


M.D. NEWS

Special Feature



HealthSouth of Kingsport
Brings Cutting-Edge Technology
into the Rehabilitation Process

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By Ann N. Yungmeyer

With the unfortunate distinction of being located in the “stroke belt,” the Tri-Cities TN/VA region has a high stroke population. The incidence of stroke, whether due to culture, environment or health habits, is currently being addressed by area medical communities through patient education and topnotch health care and facilities.

HealthSouth Rehabilitation Hospital of Kingsport, inspired to meet the needs of the region, strives to be a center of excellence for neurorehabilitation. More than half of HealthSouth patients have neurological impairments — many with disabilities due to stroke. Known for its excellent rehabilitation outcomes, HealthSouth continues to add innovative treatment modalities to improve patients’ recovery potential.

In September 2006, HealthSouth doctors and therapists unveiled their new state-of-the-art ambulation machine for treating patients with gait disorder. The AutoAmbulator is the first of its kind in the Tri-Cities area.

The AutoAmbulator was created and built by HealthSouth engineers, physicians and therapists, and approved by the U.S. Food and Drug Association (FDA) in 2002. Currently, well over half of the 93 HealthSouth hospitals nationwide are using the AutoAmbulator in both inpatient and outpatient treatment.

Dr. James Little, Medical Director at HealthSouth Kingsport since 2001, wants to stay in the forefront with technology and therapy options. He places a priority on identifying neuromodalities to reduce stroke-induced disabilities. “What we offer is an extension of our focus on patient functionality. To give the patient the full benefit of neurorehabilitation, new technology (in equipment) is a critical piece that goes with pharmacology and therapy expertise,” he says.

The AutoAmbulator is the latest among several new physical and occupational rehabilitation therapies available at HealthSouth Kingsport. Therapists specially trained to use the new technologies are highly enthusiastic about current and potential outcomes.

FOR PATIENTS WITH CONDITIONS THAT LIMIT WALKING OR BALANCE

The AutoAmbulator resembles a large treadmill, but after seeing it in action one can better appreciate the sophistication of its design. The machine was designed based on the premise of neuroplasticity and repetition of muscle movement. Computerized settings specific to the patient are input by the therapist, while sensors adjust the machine’s

speed and power according to the patient’s performance ability. The patient is held upright by harness, bearing only as much weight as can be tolerated, while robotic braces move his or her legs to simulate walking patterns. The motion stimulates leg muscle movement, and with gradually increased weight bearing, the patient can relearn motor skills and improve function. A full-length mirror allows for patient visualization, and safety features automatically shut down the machine in case of an adverse event, such as spasm or improper foot placement on the treadmill.

“We’re in the anecdotal stages, trying a few patients each week to determine who is best suited for the AutoAmbulator and how it will

The Saeboflex is indicated for neurologically impaired individuals, particularly post-CVA, to aid in relearning grasp and release of objects.





In order to benefit from Saeboflex therapy, patients must be able to squeeze someone's hand with their fingers and exhibit some active movement in the shoulder and elbow, as well as be able to stand for five minutes, understand and follow directions, communicate and provide feedback.

fit into a patient's individualized therapy program," says Ray Dillon, a senior physical therapist at HealthSouth. "A lot of positive research has been found on weight-supported treadmills, which have been in use for some time, but we are in the process of developing research on this machine, which adds mechanical assisted gait."

Therapists say the advanced technology facilitates the rehabilitation process. Whereas traditional ambulation therapy requires three therapists working together, the AutoAmbulator alleviates the need for support and can be administered by one therapist. Doctors and

therapists believe that patients can relearn normal walking patterns in a shorter time than with traditional ambulation therapy.

AutoAmbulator therapy is indicated for various neurological conditions, such as stroke (CVA), spinal cord injury, brain injury (BI), Parkinson's disease, multiple sclerosis (MS) and also for orthopedic and debilitative conditions that result in gait abnormality. Dillon says, "The machine can benefit patients with recent illness or accident, as well as those who have lived many years with ambulatory problems. With new research showing that the brain can forge new pathways to accommodate movement through training and repetition, the AutoAmbulator holds promise for helping patients regain normal walking patterns and quality of life."

Amber Cary, a physical therapist working with patient Dr. Chris Downs, is hoping the AutoAmbulator will allow him to increase cadence and coordination. Downs has undergone traditional ambulation therapy for more than two years since an automobile accident left him with peripheral ischemic neuropathy due to severe blood loss to the legs. He explains, "We hope this therapy will help the nerves regenerate through repetitive motion. It's a catch 22 — you have to move muscle and use nerves to regenerate, but without nerve function, you cannot move muscle."

HealthSouth therapists point out that the AutoAmbulator has size and weight limits, and is not indicated for children, pregnant patients or those with conditions, such as severe spasticity, unstable backs, osteoporosis or autonomic dysreflexia.

The concept of neuroplasticity is a common theme throughout many of HealthSouth's newest treatment modalities. "Retraining the brain to utilize new pathways is part of the

infrastructure we're aiming at through these therapies," says Little. "But it's an area where we need to increase our learning."

FOR PATIENTS WITH MILD TO SEVERE DYSPHAGIA

Electrical stimulation has long been used in rehabilitation to control pain, enhance muscle performance and to stimulate wound healing; more recently, it is gaining attention in the treatment of swallowing disorders. Major advancements in treating dysphagia have occurred

since 2001, when the FDA approved the use of neuromuscular electrical stimulation with VitalStim therapy.

According to research by the makers of VitalStim, it is estimated that dysphagia impacts as many as 15 million Americans, often due to stroke, radiation therapy for head and neck cancer, and degenerative neurological diseases. Symptoms range from mild discomfort with swallowing to loss of ability to swallow.

Allison Seay, speech language pathologist at HealthSouth Kingsport, is excited about the outcomes she's seen with VitalStim therapy. "There are a growing number of patients making significant progress with VitalStim, and it is becoming widely used." VitalStim therapy has been available at HealthSouth Kingsport since December 2003.

The therapy involves placing specially designed electrodes on the anterior neck where muscles control swallowing. A carefully calibrated electrical current stimulates the peripheral motor nerves and causes contraction in the muscles. Repeated therapy results in improved contractions and swallowing function.

VitalStim is used in conjunction with swallowing exercises and traditional treatment methods, such as thermal-tactile stimulation to retrain the inactive muscles. Seay, one of four certified VitalStim therapists at the Kingsport facility says the new modality recruits muscle fibers that traditional therapy alone does not.

HealthSouth employs VitalStim therapy in about three cases per week in patients who have had CVA, BI, neurological disease, MS, myasthenia gravis and head and neck cancer. "A lot of these patients present with NPO, and after several weeks of daily one-hour VitalStim treatments, many are clinically improved and return to eating solid foods," according to Seay. "Even if the patient has other impairments, such as aphasia or tracheotomy, VitalStim can be effective as long as the patient can actively participate in therapy."

Seay shares a case history, where a post-CVA female patient, age 46, a mother and a marathon runner, had success, "After eight VitalStim treatments, she had her modified barium swallow X-ray, which showed normal swallowing. She returned to normal diet and even back to running."

HealthSouth reports that in a clinical trial of 900 patients, more than 98% improved their swallow function score. Of those with severe dysphasia, 97% regained swallow function past the point of feeding tube dependency and 40% regained full normal-swallow function.

Clinical results have shown that treatment is not as effective on patients who are unable to follow instructions, lack motivation or have severe dementia or progressive neurological disorders. VitalStim is used in patients in all age groups, including children. *For more information, visit www.vitalstimtherapy.com.*

FOR PATIENTS WHO HAVE FUNCTIONAL LIMITATIONS USING HAND OR ARM MOVEMENT

HealthSouth has specialized in helping patients regain independence and handle common tasks, such as getting dressed, self-feeding or carrying necessary items. Occupational therapists at HealthSouth Kingsport have added a revolutionary rehabilitation device, called

Saeboflex, to their latest treatment modalities. The specially made hand orthosis is indicated for neurologically impaired individuals, particularly post-CVA, to aid in relearning grasp and release of objects.

The purpose of Saeboflex is to assist patients in performing repetitive, functional exercises using the involved hand and arm. The device allows unilateral training when combined with arm training drills and other retraining activities. With a specifically designed program, the orthosis is customized to fit the patient's hand. It has a mechanical spring-loaded system to extend the wrist and fingers and help the user grasp an object by voluntarily flexing his or her fingers. The spring system assists the hand in reopening to release the object.

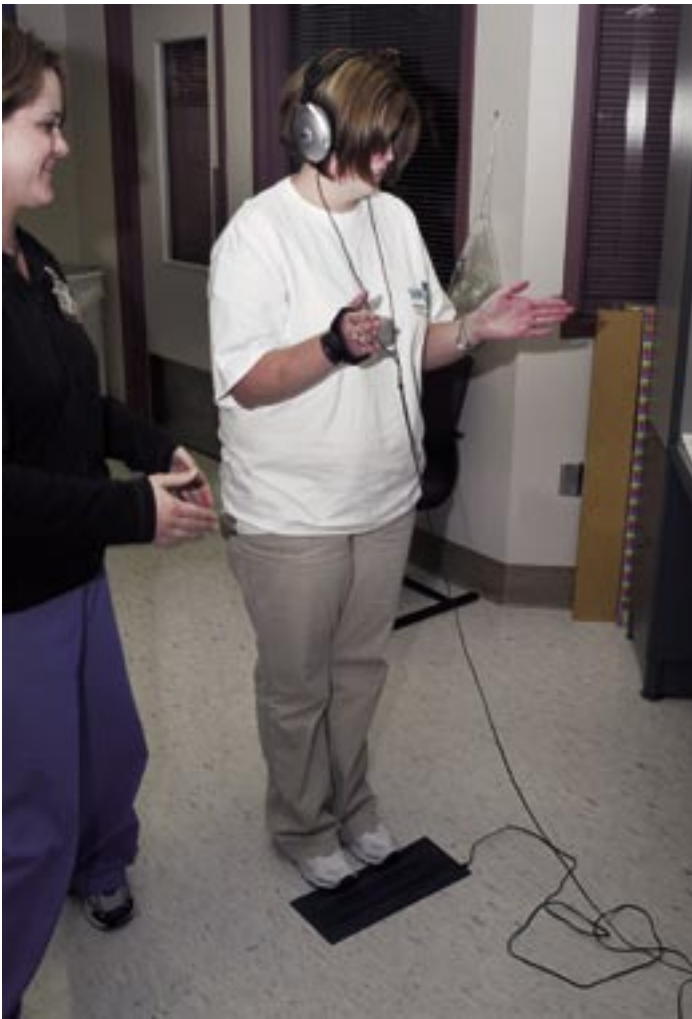
Senior occupational therapist Tracy Skinner says this new technology is a break-through from traditional therapy, with the added advantage that the patient can take the device home and potentially optimize workout sessions. "Outpatients can work on their own for 45 minutes twice a day," he says.

Saeboflex is ideal for post-CVA patients who are unable to open their hand due to increased tone or who have reached a plateau in traditional therapy. "It improves proximal stabilization, mobilization

Anodyne therapy is a noninvasive procedure, which uses near-infrared light to increase local circulation and reduce pain. Anodyne is used in patients to improve circulation, sensation and nerve function, and can be effective in healing skin pressure ulcers and reducing pain.



PHOTO BY ANDY OLSON, ABSOLUTE COMMUNICATIONS



Interactive metronome (IM) rehabilitation involves synchronizing various hand and foot exercises to a computer-generated reference tone heard through headphones. IM was developed to improve timing skills and processing abilities that affect attention, motor planning and sequencing.

against gravity and control of the arm, even in patients many years post neurological injury,” explains Skinner. “It offered a ‘spark of new hope’ for one patient who suffered from hemispatial neglect. She couldn’t release or feel an object in her hand,” says Skinner. “After six weeks of using Saeboflex, she can relax her hand and is now exercising without her device.” Skinner points out that a key component to compliance is having someone at home to help the patient put on the device.

Skinner explains that Saeboflex is designed to promote normal functional sequence; the reaching and grasping sequence requires the use of 16 active muscles. So, in order to benefit from Saeboflex therapy, patients must be able to squeeze someone’s hand with their fingers and exhibit some active movement in the shoulder and elbow. Patients must also be able to stand for five minutes, understand and follow directions, communicate and provide feedback.

Skinner is one of two therapists at HealthSouth who have received certification to perform Saeboflex fitting and therapy. They are among the first to be trained in the Tri-Cities. *For more information, visit www.saebo.com.*

FOR PATIENTS WITH COMPROMISED NERVE FUNCTION AND SYMPTOMATIC PROBLEMS WITH PAIN OR POOR CIRCULATION

HealthSouth has recognized the benefits of Anodyne therapy, a noninvasive procedure which uses near-infrared light to increase local circulation and reduce pain. Widely used since 1994, the treatment is considered safe and is FDA approved, and has recently become available at HealthSouth Kingsport.

Anodyne is used in patients to improve circulation, sensation and nerve function, and can be effective in healing skin pressure ulcers and reducing pain. It is also used to improve balance and gait and reduce risk of falls in patients with neuropathy.

HealthSouth physical therapist, Preci Pioquinto, is enthusiastic about the treatment. Pioquinto was involved in a pilot study on the effects of Anodyne a few years ago and liked what she saw, “In one patient nurses had been treating an open wound complication for five years. After four to six weeks of Anodyne treatment, the wound closed and healed up.” Besides wound treatment, she finds it especially effective in relieving pain postsurgery. “With less pain, the patients are able to get their active range of motion and functional mobility sooner,” she says.

Pioquinto warns that not all patients like the feeling of the monochromatic infrared photo energy penetrating through the electrical pads, which she adheres over a plastic barrier with neoprene straps. “Most like the increased sensation of warmth, but some have said they felt tingling,” she adds.

Anodyne is frequently indicated in patients with diabetes, peripheral vascular disease (PVD) and chronic wounds. It can also benefit patients with carpal tunnel, sprains, degenerative disc disease, osteoarthritis and tendonitis. Patients often get results after three to four weeks.

PATIENTS WHO EXPERIENCE COGNITIVE AND MOTOR IMPAIRMENTS

Keep the beat is the mantra for patients in Interactive Metronome (IM) rehabilitation. This advanced training program for physical, neurological and motor rehabilitation was introduced to health care professionals in 1999. IM has received broad media coverage for its proven applications and enhanced outcomes when integrated with traditional rehabilitation programs. HealthSouth Kingsport is one of more than 1,500 clinics and hospitals in North America, Europe and Australia to have certified IM providers.

IM involves synchronizing various hand and foot exercises to a computer-generated reference tone heard through headphones. The patient tries to match the rhythmic beat by tapping toes or clapping hands while being monitored by the IM system. Immediate feedback is provided by an audio-visual guidance system, and the patient’s scores are evaluated between sessions. The trained therapist adjusts the synchronization exercises according to patient progress.

IM was developed to improve timing skills and processing abilities that affect attention, motor planning and sequencing. Patients can see improvement in many cognitive and motor skills, such

as concentration, language processing, behavior, balance, gait, strength and coordination.

Amy Wilkinson, a physical therapist who received IM certification, recently administered the therapy to patients to improve their gross motor skills and reflex. It's very challenging, both mentally and physically; the patient does up to 1,000 reps per session," she says.

"One stroke patient saw improved instantaneous movement and reflexes after 10-12 sessions," Wilkinson says. She cites an example of another patient she treated for balance who came in with a walker and no longer needed it after several weeks of therapy two to three sessions/week.

"The goal for outpatients is to become more functionally independent," she explains. "We measure their progress by the percentage of assistance needed by a caregiver."

Adults and children who have benefited from IM therapy include patients with BI, CVA, spinal cord injury, Parkinson's disease, MS, Guillain Barre disease and developmental and balance disorders. *For more information, visit www.interactivemetronome.com.*

HEALTHSOUTH KINGSFORT

HealthSouth is one of the nation's largest providers of inpatient and outpatient rehabilitative health care services. HealthSouth Rehabilitation Hospital of Kingsport is owned by HealthSouth Corporation.

HealthSouth Kingsport is an acute inpatient rehabilitation hospital treating more than 1,000 patients per year from Southwest Virginia, Northeast Tennessee, Southeastern Kentucky and Northwestern North Carolina. The facility offers care by physician specialists in physical medicine and rehabilitation, pulmonology, neurology, gastroenterology, ENT, internal medicine and family practice.

Rehabilitative services include physical therapy, occupational therapy, respiratory therapy, speech language pathology, physical medicine, rehabilitation nursing, case management, nutritional counseling, neuropsychology, orthotics/prosthetics, community reentry, social services and family counseling.

HealthSouth is focused on helping patients achieve the best possible quality of life, and strives for community reintegration of all patients. Inpatient treatment focuses on daily living activities so patients can return home with greater function and independence. Approximately 80% of patients return home.

"We want to help families keep their loved ones from needing to make the move to a long-term skilled nursing facility. In our Medical Recovery Program, we see a lot of deconditioned patients that just need a 'tune-up' and are then able to continue living at home," says Robert Ley, Director of Marketing Operations. Doctors and therapists at HealthSouth Kingsport are pleased to offer state-of-the-art treatment modalities, many of which are approved for Medicare coverage.

For referrals or assessment information, call HealthSouth Rehabilitation Hospital, 113 Cassel Drive, Kingsport, TN 37660 at (423) 246-7240 or 1-800-454-7422. ■

Using IM rehabilitation, the patient tries to match the rhythmic beat by tapping toes or clapping hands while being monitored by the IM system. Immediate feedback is provided by an audio-visual guidance system, and the patient's scores are evaluated between sessions.

