rotation pin, set the halo rotation to 90 degrees left, and then lock the rotation pin (Figure 5-8). Click **OK** on the calibration screen.



Figure 5-8. Halo at 90° Rotation

Step 7. Unlock the rotation pin, rotate the halo back to 0 degrees, and then lock the rotation pin.

Step 8. If it isn't already, set the halo flexion/extension angle to 0 degrees and insert the ROM stop pin (Figure 5-9). Click **OK** on the calibration screen.



Figure 5-9. Halo at 0° Flexion/Extension

Step 9. Remove the ROM stop pin, set the halo flexion/extension angle to 70 degrees flexion, and then insert the ROM stop pin (Figure 5-10). Click **OK** on the calibration screen.

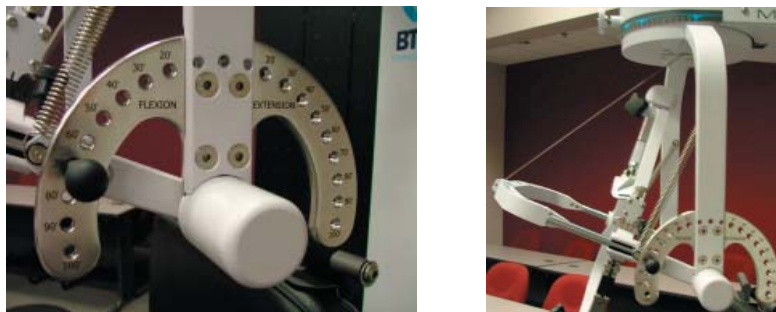


Figure 5-10. Halo at 70° Flexion

Step 10. Remove the ROM stop pin, set the halo flexion/extension angle back to 0 degrees, and insert the ROM stop pin.

Step 11. If it isn't already, lower the seat height to its lowest position (Figure 5-11). Click **OK** on the calibration screen.



Figure 5-11. Seat Height at Lowest Position

Step 12. Make sure the seat back is at its lowest position, and then raise the seat height to its highest position (Figure 5-12). Click **OK** on the calibration screen.



Figure 5-12. Seat Height at Highest Position

Step 13. Once the device has been successfully calibrated, a screen will appear requesting the name of the individual who just completed the calibration.

III. PERFORMING THE VERIFICATION

It is recommended that the accuracy of the device be verified after calibration. In addition, verification should be completed prior to testing each day or after the equipment has been set up.

Note that verification may only be performed on the head braces.

The Verification Screen can be accessed under the Calibration menu within the taskbar or within the individual tool calibration screens (Figure 5-13).

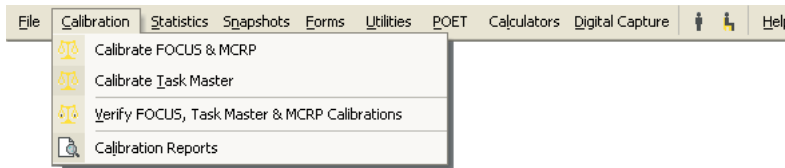


Figure 5-13. Calibration Drop-Down Menu

The main verification screen will appear (Figure 5-14).

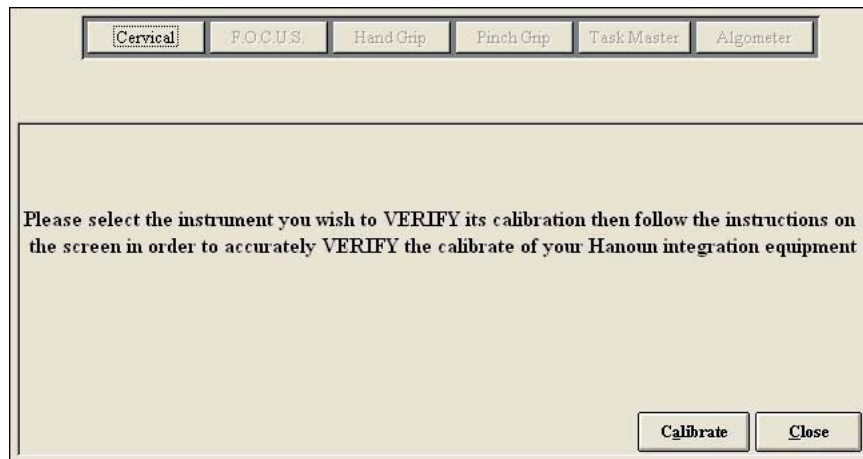


Figure 5-14. Main Verification Screen

Select the **Cervical** icon from the main verification screen to bring up the MCU™ verification screen (Figure 5-15).

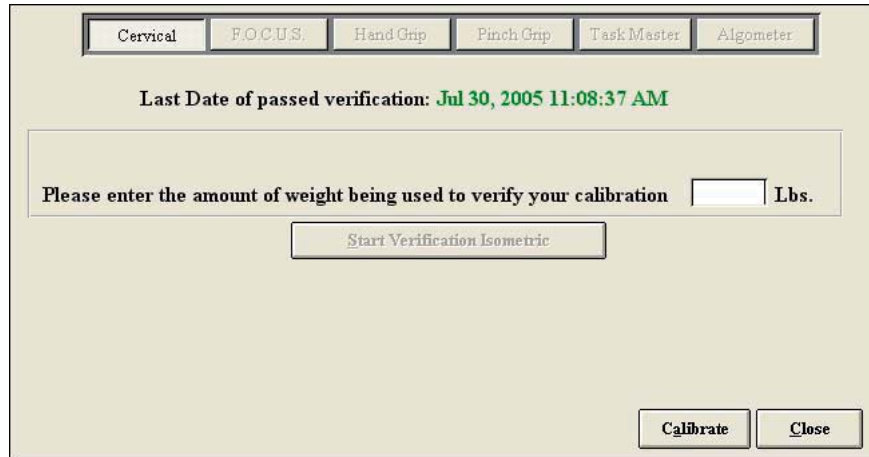


Figure 5-15. Cervical Verification Screen

The screen will always indicate the last day of successful verification.

The verification tools and process are the same as calibration. However, **you must make sure to use a different amount of weight for the verification than you did for the calibration.** Lastly, remember to include the weight of the calibration fixture, which is 0.7lb.

Once the device has been successfully verified, a screen will appear requesting the name of the individual who just completed the calibration. In addition, the verification screen will show the weight that you entered compared to the weight that the software calculated.

IV. CALIBRATION REPORTS

To print or view the calibration and verification reports, go to the Calibration menu within the taskbar and then Calibration Reports (Figure 5-16).

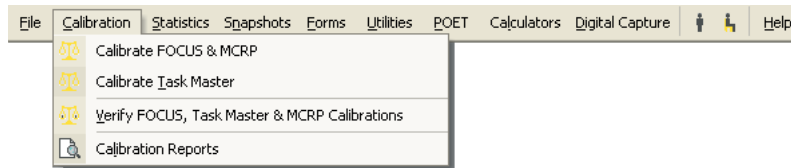


Figure 5-16. Calibration Drop-Down Menu

You may filter the calibration report according to latest calibration, all calibrations, or date range (Figure 5-17).

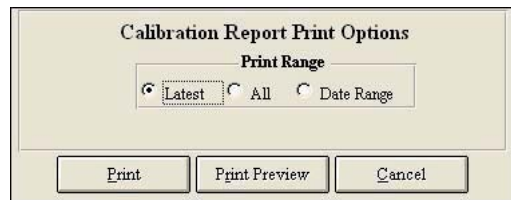


Figure 5-17. Calibration Report Options Menu

Print a report by clicking **Print**.

View a report by clicking **Print Preview**.

Reports include the name of the person who performed the calibration/verification, the date when the calibration/verification occurred, and actual weight vs. measured weight, and any deviation from the accuracy of the device (Figure 5-18).

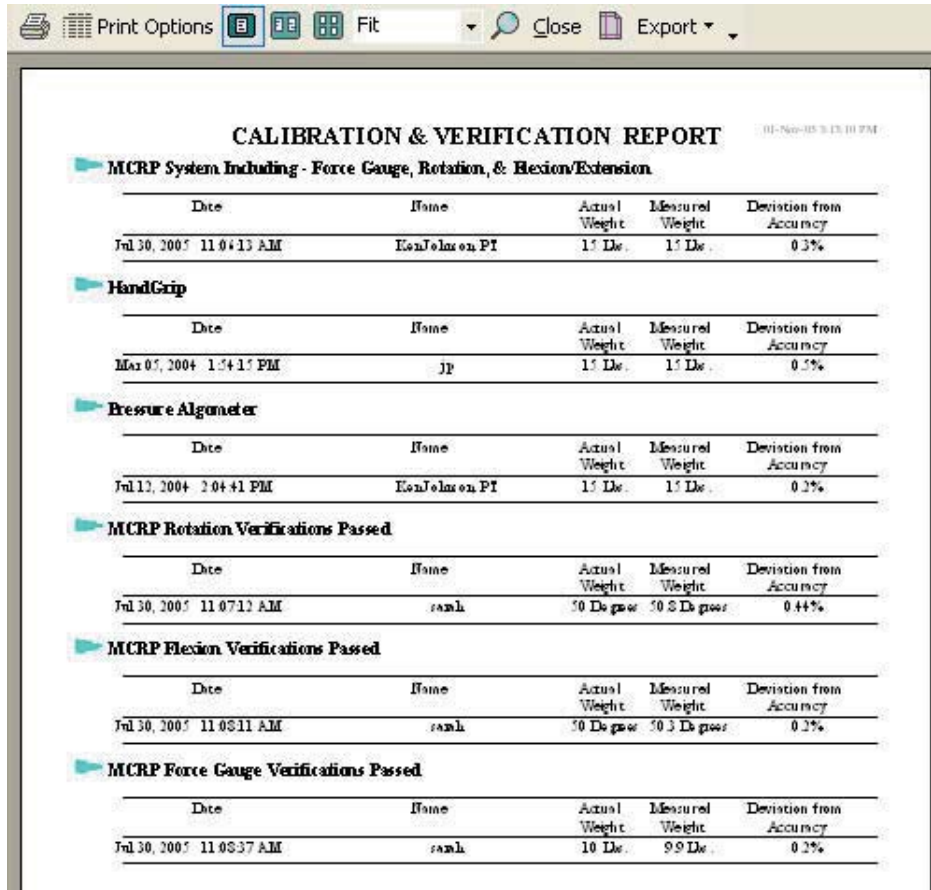


Figure 5-18. Calibration and Verification Report

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PROTOCOLS

Through the ODES software, you can access many pre-programmed protocols as well as create customized protocols. The following protocol categories can be accessed through the Home Screen:

- Self Reports • Cardio • ROM Tests • Strength Tests • Clinical Tests

BTE Technologies recommends that the MCU™ be used in conjunction with a certified training program on *The Melbourne Protocol*. This training program covers the practical and clinical application of Evaluation Protocols for patients suffering from various cervical disorders. Precautions, indications, and contra-indications for the evaluation of patients on the MCU™ are also covered. Refer to Section 10 for more information on this training program.

I. SELF REPORTS

ODES includes several pre-programmed Self Report protocols, which are intended to be completed without the use of any tools. These are typically questionnaires used to evaluate the patient’s perceived level of injury and pain.

A. UTILIZING SELF REPORTS

Access the pre-programmed Self Reports protocols by clicking the **Self Reports** icon on the Home Screen.

This will bring you to the Self Reports Protocols main page. From this page you have the ability to access all the pre-programmed protocols, including those in hibernation, add and remove tests to clients, create new range of motion tests, edit tests, and delete tests (Figure 6-1).

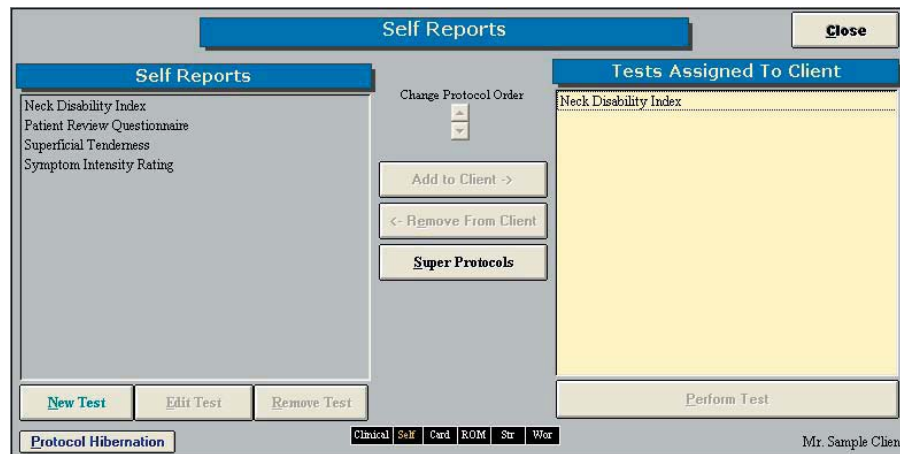


Figure 6-1. Self Reports Protocol Screen

Step 1. Assign a test to a client by highlighting the test in the left box and clicking **Add to Client** or by double clicking on the test in the left box.

Step 2. Once a test has been assigned to a client, highlight the test name in the right box and click **Perform Test** to bring up the testing screen.

Step 3. Fill out the questionnaire using the following options: a) Read the questions aloud and enter in the answers; b) Allow the patient to enter in the answers via the computer; c) Print out the questionnaire and allow the patient to enter in the answers on the paper.

Step 4. Store and/or file the questionnaire according to your clinic’s procedures.

B. EDITING AND CREATING SELF REPORTS

Access the pre-programmed Self Reports protocols by clicking the **Self Reports** icon on the Home Screen.

This will bring you to the Self Reports Protocols main page, where you can edit and create tests.

Edit a test by highlighting the test you would like to edit in the left box and clicking **Edit Test**.

Create a new test by clicking on **New Test**.

If you are editing a test, a screen will appear with the current settings of the test you selected. If you are creating a test, a screen will appear with the same headings as if you were editing a test, but all of the text fields will be blank (Figure 6-2).

The screenshot shows a 'Custom Self Report' form with the following elements:

- A:** Self Report Name: [Text Field]
- B:** A grid of checkboxes for Section 1 through Section 16.
- C:** Final Score Column: Name: [Text Field]
- D:** Rating Column: [Checkbox]
- E:** Examiner Description: [Text Field]
- F:** Report Description: [Text Field]
- G:** Reference(s): [Text Field]

Figure 6-2. Custom Self Report

Since editing and creating protocols are very similar, an example of an edited test will be given, but the same guidelines apply for creating a test. The following can typically be edited or created on Custom Self Report Tests:

A. Test Name - Type in the name of the test

B. Section - Type in the sections to include in the test

C. Final Score Column Name - Type in the name of the final score column

D. Rating Column - Select whether to include a rating column and then type in the name of the column

E. Examiner Description - Type in any description the examiner will need to perform the test - this field is especially useful for supplying instructions on how to perform the evaluation

F. Report Description - Type in any description that should be included on the report

G. Reference Information - Include any reference information that needs to be added to the report

Once the screen has been closed, the protocol is saved under the assigned test name with

the new specifications.

II. CARDIOVASCULAR PROTOCOLS

ODES includes several pre-programmed Cardiovascular protocols.

A. UTILIZING CARDIOVASCULAR PROTOCOLS

Access the pre-programmed Cardiovascular protocols by clicking the Cardio icon on the Home Screen.

This will bring you to the Cardiovascular Protocols main page. From this page you have the ability to access all the pre-programmed protocols, including those in hibernation, add and remove tests to clients, create new range of motion tests, edit tests, and delete tests (Figure 6-3).

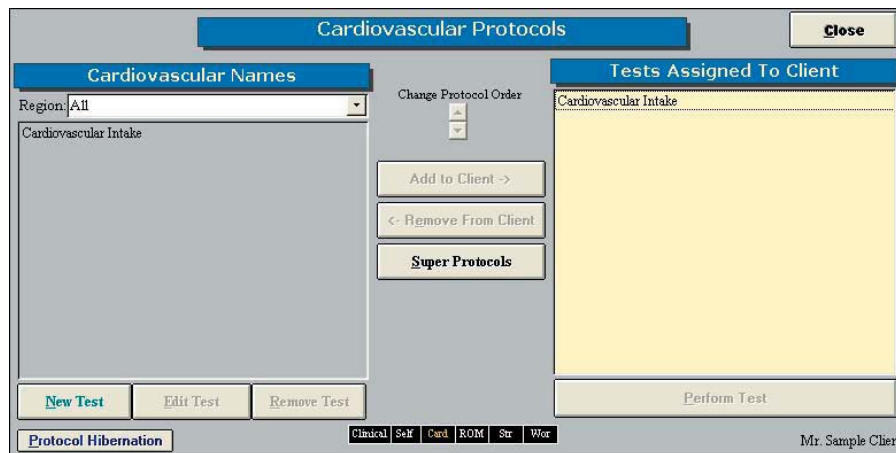


Figure 6-3. Cardiovascular Protocols

Step 1. Assign a test to a client by highlighting the test in the left box and clicking **Add to Client** or by double clicking on the test in the left box.

Step 2. Once a test has been assigned to a client, highlight the test name in the right box and click **Perform Test** to bring up the testing screen.

Step 3. Follow the instructions on the test screen.

B. EDITING AND CREATING CARDIOVASCULAR PROTOCOLS

Access the pre-programmed Cardiovascular protocols by clicking the **Cardio** icon on the Home Screen.

This will bring you to the Cardiovascular Protocols main page, where you can edit and create tests .

Edit a test by highlighting the test you would like to edit in the left box and clicking **Edit Test**.

Create a new test by clicking on **New Test**.

If you are editing a test, a screen will appear with the current settings of the test you selected. If you are creating a test, a screen will appear with the same headings as if you were editing a test, but all of the text fields will be blank (Figure 6-4).

Figure 6-4. Custom Cardiovascular Protocol

Since editing and creating protocols are very similar, an example of an edited test will be given, but the same guidelines apply for creating a test.

The following can typically be edited or created on Cardiovascular Tests:

- A. Test Name** - Type in the name of the test
- B. Set Maximum Allowable Heart Rate** - Select whether to set the maximum allowable heart rate and at what percentage of age.
- C. View Initial Heart Rate** - Select whether to view the initial heart rate within the test screen
- D. View Peak Heart Rate** - Select whether to view the peak heart rate within the test screen
- E. View Final Heart Rate** - Select whether to view the final heart rate within the test screen
- F. View Percent Heart Rate Increase from Initial** - Select whether to view the percent heart rate increase from the initial within the test screen
- G. View Recovery Heart Rate** - Select whether to view the recovery heart rate within the test screen and choose when to stop the recovery time
- H. Use a Rating** - Select whether to use a rating and then set the rating
- I. Examiner Description** - Type in any description the examiner will need to perform the test - this field is especially useful for supplying instructions on how to perform the evaluation
- J. Report Description** - Type in any description that should be included on the report
- K. Reference Information** - Include any reference information that needs to be added to the report
- L. Test Duration Options** - Choose which method will determine test duration
- M. Use a Metronome** - Select whether to use a metronome and number of beats per minute

N. Parameters to be Measured (Heading Labels) - Type in the parameters that will be measured

Once the screen has been closed, the protocol is saved under the assigned test name with the new specifications.

III. CERVICAL RANGE OF MOTION (ROM) PROTOCOLS

A. POSITIONING THE PATIENT FOR A CERVICAL ROM PROTOCOL

In order to prepare for cervical range of motion testing, it is extremely important to understand how to properly position the patient; this will prevent any injury during testing.

The following 7 steps are required prior to each type of ROM testing. Outlined after these 7 initial steps are the subsequent steps, which vary according to the test being performed.

Step 1. Insert the range-of-motion stop pin in the zero degree position on the halo (Figure 6-5).



Figure 6-5. Insert ROM Stop

Step 2. Lower the chair all the way down to its lowest position.

Step 3. Using the latch on the right side, open the halo (Figure 6-6).



Figure 6-6. Open Halo

Step 4. Ask the patient to sit in the chair.

Step 5. Adjust the height of the seat, the position of the seat, the position of the back of the chair, the height of the back of the chair, and the arm rests to accommodate the patient's size, height, and posture. Set the halo height to 3 as a starting position (Figure 6-7).



Figure 6-7. Seat Adjustments

Step 6. Secure the patient with the waist strap and shoulder straps (Figure 6-8).



Figure 6-8. Waist and Shoulder Straps

Step 7. Close and lock the halo (Figure 6-9).



Figure 6-9. Close and Lock the Halo

1. POSITIONING THE PATIENT FOR A ROM FLEXION OR EXTENSION TEST

Step 8. For a flexion test, insert both of the head braces in the halo. For an extension test, insert the back head brace with a Velcro strap attached. Note that the bottom of the back brace is located at the external occipital protuberance (Figure 6-10).



Figure 6-10. Initial ROM Flexion & Extension Set-ups

Step 9. Set the halo to 15 degrees below the horizontal (Figure 6-11).



Figure 6-11. Halo Angle

Step 10. Position the head brace(s) against the patient's head, but do not secure his/her head in place.

Step 11. Make fine adjustments to the seat and halo such that C5/C6 of the patient's

spine lines up with the pivot point of the halo (Figure 6-12).

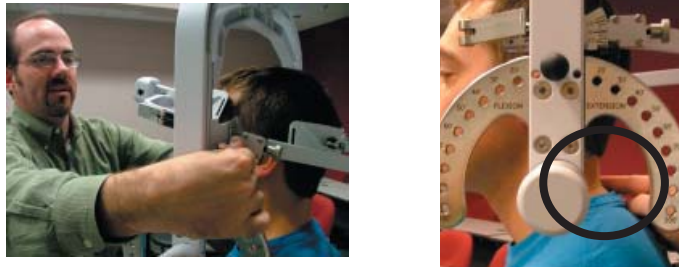


Figure 6-12. Final Adjustments and Locating C5/C6

Step 12. Firmly secure the patient's head with the head brace(s) and Velcro strap (if performing an extension test).

Step 13. Remove the range-of-motion stop pin before performing the test (Figure 6-13).

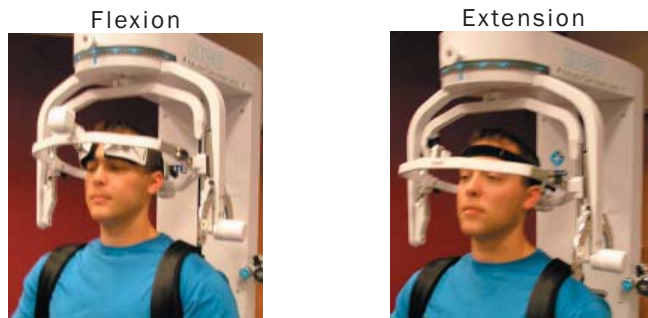


Figure 6-13. Final Set-ups for ROM Flexion & Extension

Note that the RJ45 cable is not required for this test.

2. POSITIONING THE PATIENT FOR A ROM L/R ROTATION TEST

Step 8. Insert both of the head braces in the halo (Figure 6-14).



Figure 6-14. Insert Both Head Braces

Step 9. Set the halo to 0 degrees with respect to the horizontal and 10 degrees flexion (Figure 6-15).



Figure 6-15. Set halo angles

Step 10. Position the head braces against the patient's head, but do not secure his/her head in place.

Step 11. Make fine adjustments to the seat to line up C5/C6 of the patient’s spine with the pivot point of the halo (Figure 6-16).

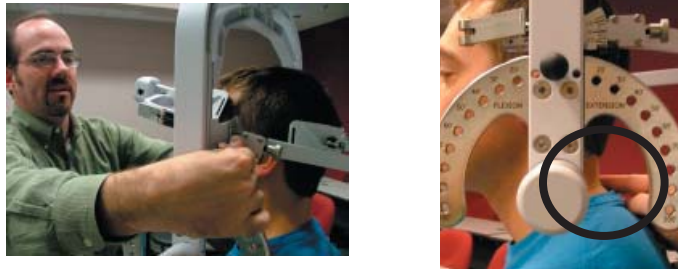


Figure 6-16. Final Adjustments and Locating C5/C6

Step 12. Firmly secure the patient’s head with the head braces.

Step 13. While holding onto the side of the halo, unlock the rotation pin, which is located at the top middle of the halo, before performing the test (Figure 6-17).

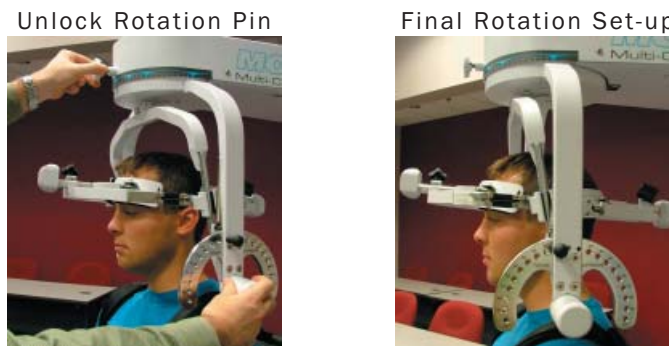


Figure 6-17. Unlocking Rotation Pin and Final ROM L/R Rotation Set-up

Note that the RJ45 cable is not required for this test.

3. POSITIONING THE PATIENT FOR A ROM LATERAL FLEXION TEST

Step 8. Unlock the rotation pin and rotate the halo to 90 degrees right rotation. Lock the rotation pin back into place (Figure 6-18).

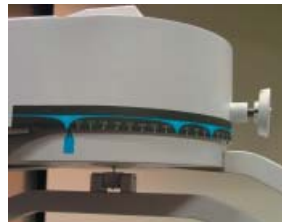


Figure 6-18. Halo at 90° Rotation

Step 9. Insert both of the head braces in the halo (Figure 6-19).



Figure 6-19. Attach Head Braces

Step 10. Set the halo to 0 degrees with respect to the horizontal. Make sure the flexion/extension angle is set to 0 degrees as well (Figure 6-20).

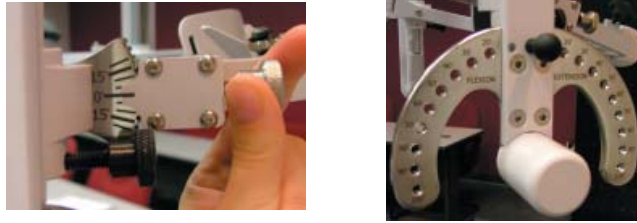


Figure 6-20. Set halo angles

Step 11. Position the head braces against the patient’s head, but do not secure his/her head in place.

Step 12. Make fine adjustments to the seat to line up C5/C6 of the patient’s spine with the pivot point of the halo (Figure 6-21).



Figure 6-21. Final Adjustments and Locating C5/C6

Step 13. Firmly secure the patient’s head with the head braces.

Step 14. Remove the range-of-motion stop pin before performing the test (Figure 6-22).

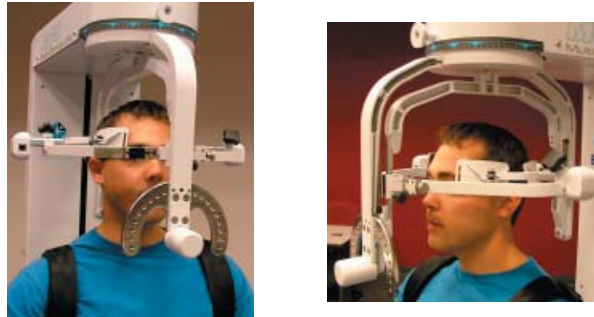


Figure 6-22. Final Set-up for ROM Lateral Flexion

Note that the RJ45 cable is not required for this test.

B. UTILIZING THE CERVICAL RANGE OF MOTION (ROM) PROTOCOL

1. ACCESSING THE CERVICAL ROM PROTOCOL

Access the pre-programmed ROM protocols by clicking the **ROM Tests** icon on the Home Screen.

This will bring you to the ROM Protocols main page. From this page you have the ability to access all the pre-programmed protocols, including those in hibernation, add and remove tests to clients, create new range of motion tests, edit tests, and delete tests.

Note that the Cervical Range of Motion protocol is the only pre-programmed ROM test that will be needed for the MCU™ (Figure 6-23).

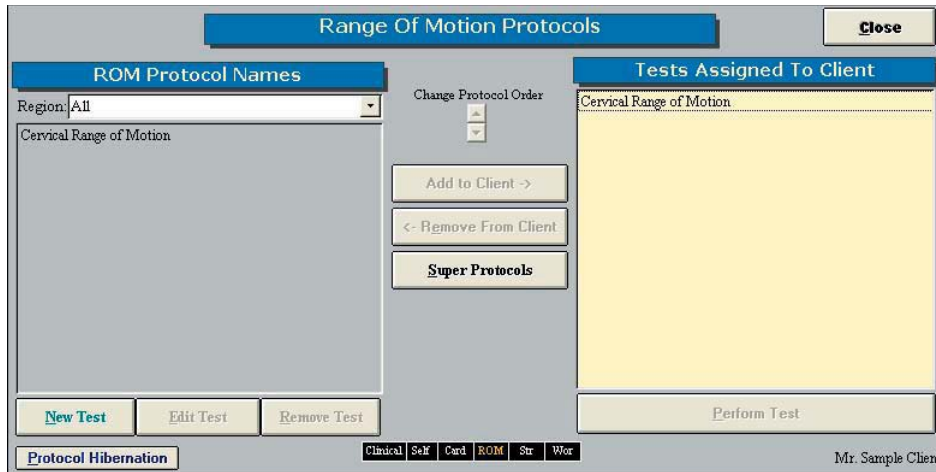


Figure 6-23. Range of Motion Protocols

Step 1. Assign a test to a client by highlighting the test in the left box and clicking **Add to Client** or by double clicking on the test in the left box.

Step 2. Once a test has been assigned to a client, highlight the test name in the right box and click **Perform Test** to bring up the testing screen (Figure 6-24).

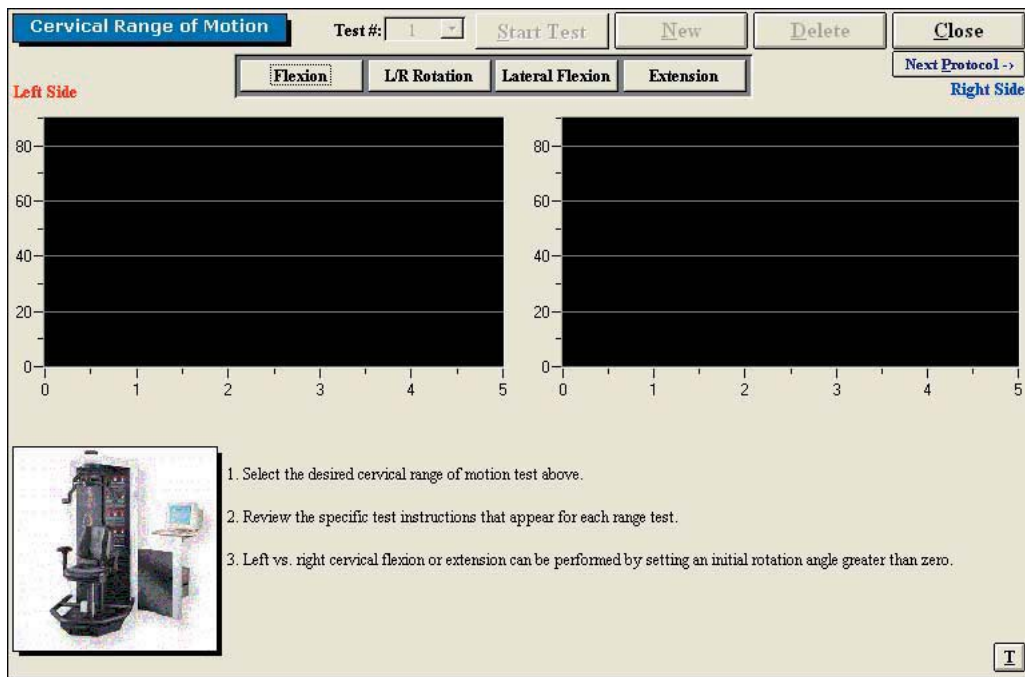


Figure 6-24. Cervical Range of Motion Main Screen

The initial Cervical Range of Motion protocol screen contains the following features:

- Name of the test
- Test number
- Start Test icon, which changes to Stop Test after the test has begun
- New icon to begin a new set of tests
- Delete icon to delete the selected test's results
- Close icon to return to the protocol screen
- Next Protocol icon to move on to the next protocol
- Flexion icon, which switches to the Flexion test screen
- L/R Rotation icon, which switches to the Rotation test screen

- Lateral Flexion icon, which switches to the Lateral Flexion test screen
- Extension icon, which switches to the Extension test screen
- Graphs and tables to illustrate the test results
- Instructions on how to perform the tests
- Threshold icon, which allows a threshold force to be set

2. UTILIZING THE ROM FLEXION TEST

The ROM Flexion test measures the patient’s range of motion with respect to the flexor muscle group.

Step 1. Select the **Flexion** icon. The Flexion Testing screen will appear (Figure 6-25).

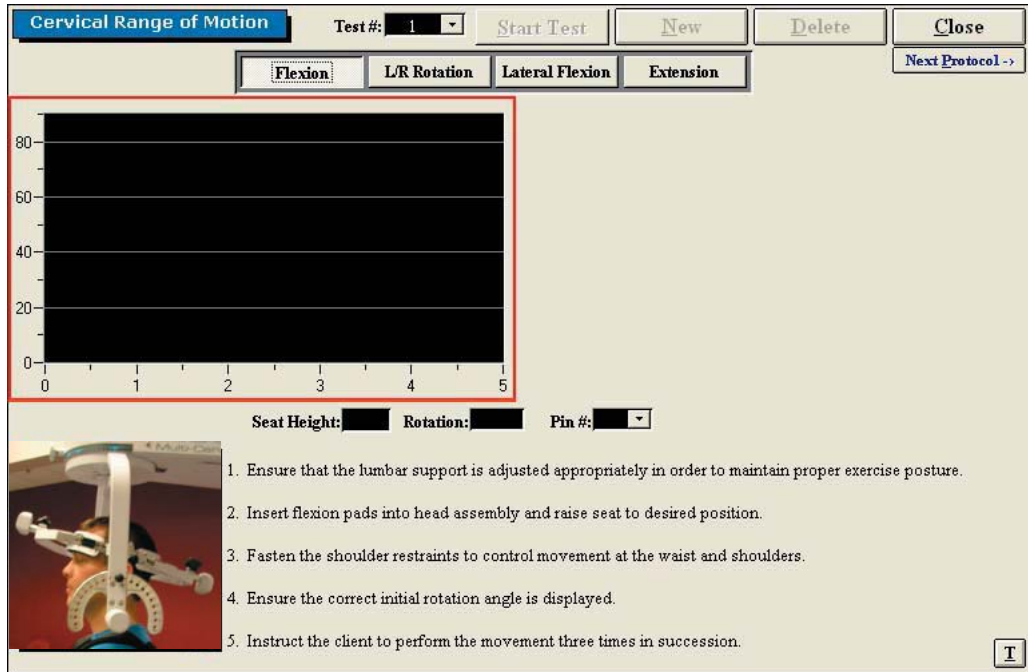


Figure 6-25. Cervical ROM - Flexion Test

Note that the screen shown in the figure may differ from that on the computer.

Step 2. Position the patient as described in Section 06-III of this manual.

Step 3. Click **Start Test** to begin testing.

Step 4. Once the test is completed, a pain scale will appear. Ask the patient to rate his/her pain on a ten-point scale (0 is equivalent to no pain and 10 is equivalent to the worst pain possible). Click on the number the patient stated and then click **OK**.

The ROM Flexion test calls for three trials to be performed.

As the protocol is performed, the screen will display the results and averages via a line graph, table, pie chart, and bar graph.

In addition to the test results, the screen will tabulate: the average ROM, peak ROM, coefficient of variation (COV), and the percent of normal. The pain rating determined by the patient will also appear in the pain scale text field (Figure 6-26).

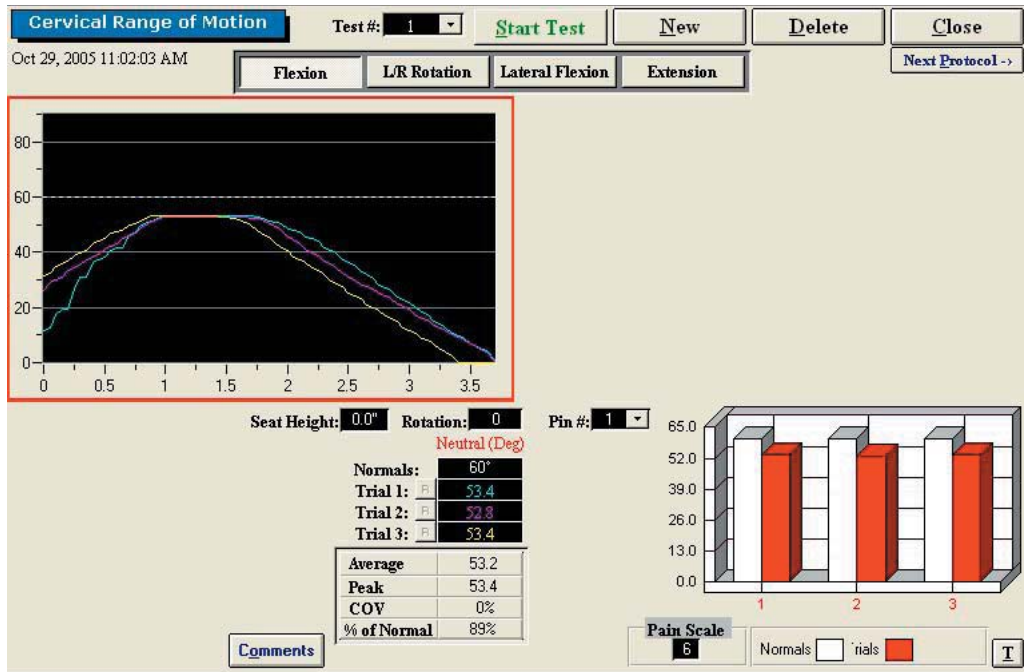


Figure 6-26. Cervical ROM - Completed Flexion Test

You may retest a trial by clicking on the R icon to the left or right of the trial table, depending on which trial you would like to redo. However, once a test has been closed, the trials can not be retested.

3. UTILIZING THE ROM ROTATION TEST

The ROM Rotation test measures the patient's range of motion with respect to the lateral rotator muscle group.

Step 1. Select the **L/R Rotation** icon. The Rotation Testing screen will appear (Figure 6-27). Note that the screen shown in the figure may differ from that on the computer.



Figure 6-27. Cervical ROM - L/R Rotation Test

Step 2. Position the patient as described in Section 06-III of this manual.

Step 3. Click **Start Test** to begin testing.

Step 4. Once each side is completed, a pain scale will appear. Ask the patient to rate his/her pain on a ten-point scale (0 is equivalent to no pain and 10 is equivalent to the worst pain possible). Click on the number the patient stated and then click **OK**.

The ROM Rotation test calls for three trials to be performed per side.

As the protocol is performed, the screen will display the results and averages via a line graph, table, pie chart, and bar graph. These figures are especially helpful in comparing the abilities of each side.

In addition to the test results, the screen will tabulate: the average ROM, peak ROM, coefficient of variation (COV), the percent of normal, and the percent difference between the left and right side. The pain ratings determined by the patient will also appear in the pain scale text fields (Figure 6-28).



Figure 6-28. Cervical ROM - Completed L/R Rotation Test

You may retest a trial by clicking on the R icon to the left or right of the trial table, depending on which trial you would like to redo. However, once a test has been closed, the trials can not be retested.

4. UTILIZING THE ROM LATERAL FLEXION TEST

The ROM Lateral Flexion test measures the patient's range of motion with respect to the lateral flexor muscle group.

Step 1. Select the **Lateral Flexion** icon. The Lateral Flexion Testing screen will appear (Figure 6-29). Note that the screen shown in the figure may differ from that on the computer.



Figure 6-29. Cervical ROM - Lateral Flexion Test

Step 2. Position the patient as described in Section 06-III of this manual.

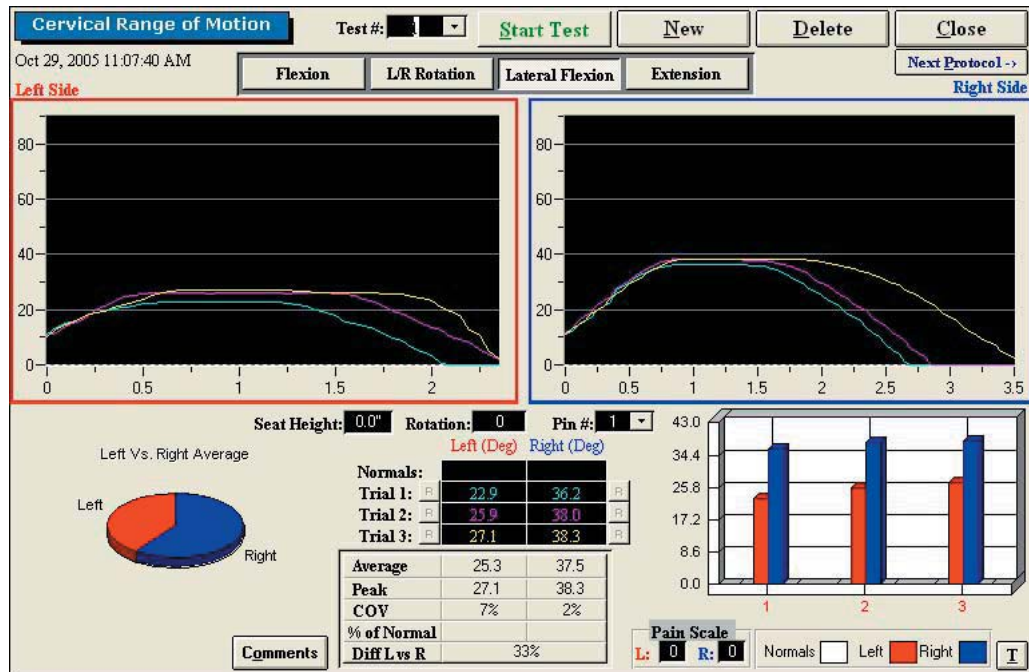
Step 3. Click **Start Test** to begin testing.

Step 4. Once each side is completed, a pain scale will appear. Ask the patient to rate his/her pain on a ten-point scale (0 is equivalent to no pain and 10 is equivalent to the worst pain possible). Click on the number the patient stated and then click **OK**.

The ROM Lateral Flexion test calls for three trials to be performed per side.

As the protocol is performed, the screen will display the results and averages via a line graph, table, pie chart, and bar graph. These figures are especially helpful in comparing the abilities of each side.

In addition to the test results, the screen will tabulate: the average ROM, peak ROM, coefficient of variation (COV), the percent of normal, and the percent difference between the left and right side. The pain ratings determined by the patient will also appear in the pain scale text fields (Figure 6-30).



Step 2. Position the patient as described in Section 06-III of this manual.

Step 3. Click **Start Test** to begin testing.

Step 4. Once the test is completed, a pain scale will appear. Ask the patient to rate his/her pain on a ten-point scale (0 is equivalent to no pain and 10 is equivalent to the worst pain possible). Click on the number the patient determined and then click **OK**.

The ROM Extension test calls for three trials to be performed.

As the protocol is performed, the screen will display the results and averages via a line graph, table, pie chart, and bar graph.

In addition to the test results, the screen will tabulate: the average ROM, peak ROM, coefficient of variation (COV), and the percent of normal. The pain rating determined by the patient will also appear in the pain scale text field (Figure 6-32).

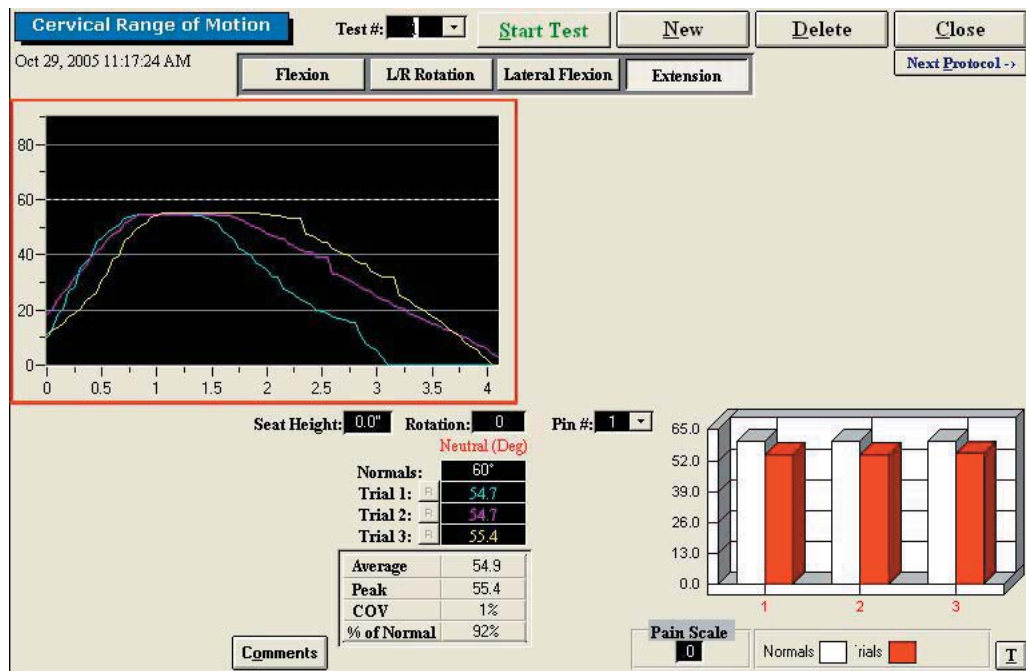


Figure 6-32. Cervical ROM - Completed Extension Test

You may retest a trial by clicking on the R icon to the left or right of the trial table, depending on which trial you would like to redo. However, once a test has been closed, the trials can not be retested.

IV. STRENGTH PROTOCOLS

A. POSITIONING THE PATIENT FOR NEUTRAL CERVICAL ISOMETRIC STRENGTH PROTOCOLS

In order to prepare for cervical strength testing, it is extremely important to understand how to properly position the patient; this will prevent any injury during testing.

The following 7 steps are required prior to each type of strength testing. Outlined after these 7 initial steps are the subsequent steps, which vary according to the test being performed.

Step 1. Insert the range-of-motion stop pin in the zero degree position on the halo (Figure 6-33).



Figure 6-33 Insert ROM Stop

Step 2. Lower the chair all the way down to its lowest position.

Step 3. Using the latch on the right side, open the halo (Figure 6-34).



Figure 6-34. Open Halo

Step 4. Ask the patient to sit in the chair.

Step 5. Adjust the height of the seat, the position of the seat, the position of the back of the chair, the height of the back of the chair, and the arm rests to accommodate the patient's size, height, and posture. Set the halo height to 3 as a starting position (Figure 6-35).



Figure 6-35. Seat Adjustments

Step 6. Secure the patient with the waist strap and shoulder straps (Figure 6-36).



Figure 6-36. Waist and Shoulder Straps

Step 7. Close and lock the halo (Figure 6-37).



Figure 6-37. Close and Lock the Halo

1. POSITIONING THE PATIENT FOR AN ISOMETRIC FLEXION/EXTENSION TEST

Step 8. For a flexion test, insert the front head brace. For an extension test, insert the back head brace. Note that the bottom of the back brace is located at the external occipital protuberance (Figure 6-38).

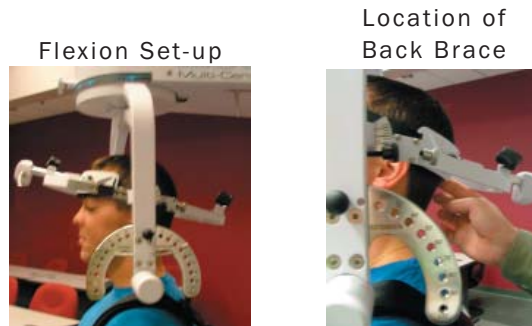


Figure 6-38. Initial Isometric Flexion & Extension Set-up

Step 9. Set the halo to 15 degrees below the horizontal (Figure 6-39).



Figure 6-39. Halo Angle

Step 10. Position the head brace against the patient's head.

Step 11. Make fine adjustments to the seat and halo such that C5/C6 of the patient's spine lines up with the pivot point of the halo (Figure 6-40).



Figure 6-40. Final Adjustments and Locating C5/C6

Step 12. Attach the RJ45 cable to the head brace being used and the RJ45 jack that is

closest to the front of the unit at the top of the MCU™ (Figure 6-41).



Figure 6-41. MCU™ RJ45 Jack and Final Isometric Flexion & Extension Set-ups

2. POSITIONING THE PATIENT FOR A ISOMETRIC LATERAL TEST

Step 8. Unlock the rotation pin and rotate the halo to 90 degrees right rotation. Lock the rotation pin (Figure 6-42).



Figure 6-42. Halo at 90° Rotation

Step 9. Attach the head brace to the halo on the side being tested (Figure 6-43).



Figure 6-43. Attach Head Brace

Step 10. Set the halo to 0 degrees with respect to the horizontal. Make sure the flexion/extension angle is set to 0 degrees as well (Figure 6-44).

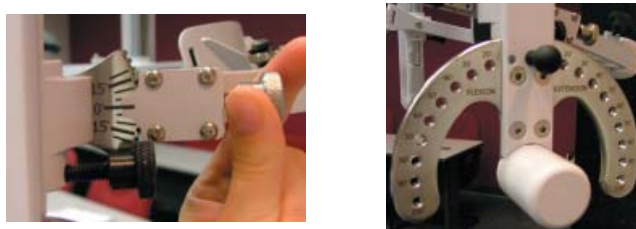


Figure 6-44. Set halo angles

Step 11. Position the head brace against the patient's head.

Step 12. Make fine adjustments to the seat to line up C5/C6 of the patient's spine with the pivot point of the halo (Figure 6-45).

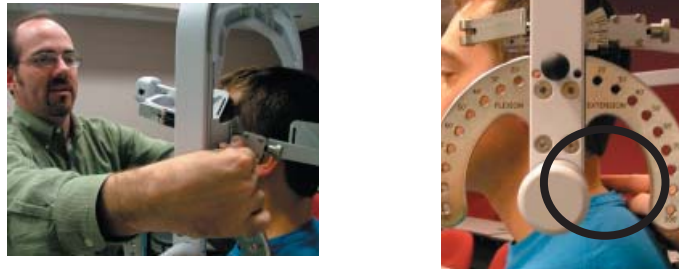


Figure 6-45. Final Adjustments and Locating C5/C6

Step 13. Attach the RJ45 cable to the head brace being used and the RJ45 jack that is closest to the front of the unit at the top of the MCU™ (Figure 6-46).

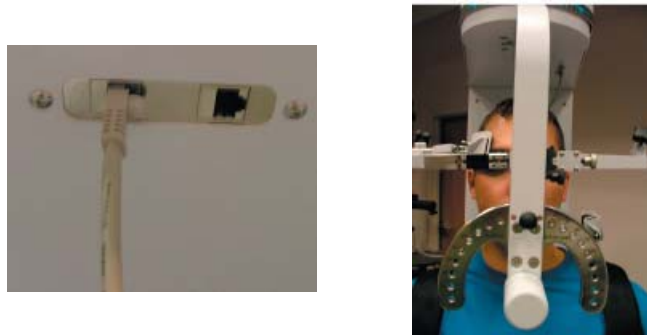


Figure 6-46. MCU™ RJ45 Jack and Final Isometric Lateral Set-up

B. POSITIONING THE PATIENT FOR 25 DEGREE CERVICAL ISOMETRIC STRENGTH PROTOCOLS

In order to prepare for cervical strength testing, it is extremely important to understand how to properly position the patient; this will prevent any injury during testing.

The following 7 steps are required prior to each type of strength testing. Outlined after these 7 initial steps are the subsequent steps, which vary according to the test being performed.

Step 1. Insert the range-of-motion stop pin in the zero degree position on the halo (Figure 6-47).



Figure 6-47. Insert ROM Stop

Step 2. Lower the chair all the way down to its lowest position.

Step 3. Using the latch on the right side, open the halo (Figure 6-48).



Figure 6-48. Open Halo

Step 4. Ask the patient to sit in the chair.

Step 5. Adjust the height of the seat, the position of the seat, the position of the back of the chair, the height of the back of the chair, and the arm rests to accommodate the patient's size, height, and posture (Figure 6-49).



Figure 6-49. Seat Adjustments

Step 6. Secure the patient with the waist strap and shoulder straps (Figure 6-50).

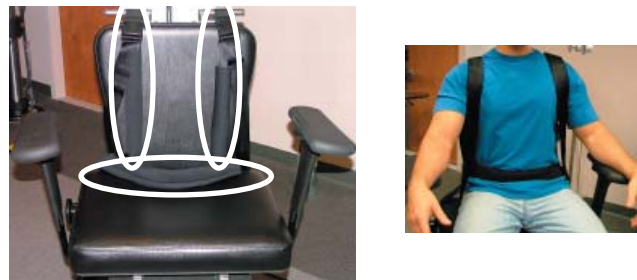


Figure 6-50. Waist and Shoulder Straps

Step 7. Close and lock the halo (Figure 6-51).



Figure 6-51. Close and Lock the Halo

1. POSITIONING THE PATIENT FOR A 25 DEGREE ISOMETRIC FLEXION/EXTENSION TEST

Step 8. For a flexion test, insert the front head brace. For an extension test, insert the back head brace. Note that the bottom of the back brace is located at the external occipital protuberance (Figure 6-52).

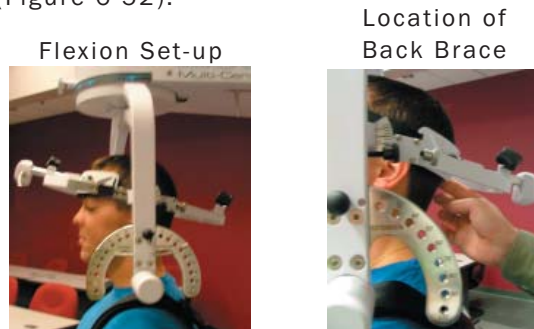


Figure 6-52. Initial Isometric Flexion & Extension Set-up

Step 9. Set the halo to 15 degrees below the horizontal (Figure 6-53).



Figure 6-53. Halo Angle

Step 10. Position the head brace against the patient's head.

Step 11. Make fine adjustments to the seat to line up C5/C6 of the patient's spine with the pivot point of the halo (Figure 6-54).



Figure 6-54. Final Adjustments and Locating C5

Step 12. While holding onto the side of the halo, unlock the rotation pin, which is located at the top middle of the halo. If you're testing the patient's left side, rotate the halo 25 degrees right and then lock the rotation pin. Rotate the halo 25 degrees to the left to test the patient's right side (Figure 6-55).

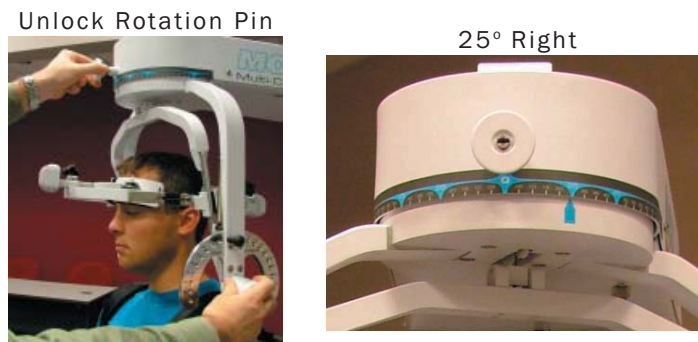


Figure 6-55. Halo Rotation of 25°

Step 13. Attach the RJ45 cable to the head brace being used and the RJ45 jack that is closest to the front of the unit at the top of the MCU™ (Figure 6-56).



Figure 6-56. MCU™ RJ45 Jack and Final 25° Isometric Flexion & Extension Set-ups

2. POSITIONING THE PATIENT FOR A 25 DEGREE ISOMETRIC LATERAL TEST

Step 8. Unlock the rotation pin, which is located at the top middle of the halo. If you're testing the patient's left side, rotate the halo 65 degrees toward the right, and then lock the rotation pin. Rotate the halo 65 degrees toward the left when testing the patient's right side (Figure 6-57). Note that the figures show a set-up for testing the patient's right side.

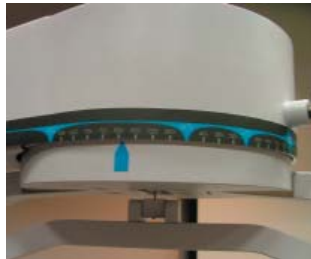


Figure 6-57. Halo Rotation of 25° Lateral

Step 9. Attach the head brace to the halo on the side being tested (Figure 6-58).



Figure 6-58. Attach Head Brace

Step 10. Set the halo to 0 degrees with respect to the horizontal. Make sure the flexion/extension angle is set to 0 degrees as well (Figure 6-59).



Figure 6-59. Set halo angles

Step 11. Position the head brace against the patient's head.

Step 12. Make fine adjustments to the seat to line up C5/C6 of the patient's spine with

the pivot point of the halo (Figure 6-60).



Figure 6-60. Final Adjustments and Locating C5

Step 13. Attach the RJ45 cable to the head brace being used and the RJ45 jack that is closest to the front of the unit at the top of the MCU™ (Figure 6-61).



Figure 6-61. MCU™ RJ45 Jack and Final 25° Isometric Lateral Set-up

C. POSITIONING THE PATIENT FOR 45 DEGREE CERVICAL ISOMETRIC STRENGTH PROTOCOLS

In order to prepare for cervical strength testing, it is extremely important to understand how to properly position the patient; this will prevent any injury during testing.

The following 7 steps are required prior to each type of strength testing. Outlined after these 7 initial steps are the subsequent steps, which vary according to the test being performed.

Step 1. Insert the range-of-motion stop pin in the zero degree position on the halo (Figure 6-62).



Figure 6-62. Insert ROM Stop

Step 2. Lower the chair all the way down to its lowest position.

Step 3. Using the latch on the right side, open the halo (Figure 6-63).

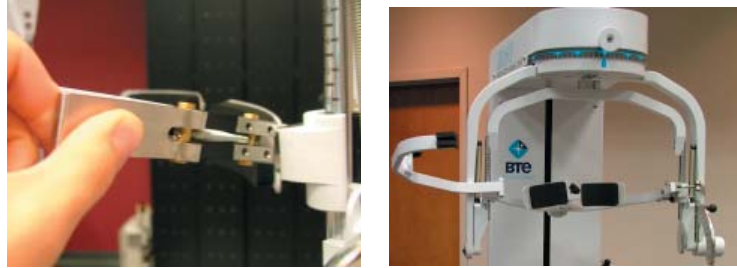


Figure 6-63. Open Halo

Step 4. Ask the patient to sit in the chair.

Step 5. Adjust the height of the seat, the position of the seat, the position of the back of the chair, the height of the back of the chair, and the arm rests to accommodate the patient's size, height, and posture. Set the halo height to 3 as a starting position (Figure 6-64).



Figure 6-64. Seat Adjustments

Step 6. Secure the patient with the waist strap and shoulder straps (Figure 6-65).

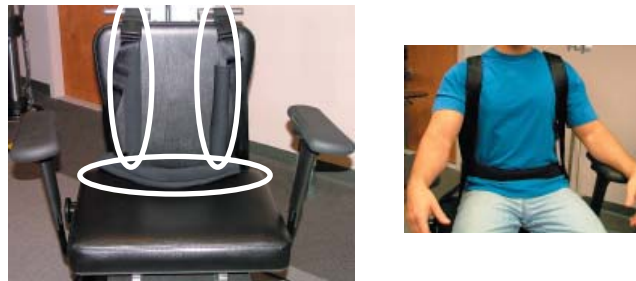


Figure 6-65. Waist and Shoulder Straps

Step 7. Close and lock the halo (Figure 6-66).



Figure 6-66. Close and Lock the Halo

1. POSITIONING THE PATIENT FOR A 45 DEGREE ISOMETRIC FLEXION/EXTENSION TEST

Step 8. For a flexion test, insert the front head brace. For an extension test, insert the back head brace. Note that the bottom of the back brace is located at the external occipital protuberance (Figure 6-67).

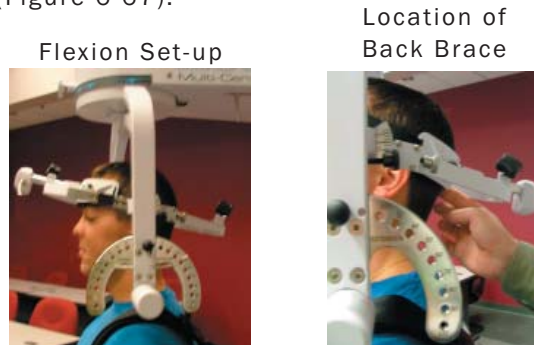


Figure 6-67. Initial Isometric Flexion & Extension Set-up

Step 9. Set the halo to 15 degrees below the horizontal (Figure 6-68).



Figure 6-68. Halo Angle

Step 10. Position the head brace against the patient's head.

Step 11. Make fine adjustments to the seat to line up C5/C6 of the patient's spine with the pivot point of the halo (Figure 6-69).

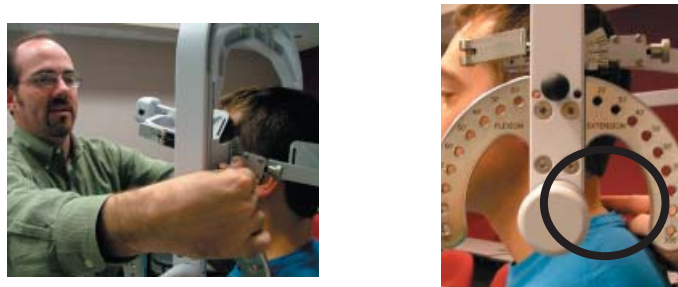


Figure 6-69. Final Adjustments and Locating C5/C6

Step 12. While holding onto the side of the halo, unlock the rotation pin, which is located at the top middle of the halo. If you're testing the patient's left side, rotate the halo to 45 degrees right rotation and then lock the rotation pin. Rotate the halo to 45 degrees left rotation to test the patient's right side (Figure 6-70).

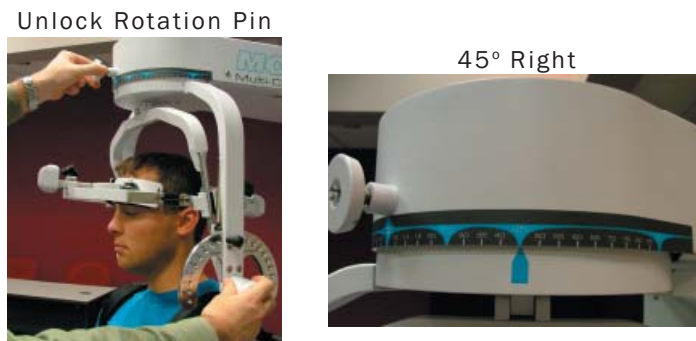


Figure 6-70. Halo Rotation of 45°

Step 13. Attach the RJ45 cable to the head brace being used and the RJ45 jack that is closest to the front of the unit at the top of the MCU™ (Figure 6-71).



Figure 6-71. MCU RJ45 Jack and Final 25° Isometric Flexion & Extension Set-ups

2. POSITIONING THE PATIENT FOR A 45 DEGREE ISOMETRIC LATERAL TEST

Step 8. Unlock the rotation pin, which is located at the top middle of the halo. If you're testing the patient's left side, rotate the halo to 45 degrees right rotation, and then lock the rotation pin. Rotate the halo to 45 degrees left rotation when testing the patient's right side (Figure 6-72). Note that the figures show a set-up for testing the patient's right side.



Figure 6-72. Halo Rotation of 45° Lateral

Step 9. Attach the head brace to the halo on the side being tested (Figure 6-73).



Figure 6-73. Attach Head Brace

Step 10. Set the halo to 0 degrees with respect to the horizontal. Make sure the flexion/extension angle is set to 0 degrees as well (Figure 6-74).

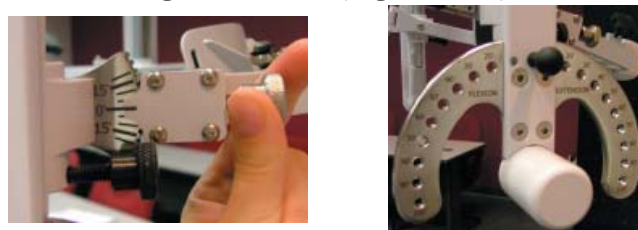


Figure 6-74. Set halo angles

Step 11. Position the head brace against the patient's head.

Step 12. Make fine adjustments to the seat to line up C5/C6 of the patient's spine with the pivot point of the halo (Figure 6-75).

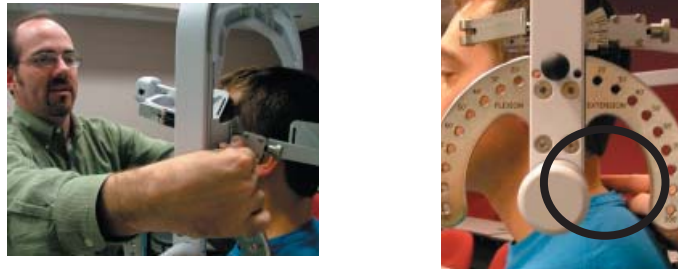


Figure 6-75. Final Adjustments and Locating C5/C6

Step 13. Attach the RJ45 cable to the head brace being used and the RJ45 jack that is closest to the front of the unit at the top of the MCU™ (Figure 6-76).



Figure 6-76. MCU™ RJ45 Jack and Final 45° Isometric Lateral Set-up

D. UTILIZING THE CERVICAL STRENGTH PROTOCOLS

1. ACCESSING THE CERVICAL STRENGTH PROTOCOLS

Access the pre-programmed Strength protocols by clicking the **Strength Tests** icon on the Home Screen.

This will bring you to the Strength Protocols main page. From this page you have the ability to access all the pre-programmed protocols, including those in hibernation, add and remove tests to clients, create new isometric strength tests, edit tests, and delete tests (Figure 6-77).

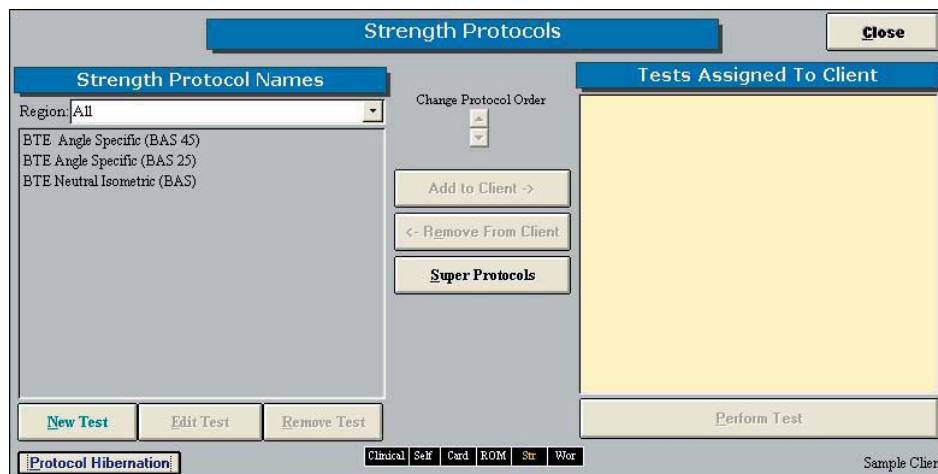


Figure 6-77. Strength Protocols

Note that three strength protocols have been designed for the Multi-Cervical™ Unit: MCU™ Neutral Isometric, MCU™ Angle Specific 25 Degrees, and MCU™ Angle Specific 45 Degrees. The only difference between the three protocols is the rotation angle at which

the halo is set (i.e. 0 degrees, 25 degrees, and 45 degrees).

Step 1. Assign a test to a client by highlighting the test in the left box and clicking **Add to Client** or by double clicking on the test in the left box.

Step 2. Once a test has been assigned to a client, highlight the test name in the right box and click **Perform Test** to bring up the testing screen (Figure 6-78).

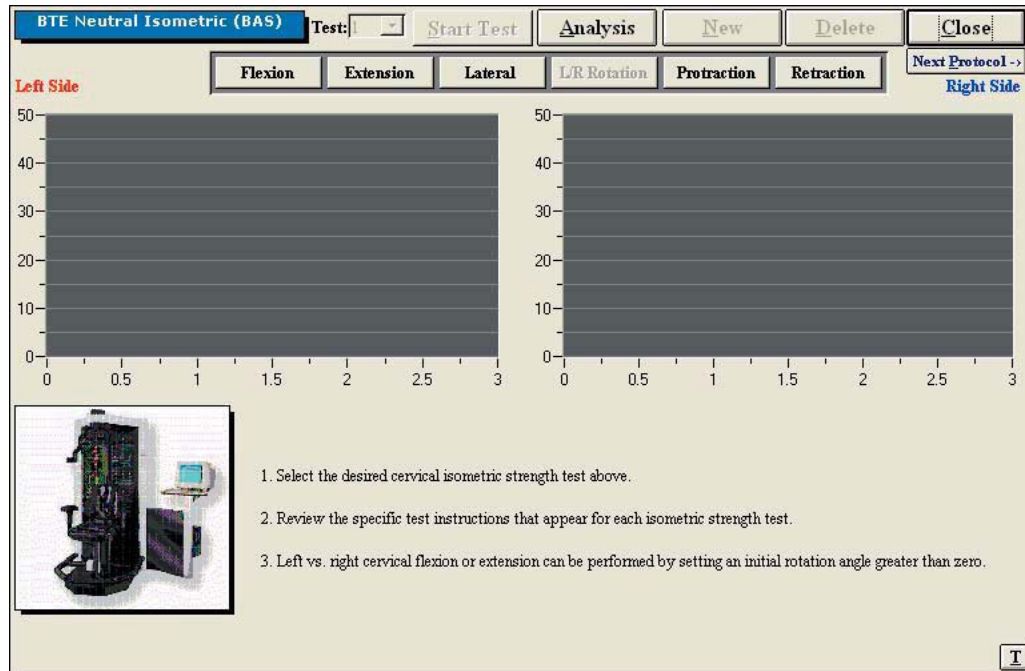


Figure 6-78. Cervical Strength Main Screen

The initial Cervical Strength protocol screens contain the following features:

- Name of the test
- Start Test icon, which changes to Stop Test after the test has begun
- Analysis icon to extensively analyze the data of a completed test
- New icon to begin a new set of test results
- Delete icon to delete the selected test’s results
- Close icon to return to the protocol screen
- Next Protocol icon to move on to the next protocol
- Flexion icon, which switches to the Flexion test screen
- Extension icon, which switches to the Extension test screen
- Lateral icon, which switches to the Lateral test screen
- Protraction icon, which switches to the Protraction screen
- Retraction icon, which switches to the Retraction screen
- Graphs and tables to illustrate the test results
- Instructions on how to perform the tests
- Threshold icon, which allows a threshold force to be set

2. UTILIZING THE STRENGTH FLEXION TEST

The Strength Flexion test measures the patient’s strength with respect to the flexor muscle group.

Step 1. Select the **Flexion** icon. The Flexion Testing screen will appear (Figure 6-79). Note that the screen shown in the figure may differ from that on the computer.

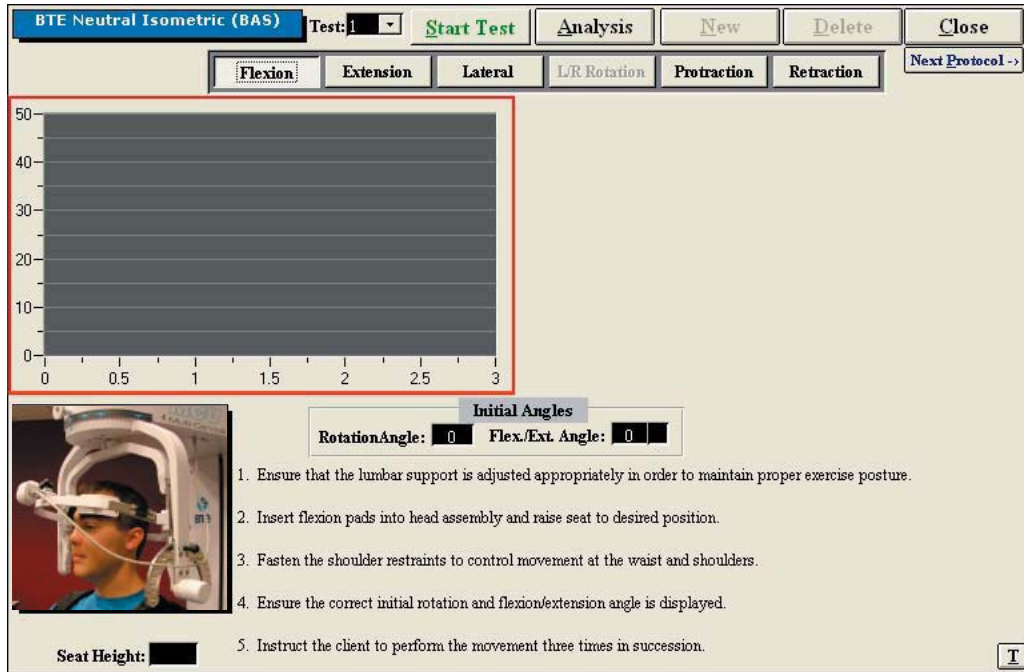


Figure 6-79. Cervical Strength - Flexion Test

Step 2. Position the patient as described in Section 06-IV of this manual.

Step 3. Click **Start Test** to begin testing.

Step 4. Once the test is completed, a pain scale will appear. Ask the patient to rate his/her pain on a ten-point scale (0 is equivalent to no pain and 10 is equivalent to the worst pain possible). Click on the number the patient stated and then click **OK**.

The Strength Flexion test calls for three trials to be performed.

As the protocol is performed, the screen will display the results and averages via a line graph, table, pie chart, and bar graph.

In addition to the test results, the screen will tabulate: the average force, peak force, coefficient of variation (COV), and the percent of normal. The pain ratings determined by the patient will also appear in the pain scale text field (Figure 6-80).

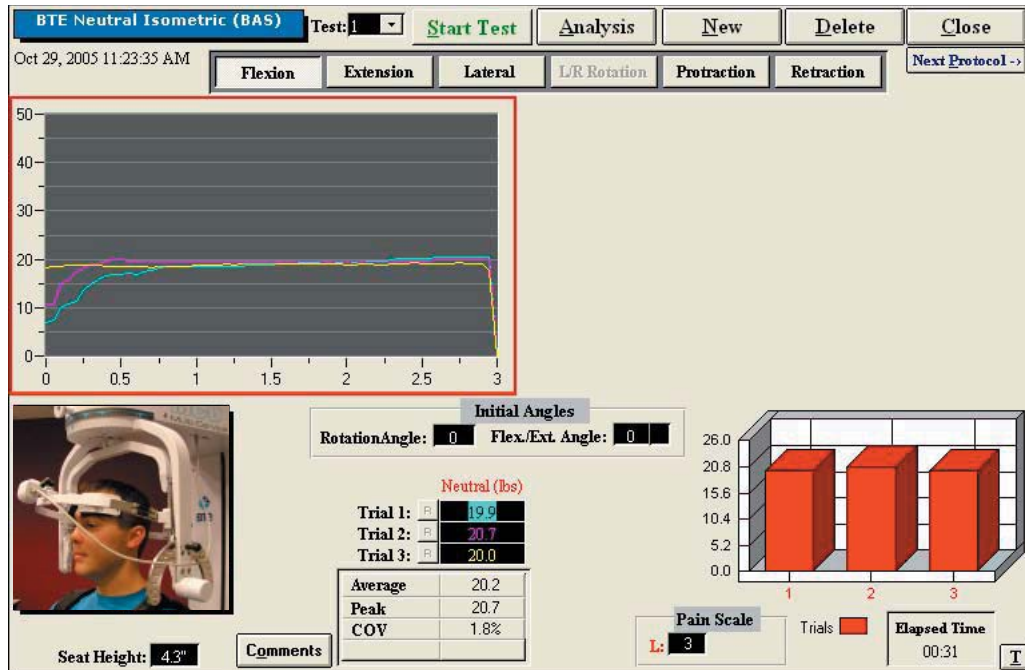


Figure 6-80. Cervical Strength - Completed Flexion Test

You may retest a trial by clicking on the R icon to the left or right of the trial table, depending on which trial you would like to redo. However, once a test has been closed, the trials can not be retested.

3. UTILIZING THE STRENGTH EXTENSION TEST

The Strength Extension test measures the patient's strength with respect to the extensor muscle group.

Step 1. Select the **Extension** icon. The Extension Testing screen will appear (Figure 6-81). Note that the screen shown in the figure may differ from that on the computer.

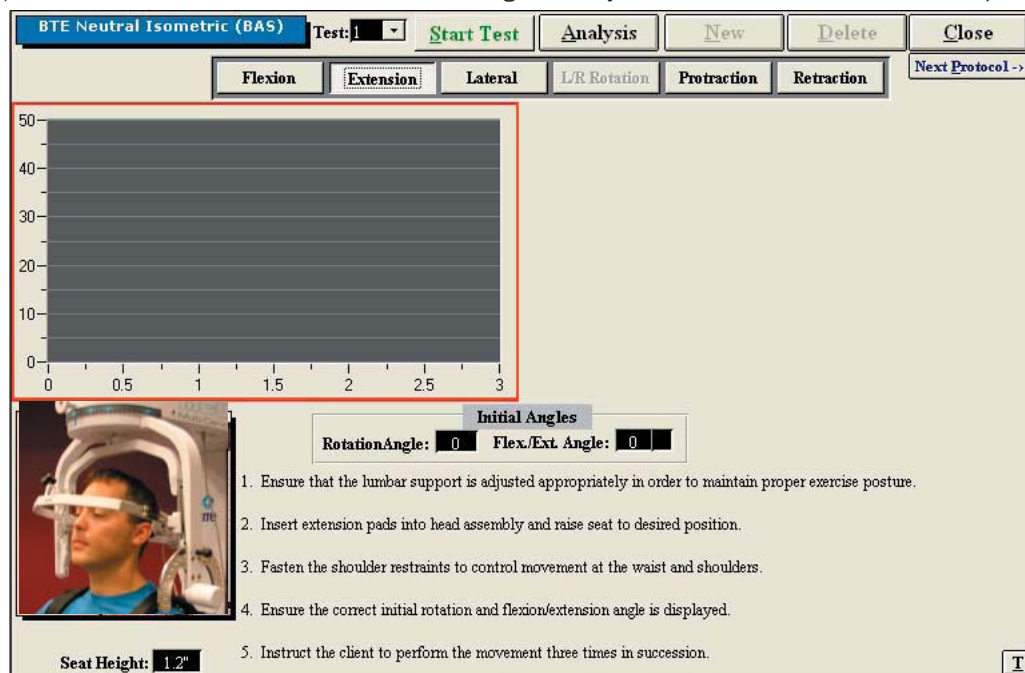


Figure 6-81. Cervical Strength - Extension Test

Step 2. Position the patient as described in Section 06-IV of this manual.

Step 3. Click **Start Test** to begin testing.

Step 4. Once the test is completed, a pain scale will appear. Ask the patient to rate his/her pain on a ten-point scale (0 is equivalent to no pain and 10 is equivalent to the worst pain possible). Click on the number the patient stated and then click **OK**.

The Strength Extension test calls for three trials to be performed.

As the protocol is performed, the screen will display the results and averages via a line graph, table, pie chart, and bar graph.

In addition to the test results, the screen will tabulate: the average force, peak force, coefficient of variation (COV), and the percent of normal. The pain ratings determined by the patient will also appear in the pain scale text field (Figure 6-82).

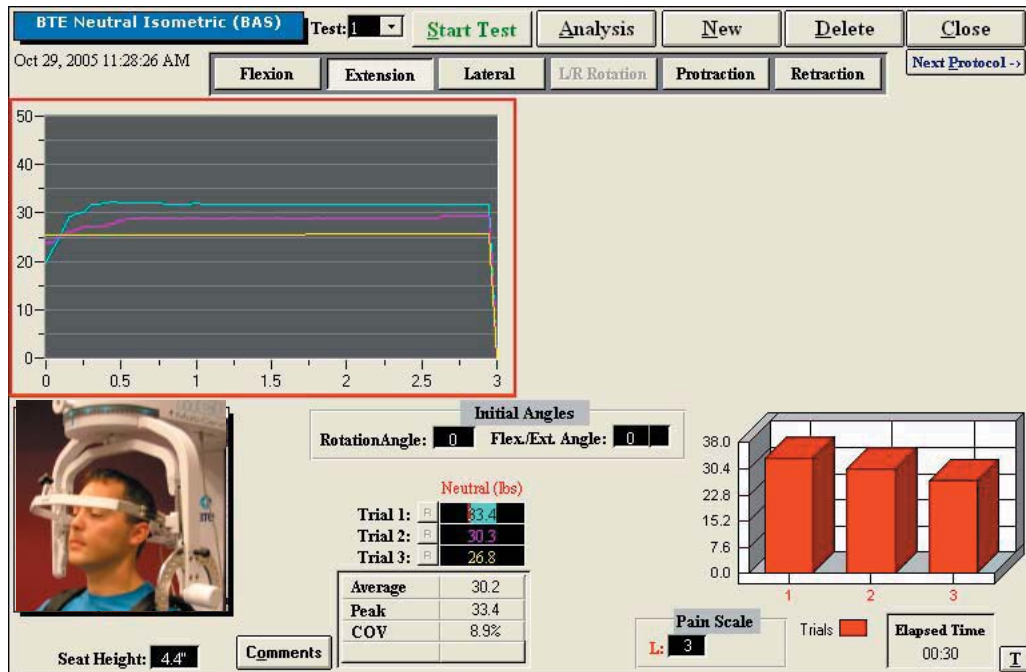


Figure 6-82. Cervical Strength - Completed Extension Test

You may retest a trial by clicking on the R icon to the left or right of the trial table, depending on which trial you would like to redo. However, once a test has been closed, the trials can not be retested.

4. UTILIZING THE STRENGTH LATERAL TEST

The Strength Lateral test measures the patient's strength with respect to the lateral muscle group.

Step 1. Select the **Lateral** icon. The Lateral Testing screen will appear (Figure 6-83). Note that the screen shown in the figure may differ from that on the computer.

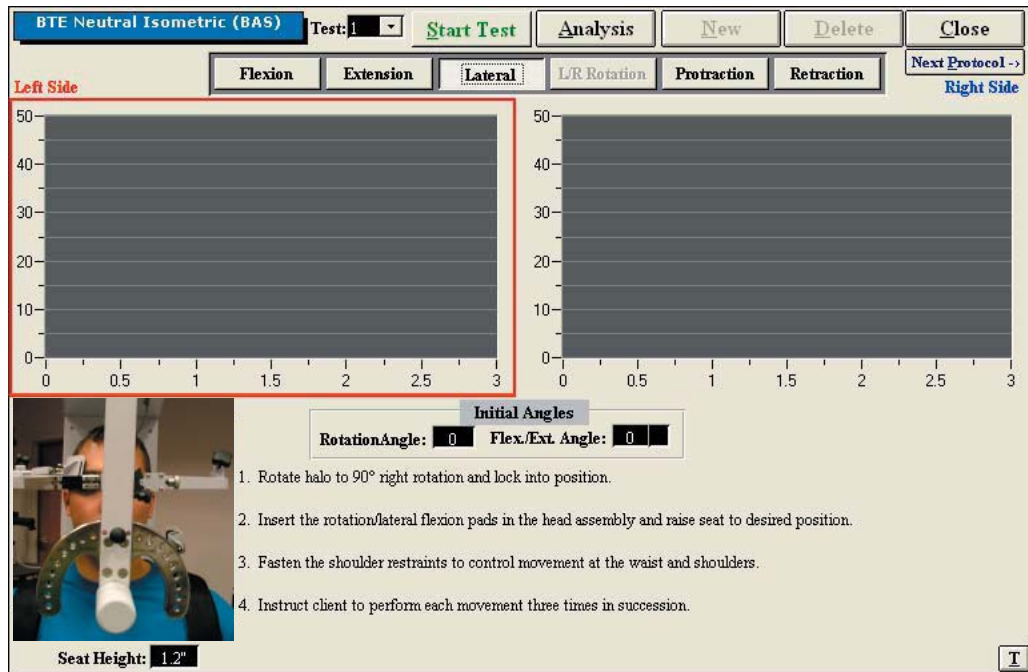


Figure 6-83. Cervical Strength - Lateral Test

Step 2. Position the patient as described in Section 06-IV of this manual.

Step 3. Click **Start Test** to begin testing.

Step 4. Once each side is completed, a pain scale will appear. Ask the patient to rate his/her pain on a ten-point scale (0 is equivalent to no pain and 10 is equivalent to the worst pain possible). Click on the number the patient determined and then click **OK**.

The Strength Lateral test calls for three trials to be performed per side.

As the protocol is performed, the screen will display the results and averages via a line graph, table, pie chart, and bar graph.

In addition to the test results, the screen will tabulate: the average force, peak force, coefficient of variation (COV), and the percent of normal. The pain ratings determined by the patient will also appear in the pain scale text field (Figure 6-84).

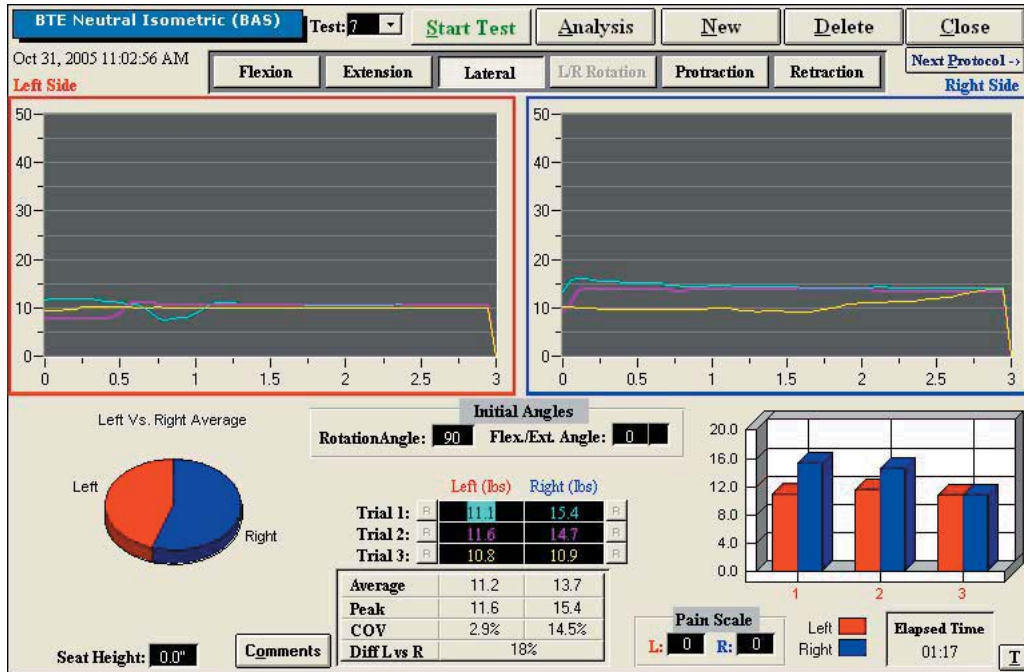


Figure 6-84. Cervical Strength - Completed Lateral Test

You may retest a trial by clicking on the R icon to the left or right of the trial table, depending on which trial you would like to redo. However, once a test has been closed, the trials can not be retested.

5. UTILIZING THE STRENGTH PROTRACTION TEST

Step 1. Select the **Protraction** icon. The Protraction Testing screen will appear (Figure 6-85). Note that the screen shown in the figure may differ from that on the computer.

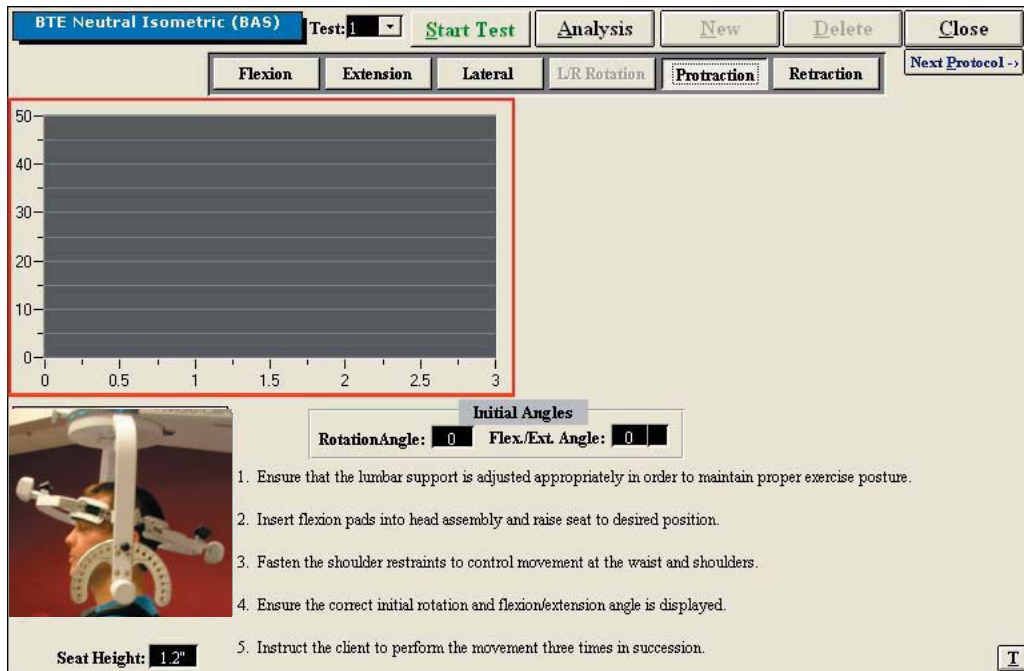


Figure 6-85. Cervical Strength - Protraction Test

Step 2. Position the patient as described in Section 06-IV of this manual.

Step 3. Click **Start Test** to begin testing.

Step 4. Once the test is completed, a pain scale will appear. Ask the patient to rate his/her pain on a ten-point scale (0 is equivalent to no pain and 10 is equivalent to the worst pain possible). Click on the number the patient stated and then click **OK**.

The Strength Protraction test calls for three trials to be performed.

As the protocol is performed, the screen will display the results and averages via a line graph, table, pie chart, and bar graph.

In addition to the test results, the screen will tabulate: the average force, peak force, coefficient of variation (COV), and the percent of normal. The pain ratings determined by the patient will also appear in the pain scale text field.

You may retest a trial by clicking on the R icon to the left or right of the trial table, depending on which trial you would like to redo. However, once a test has been closed, the trials can not be retested.

6. UTILIZING THE STRENGTH RETRACTION TEST

Step 1. Select the **Retraction** icon. The Retraction Testing screen will appear (Figure 6-86). Note that the screen shown in the figure may differ from that on the computer.

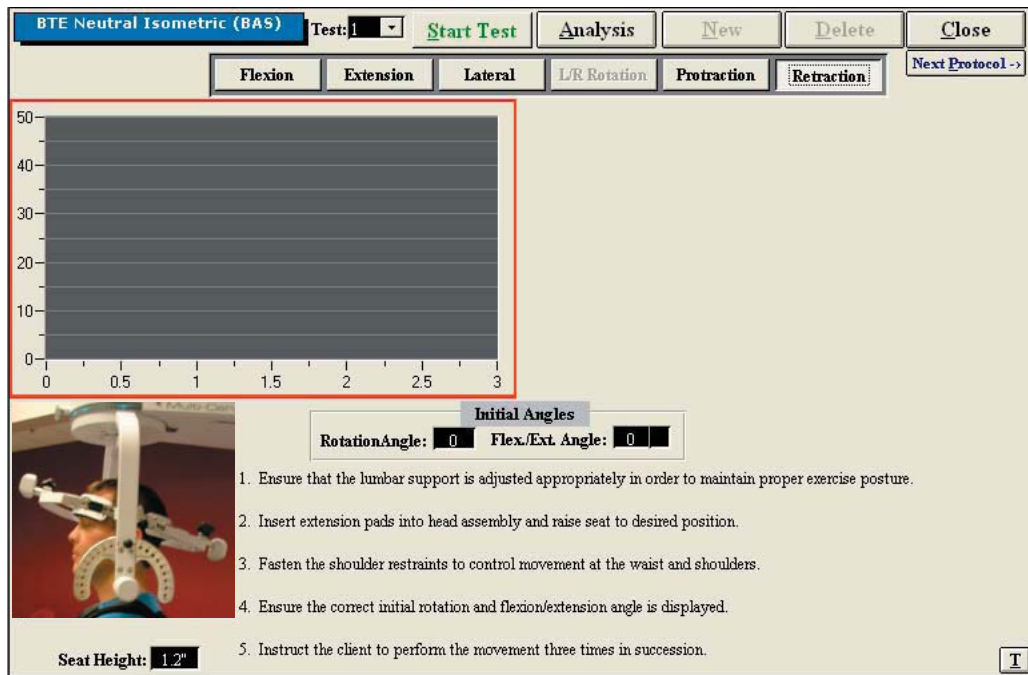


Figure 6-86. Cervical Strength - Retraction Test

Step 2. Position the patient as described in Section 06-IV of this manual.

Step 3. Click **Start Test** to begin testing.

Step 4. Once the test is completed, a pain scale will appear. Ask the patient to rate his/her pain on a ten-point scale (0 is equivalent to no pain and 10 is equivalent to the worst pain possible). Click on the number the patient stated and then click **OK**.

The Retraction Strength test calls for three trials to be performed.

As the protocol is performed, the screen will display the results and averages via a line graph, table, pie chart, and bar graph.

In addition to the test results, the screen will tabulate: the average force, peak force,

coefficient of variation (COV), and the percent of normal. The pain ratings determined by the patient will also appear in the pain scale text field.

You may retest a trial by clicking on the R icon to the left or right of the trial table, depending on which trial you would like to redo. However, once a test has been closed, the trials can not be retested.

7. CREATING CUSTOM CERVICAL INTEGRATION PROTOCOLS

Access the pre-programmed Strength protocols by clicking the **Strength Tests** icon on the Home Screen.

This will bring you to the Strength Protocols main page, where you can edit and create tests.

Create a new test by clicking on **New Test** and then clicking **Cervical Integration** (Figure 6-87).

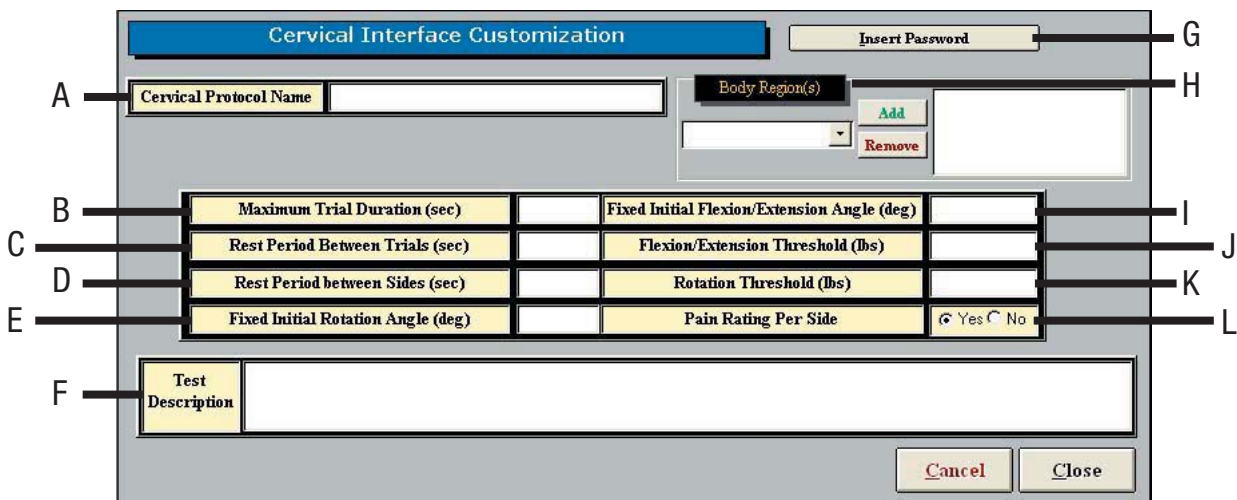


Figure 6-87. Custom Cervical Integration Protocol

The following can be created on Custom Cervical Integration Protocols:

- A. Cervical Protocol Name** - Type in the name of the test
- B. Maximum Trial Duration** - Set the maximum amount of time (seconds) for the trial duration
- C. Rest Period Between Trials** - Set the amount of time (seconds) to rest between trials
- D. Rest Period Between Sides** - Set the amount of time (seconds) to rest between switching sides
- E. Fixed Initial Rotation Angle (deg)** - Set the initial angle (degrees) for a rotation test
- F. Test Description** - Type in any description that should be included on the test
- G. Insert Password** - Choose whether a password is required to edit the test – if this option is selected, any user will be prompted for the password whenever he or she tries to edit the test.
- H. Body Region** - Select which body region is to be evaluated
- I. Fixed Initial Flexion/Extension Angle (deg)** - Set the initial (degrees) for a flexion or extension test
- J. Flexion/Extension Threshold (lbs)** - Set the amount of force (lbs) required for a flex-

ion or extension test to begin

K. Rotation Threshold (lbs) - Set the amount of force (lbs) required for a rotation test to begin

L. Pain Rating Per Side - Choose whether to display the pain rating scale

Once the screen has been closed, the protocol is saved under the assigned test name with the new specifications.

V. CLINICAL PROTOCOLS

ODES includes several pre-programmed Clinical protocols, which are intended to be completed without the use of any tools. These protocols help to identify any injuries or anomalies the patient may have.

A. UTILIZING CLINICAL PROTOCOLS

Access the pre-programmed Clinical protocols by clicking the **Clinical** icon on the Home Screen.

This will bring you to the Clinical Protocols main page. From this page you have the ability to access all the pre-programmed protocols, including those in hibernation, add and remove tests to clients, create new range of motion tests, edit tests, and delete tests (Figure 6-88).

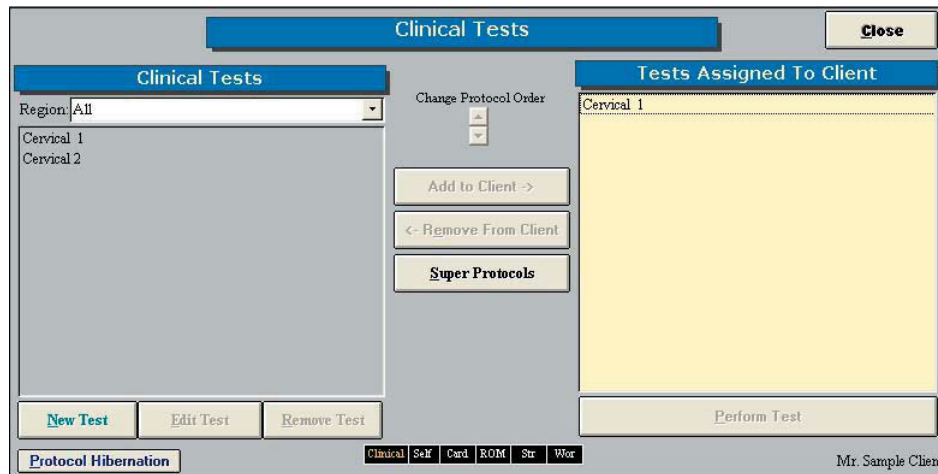


Figure 6-88. Clinical Protocols

Step 1. Assign a test to a client by highlighting the test in the left box and clicking **Add to Client** or by double clicking on the test in the left box.

Step 2. Once a test has been assigned to a client, highlight the test name in the right box and click **Perform Test** to bring up the testing screen (Figure 6-89).