

VALLEYCARE
OLIVE VIEW-UCLA MEDICAL CENTER/HEALTH CENTERS
REHABILITATION SERVICES
POLICY & PROCEDURE

NUMBER: 1164
VERSION: 2

SUBJECT/TITLE: BTE SIMULATOR II FUNCTIONAL REHAB SYSTEM

POLICY: The BTE Simulator II is used to provide functional treatment programs that can be customized to simulate work and home activities, to determine the patient's capacity to perform those activities independently.

PURPOSE: Provide guidelines for staff for safe and effective use of the BTE Simulator II.

DEPARTMENTS: REHABILITATION SERVICES

DEFINITIONS: The BTE SIMULATOR II is used to provide a functional dynamic strengthening treatment program that will enable patients to reach their maximum achievable potential in therapy.

The Simulator II is used for isometric and isotonic evaluation and treatment. This system has clinical applications and standardized test protocols that can be individualized according to each patient's needs.

PROCEDURE:

A. Precautions

1. The work head is electromagnetic.
 - a. It is required that people with magnetically sensitive implant devices (such as defibrillators and pacemakers) maintain a 6" (15cm) distance between the implant and the workhead shaft.
 - (1) A warning sign must be displayed in a visible location for patients with pacemakers and automated defibrillators.
 - b. The magnetic field will automatically turn off after 5 minutes while the BTE SIMULATOR is not in use.
 - c. The power switch will still be on (unless manually turned off) and the magnetic field will only be activated again when in use.

B. Contraindications

The BTE should not be used on patients with the following acute conditions/diagnoses:

1. Musculoskeletal Problems
2. Acute fractures of the upper extremity
3. Arthroplasties for the upper extremity
4. Tendon repairs, tendon transfers
5. Rotator cuff
6. Impingement syndromes
7. Bursitis, tendonitis & acute arthritis

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8. Back injuries & sprains, strains
9. Unstable joints
10. Acute pain
11. Other Peripheral Nerve Related Diagnoses
12. Nerve compressions
13. Nerve repairs
14. Neurological Conditions and/or injury
15. Head injury, not cooperative with instructions

C. Indications

When the acute phase subsides many of the above conditions/diagnoses will be appropriate for strengthening.

D. General Operation

1. To turn the SIMULATOR II “on” move the power switch in the power box to the ON (I) position. Then turn the CPU, monitor and printer on.
 - a. NOTE: When you shut the system down, leave the monitor and printer turned on. When you turn the SIMULATOR II power switch to the OFF position, these components (monitor and printer) will be turned off as well. If you leave the component switches ON when you turn the system on, these components will turn on automatically with the SIMULATOR II. The CPU must be turned on separately.
2. The SIMULATOR II program can be controlled with the mouse or via the optional touch screen (with additional mouse operation tips refer to the Simulator II user manual)
3. When the Windows desktop appears, double click the SIMULATOR II icon on the desktop to start the program.
4. Refer to the manual for start-up procedures & specific programs.
 - a. Patient record (editing, deleting a record, etc.)
 - b. Types of evaluations
 - c. Types of treatments
 - d. Reports and report options
 - e. Summary reports
 - f. Navigate with the control panel
 - g. Variations in exercise programs
 - h. Working with a specific patient
 - i. Help levels
 - j. Consistency of effort testing
 - k. Task Analysis and measurement
 - i. Standardized test & protocols

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5. Turning the SIMULATOR II OFF
 - a. Once the Simulator II is turned ON, it is ok to leave it on all day. At the end of the day, you must turn the system OFF.
 - b. To do so
 - (1) Select EXIT from the Main Screen
 - (2) Select START on the Windows desktop
 - (3) Select Shut Down, then Shut down the computer

Warning: The above steps must be followed in order to properly shut down the SIMULATOR II! Failure to do so may produce errors on the hard drive and corrupt files in Windows and/or other software running on the system.

1. Exercise Head and Attachments with precautions
 - a. **Exercise Head description**
 - (1) The exercise head is the mechanism that creates the resistance for the exercises.
 - (2) It has two adjustments to place the tool in the desired position for an exercise.
 - (3) The entire head may be raised or lowered by pushing the up-down switch.
 - b. On the right side of the exercise head is a large lever.
 - (1) Pulling this lever out will release a locking clamp.
 - (2) The head can now be swiveled vertically to any one of seven positions from straight up, to 45% below horizontal.
 - (3) Push the lever back down to lock the exercise head.

CAUTION: Be sure this lever is locked into one of the seven positions before proceeding with an exercise.

- c. The shaft on the exercise head has a knurled nut with a center hole for inserting the SIMULATOR II attachments. Inside there is a square hole that matches the square shaft end found on all attachments. When an attachment is inserted, slowly rotate it while lightly pushing in, until it slides in place.
 - (1) The squares must be aligned before the attachment can be completely seated.
 - (2) Once it is seated, hold the attachment and turn the knurled nut clockwise as tight as possible.
 - (3) If properly inserted, the attachment will be locked into the shaft. Make sure the attachment is securely locked with a spanner wrench. The spanner wrench is kept on the base of the exercise head.

- d. When releasing an attachment, back the knurled nut off (counterclockwise) in order to pull the attachment out.
 - (1) If the nut is very tight and difficult to loosen, increase the resistance in the counterclockwise direction so the exercise shaft will be held in place by the higher resistance.
 - (2) Both hands can be used on the spanner wrench to turn it counterclockwise, releasing the tight nut.

2. Tool setup (refer to manual for details).

3. Attachment description and uses (see manual for specifics)

a. **102-One-inch diameter knurled knob**

- (1) Fine finger manipulation (rotational)
- (2) Uses: Fingertip desensitization
Pinch strengthening
- (3) *To simulate: twist top bottles, machine adjustments*

b. **202-Key shape**

- (1) Finger pinch
- (2) Uses: Fingertip desensitization
Lateral pinch strengthening
Pulp to pulp pinch strengthening
Supination/ pronation (with finger pinch)
- (3) *To simulate: Keys of all types*

c. **301-Two-inch diameter knurled knob**

302-Three-inch diameter knurled

- (1) Uses: Rotational grip strengthening
Fingertip and palmer desensitization
Radial/ulnar wrist deviation
- (2) *To simulate: door knobs, small valve wheels*

d. **400-Small wheel with short crank**

- (1) Finger pinch with compound wrist motion
- (2) Uses: Pinch strengthening
Compound wrist motion
Prosthetic training
- (3) *To simulate: machine controls, pencil sharpener hand drill, lathe or milling machine crank*

e. **501-Small screwdriver handle**

502-Medium screwdriver handle

504-Large screwdriver handle

- (1) *To simulate: screwdriver of various sizes, pipes, wrist*

curls

- f. **601-Cylindrical handle**
 - (1) Hand grasp
 - (2) Uses- Supination/pronation
Radial and ulnar deviation

- g. **701- Medium crank handle**
 - (1) Hand grasp (rotational) three position crank handle
 - (2) Uses: wrist flexion/extension with arm support
Pushing/pulling
Total upper extremity ROM
Prosthetic training
 - (3) *To simulate: machine control, car window crank*

- h. **802-Large Crank Handle**
 - (1) Uses: Elbow flexion/extension
Internal/external shoulder rotation
Shoulder abduction/adduction
Pushing/pulling (overhead or horizontal)
Amputee and prosthetic training
 - (2) *To simulate: lifting, crowbar, drill press, wrenches, etc*

- i. **901-End/side handle with articulation joint**
 - (1) One or two-handed grasp (linear motion)
 - (2) Uses: Pushing/pulling,
Bilateral upper torso motions,
Elbow and shoulder flexion/extension
 - (3) *To simulate: saw, shovel & lifting*

- j. **122-Two handled reciprocating crank (rotational)**
 - (1) *To simulate: auger drill and upper extremity ergometer*

- k. **131/141-Large steering wheel**
 - (1) *To simulate: driving, valve wheels, machine controls*

- l. **162-Grip and pinch tool**
 - (1) *To simulate: pliers, scissors, shears and stapler*

- m. **171-Straight handle with articulating joint**
 - (1) *To simulate: shovel, knife, tennis racket, hammer, broom, baseball bat, caper, vacuum cleaner*

- n. **181-Multiple handle crossbar**
 - (1) *To simulate: climbing ladder, pulling ropes*

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- o. **191-Dynamic linear motion attachment**
(1) *To simulate: rowing, bowling, baseball bat*
- p. **191B-Extension pole**
(1) See instruction in manual
- q. **001-Range of motion limiter**
(1) Refer to manual for details
- r. **002-Arm support for wrist flexion/extension**
(1) Refer to manual for details

E. Maintenance and Utilities

- 1. The BTE SIMULATOR II has been designed with very low maintenance required
- 2. Cleaning the attachments
 - a. Use hospital approved disinfectant per facility guidelines to clean the attachments and any surfaces the patient comes in contact with.

NEVER PLACE ANY OIL OR OTHER LUBRICANT INSIDE THE EXERCISE HEAD!

- 3. Calibration
 - a. Calibration refers to accurately measuring torque and setting the desired resistance for the SIMULATOR II.
 - b. The BTE SIMULATOR II system is calibrated every month and documented in a record book.
 - c. See specific instructions for details under Maintenance and Utilities.
- 4. Database Management
 - a. To keep the system operating at peak efficiency and the database manageable size, keep only current active patients
 - b. Once a patient has been discharged, delete that patient or archive them to a CD-RW, then delete them.
 - c. See instructions to backup and for archive functions.
- 5. Extended warranty agreement
 - a. The annual extended warranty is no longer being maintained which included the following:
 - (1) Coverage, use and service
 - (2) Telephone support

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- (3) Software update and corrections
- (4) Training
- (5) Parts and labor
- (6) Shipping
- (7) Replacement parts

References: BTE Technologies™ user manual	
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