



Restorative Therapies
THE LEADER IN FES POWERED SYSTEMS

Our therapy systems integrate functional electrical stimulation with motorized ergometers to help you achieve more than you ever expected.



FES evoked activity has been shown to be an effective acute and chronic intervention with benefits including:

- Reversing muscle atrophy
- Reducing muscle spasms
- Improving local circulation
- Increasing range of motion

What is FES?

FES is a well established rehabilitation technique that uses pulses of electrical current to stimulate peripheral nerves evoking muscle contractions and patterned muscle activity. With Restorative Therapies systems, FES creates patterned movement in the arms, legs and trunk. FES enables muscles to work and perform activities even though the muscles may be weak or paralyzed through neurological disease or injury.

What is an ergometer?

An ergometer is a machine that allows an individual to perform a repetitive activity such as cycling or stepping. It guides the muscle activity evoked by FES into a useful pattern. Ergometers also measure the amount of work that muscles perform during an activity. We motorize our ergometers so they can automatically provide assistance or resistance throughout a therapy session as required by an individual.

Why is active therapy important?

During passive therapy, muscles don't actually do any of the work. Arms and legs are moved mechanically, by a non-FES cycle for example. Active therapy, on the other hand, allows muscles to do the work they are meant to do. This is achieved either by an individual moving their muscles on their own or when muscles are activated by FES. Either way, active therapy means muscles are working and performing the activity.

What is the role of FES therapy along the continuum of care?

Our FES systems can be applied across the continuum of care from the acute phase to chronic intervention. For many patients the application of FES systems is a short term intervention they use during their recovery process. When recovery is longer or less function is regained, patients may benefit from FES systems as a long term intervention at a facility or in the home. Restorative Therapies routinely works with families and a wide range of funding sources to obtain home systems. All our systems are suitable for clinic and home use and are available for adults and pediatrics.

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CAUTION: FEDERAL LAW RESTRICTS THIS DEVICE TO SALE BY OR ON THE ORDER OF A PRACTITIONER LICENSED BY THE LAW OF THE STATE IN WHICH HE PRACTICES TO USE OR ORDER THE USE OF THIS DEVICE.

RT300 sets the standard in FES cycling



RT300-SLSA



RT300-SUPINE



RT300-SLP



RT300-SL



RT300-SA

- IDEAL FOR HOME OR CLINIC USE
- COMPACT & PORTABLE
- CYCLE SECURELY FROM A WHEELCHAIR, CHAIR OR BED
- STIMULATE UP TO 16 MUSCLE GROUPS
- FOR STIMULATION IN ONE OR BOTH LEGS OR ARMS AND TRUNK

Rx only

RT300-SLSA SPECS:

FES channels	6 expandable to 16
Speed	15 – 55 rev / min
Torque	1 – 22Nm leg ergometer 1 – 20Nm arm ergometer
Current	0 to 140mA, 1mA steps
Pulse width	50 to 500usec, 10usec steps
Frequency	10 to 100Hz



RT300 SLSA

provides FES
arm or leg cycling



RT300-SLSA provides either FES leg or FES arm cycling. This is a very flexible device that is used by leading clinics globally across a wide range of patient indications.

Leg and arm cycle from a wheelchair without transferring or use a chair, plinth or balance ball.

MUSCLE SELECTION

UPPER EXTREMITY AND SHOULDER

Based on individual presentation for arm cycling you can select from biceps, triceps, anterior deltoid, posterior deltoid, grasp or wrist extensors/release.

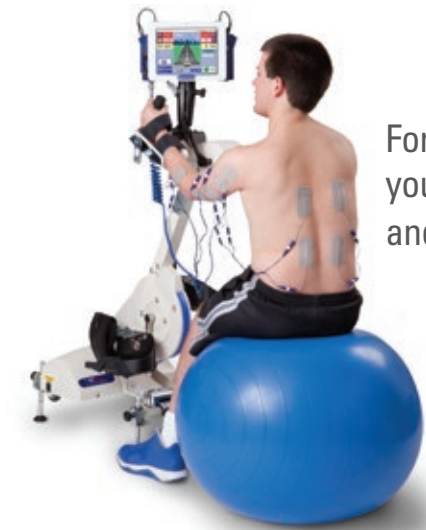
LOWER EXTREMITY

Based on individual presentation for leg cycling you can select from quadriceps, hamstrings, gluteals, gastroc and anterior tibials.

TRUNK

For core strength and stability you can also select abdominal and back muscle groups (e.g. erector spinae).

All stimulation is appropriately coordinated during the leg or arm cycling motion based on muscle selection.



For core strength you can select abdominal and back muscles.

SHOULDER STRENGTH AND STABILITY

SAGE provides functionality to ensure shoulder stability while arm cycling.



- Shoulder muscle stimulation can be applied prior to movement to correct shoulder subluxation.
- Stimulation can be applied to improve posture while arm cycling including retracting and depressing the scapula.



Arm rests and gloves help support the arm and secure the hands while cycling.

Rx only

RT300-SA SPECS:

FES channels	6 expandable to 16
Table height	28.5" to 39.5"
Speed	15 – 55 rev / min
Torque	1 – 22Nm
Current	0 to 140mA, 1mA steps
Pulse width	50 to 500usec, 10usec steps
Frequency	10 to 100Hz



RT300-SA

provides FES arm cycling

RT300-SA provides FES arm cycling. This system utilizes an electric height adjustable table for easy set up in a clinical environment or it can be mounted on a static table for individual home use. Access the cycle from a wheelchair without transferring or use a chair, plinth or balance ball.



SHOULDER STRENGTH AND STABILITY

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- Shoulder muscle stimulation can be applied prior to movement to correct shoulder subluxation.
- Stimulation can be applied to improve posture while arm cycling including retracting and depressing the scapula.



MUSCLE SELECTION

UPPER EXTREMITY AND SHOULDER

Based on individual presentation for arm cycling you can select from biceps, triceps, anterior deltoid, posterior deltoid, wrist grasp or wrist extensors/release.

TRUNK

For core strength and stability you can also select abdominal and back muscle groups (e.g. erector spinae).

All stimulation is appropriately coordinated during arm cycling motion based on muscle selection.



Arm rests and gloves help support the arm and secure the hands while cycling.

Rx only

RT300-SL SPECS:

FES channels	6 expandable to 16
Speed	15 – 55 rev / min
Torque	1 – 22Nm
Current	0 to 140mA, 1mA steps
Pulse width	50 to 500usec, 10usec steps
Frequency	10 to 100Hz



RT300-SL

provides FES
leg cycling



RT300-SL is a compact and portable system, easy to set up and convenient to use.

Use RT300-SL right from your wheelchair - no transfer is required.

Height adjustable platform facilitates correct ergonomic setup.

Adjustable calf supports secure the legs while the feet are placed in the footrests.

Wheelchair restraints hold the wheelchair securely in position during therapy sessions.

MUSCLE SELECTION

LOWER EXTREMITY

Based on individual presentation for leg cycling you can select from quadriceps, hamstrings, gluteals, gastroc and anterior tibialis.

TRUNK

For core strength and stability you can also select abdominal and back muscle groups (e.g. erector spinae).

All stimulation is appropriately coordinated during the leg cycling motion based on muscle selection.

Rx only

RT300-SUPINE SPECS:

Optional FES channels	6 expandable to 12
Table height	32" to 47.5"
Table width	34" to 46.5"
Positioning	Over the bed
Speed	15 – 55 rev / min
Torque	1 – 22Nm Power input 130VA
Current	0 to 140mA, 1mA steps
Pulse width	50 to 500usec, 10usec steps



RT300 SUPINE

with optional integrated FES

RT300-Supine provides leg and arm cycling from a bed and is ideal for use in the ICU, acute rehabilitation environments or for bedridden home patients.

RT300 is mounted on an expandable table fitting over and around beds allowing RT300 to be brought to the patient. Height is easily adjustable via the motorized table up to 47.5" .

RT300 accommodates beds up to 46.5" wide including bariatric beds and has an antimicrobial touch screen, easily cleanable surfaces and gel pads for skin protection.

ADVANTAGES OF FES

Use with weak, sedated or paretic patients. Stimulate up to 12 muscle groups in lower extremities, upper extremities and trunk.

All stimulation is appropriately coordinated during the leg or arm cycling motion based on muscle selection.

ARM CYCLE

Switch out pedals for hand grips and arm cycle while supine, seated or standing.



This portable system is easy to set up over a bed or chair and is convenient to use.



Rx only

RT200 SPECS:

FES channels	6 expandable to 16 Minimum 12 recommended for clinic use
Speed	15 – 55 rev / min
Torque	1 – 22Nm
Current	0 to 140mA, 1mA steps
Pulse width	50 to 500usec, 10usec steps
Frequency	10 to 100Hz

RT200

is the only motorized FES elliptical



RT200 sets a new standard in efficient and effective hybrid therapy where arms and legs work simultaneously. Along with the benefits of FES, working arms and legs together can achieve enhanced cardiovascular effect over working just arms or just legs. And the motor provides both assistance and resistance.

RT200 provides a smooth continuous motion without end of range bump. The ipsilateral leg to arm motion is 1:1 providing for natural swing.

RT200's seat reclines, rotates for ease of entry and exit and slides to accommodate varying leg lengths. Robust design for heavy institutional use.

Ideal applications include:

- Individuals with volitional upper extremities and FES stimulated lower extremities for the highest cardiovascular effect
- FES on lower and upper extremities to reduce total therapy time and enhance cardiovascular effect

MUSCLE SELECTION

UPPER AND LOWER EXTREMITIES AND SHOULDER

Based on individual presentation for RT200 you can select from upper and/or lower extremity muscles:

- Quadriceps, hamstrings, gluteals, gastroc and anterior tibialis.
- Biceps, triceps, anterior deltoid, posterior deltoid, grasp or wrist extensors/release.

TRUNK

For core strength and stability you can also select abdominals and back muscle groups.

All stimulation is appropriately coordinated during the elliptical motion based on muscle selection.

RT600

provides upright FES stepping therapy



RT600 is the only fully integrated upright FES stepping therapy system achieving muscle activation and weight bearing simultaneously. Standard with 12 channels of FES, you can expand up to 16. Stride length is adjustable from 9" to 18" in 3" increments accommodating small children to adults. Individuals step on RT600's motorized footplates which provide a "virtual ground" offering unique clinical options.

SAGE software controls the footplates to:



- provide a stepping surface of varying firmness accommodating tone and spasticity
- assist with ankle plantar and dorsiflexion while accommodating limitations in range of motion

Partial body weight support is provided by RT600's electric hoist. Weight bearing information is transmitted wirelessly to SAGE where it is used to control FES levels to target a clinician determined weight bearing percentage.

Hip stabilization straps attach to RT600's harness to provide an adjustable level of hip control while still allowing hip movement.

The harness is available in three sizes to accommodate children, adults and bariatric individuals. RT600 requires only 8' in ceiling height.

More features, more affordable and less labor intensive than other devices, the compact RT600 meets patient and clinic needs.

MUSCLE SELECTION

LOWER EXTREMITY

Based on individual presentation for RT600 you can select from:

- quadriceps, hamstrings, gluteals, gastroc and anterior tibialis

SHOULDER

- shoulder and scapula stabilization

TRUNK

For core strength and stability you can also select abdominals and back muscle groups.

All stimulation is appropriately coordinated during the stepping motion based on muscle selection.



RT600 SPECS

FES channels	12 expandable to 16
Current	0 to 140mA, 1mA steps
Pulse width	50 to 500usec, 10usec steps
Frequency	10 to 100Hz

ERGOMETER:

Stride length	9" to 18" in 3" increments
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HOIST:

Maximum weight	400 lbs
Maximum hoist height	8'

ELECTRIC PLINTH (OPTIONAL)

Surface size	29" x 77"
Height	18" x 34"
Head section	10", 40 to -90 degrees
Padding	Medical grade
Max load	550 lbs



Our high low plinth facilitates fitting electrodes, harness and transfer to the RT600 ergometer.

Rx only

Pediatrics

RT300-SLP SPECS:

FES channels	6 expandable to 16
Speed	15 – 55 rev / min
Torque	1 – 22Nm
Current	0 to 140mA, 1mA steps
Pulse width	50 to 500usec, 10usec steps
Frequency	10 to 100Hz



RT300-SLP

RT300-SLP is indicated for children as young as 4 years old.

FES therapy for children

Children with neurological impairments have much to gain from FES activity based therapy.



RT300 pediatric pedals are highly configurable to accommodate a wide range of orthopedic issues.

Working with children and FES requires specialized knowledge and experience. Pediatric FES is a specialty of Restorative Therapies. We work with leading pediatric clinics to help ensure that our therapy systems are safely and effectively used with children to help them achieve their full potential.



RT600 pediatric footplate adptions allow children as small as 34" tall to utilize RT600.



RT300-SLP



RT600



is the smart therapy control system that is built into all our FES powered systems.

SAGE is the only system that fully integrates the operation of the ergometer motor with the electrical stimulation.

Dynamic Motor Support delivers accurate speed, resistance and assistance making the system 100% responsive to an individual's performance level, maximizing muscle contractions and producing consistent, reliable therapy.



SAGE provides fully comprehensive therapy including:

- Asymmetry monitoring and display
- Minimum stimulation levels for patients with volition
- Spasm management prevents, detects, manages tone & spasticity
- Interval training
- Automatic therapy progression

SAGE provides flexibility that allows you to set therapy and stimulation parameters that are optimal for each individual.

- Select any number of muscle groups to be stimulated, up to a maximum of 16. Muscles are automatically stimulated for joint stability and positioning in the shoulder and scapula or to evoke muscle contractions in trunk, arms and legs.
- Easily accommodate individuals who have sensation or only need FES on one side
- Real time parameter adjustment facilitates optimal therapy settings

SAGE provides full capacity stimulation.

- Alternating monophasic rectangular current pulses
- 0 to 140 mA with 200 volt compliance (1 mA increments)
- 50-500 usec pulse width (10 usec increments)
- 10 to 100 Hz frequency

SAGE provides a large color, antimicrobial touch sensitive display screen with intuitive & easy to operate controls.

For clinicians this means a faster learning curve. With the same user interface across all our FES powered systems, knowledge of one system makes it easy to use the others. At a glance you can evaluate FES levels, speed, distance, power or weight bearing, resistance, pulse and oxygen saturation and time remaining. For individuals, operating SAGE could not be easier. Once programmed with their unique ID number, tapping GO on any system initiates their therapy session utilizing their latest therapy parameters. Animation depicts a selectable avatar riding through the countryside and city with optional background sound enhancing the patient's experience.

SAGE links with [RTILink.com](https://www.rtilink.com), a secure privacy compliant database with full telemedicine functionality including:

- Store & forward of therapy settings and results with appropriate clinician and individual access rights
- Interactive telemedicine providing real time remote adjustment of therapy parameters and control of therapy sessions
- Comprehensive reporting

RT60 provides six channels of portable stimulation



Fit two RT60s for 12 channels of stimulation.



Use your RT60s for flexible, stand alone stimulation.



RT50 stimulators are wireless stimulation channels

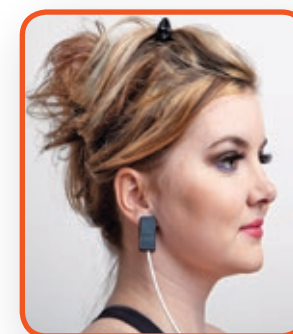


RT50 single channel stimulators can be added to SAGE to increase the number of available FES channels. Or they can be used instead of the stimulation cable to provide wireless channels.



SAGE Accessories

Use these accessories with any system



PULSE OXIMETER

SAGE's pulse oximeter keeps you on track. Our pulse oximeter clips to the ear lobe providing real time display of oxygen saturation and pulse rate. All of the data is logged to RTILink.com.



STIM SHORTS

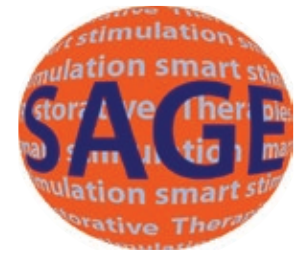
Stimulation shorts with the electrodes built into the shorts conveniently position gluteal, quadriceps and hamstring electrodes for lower extremity stimulation.



RT50 WIRELESS STIMULATORS

Wireless Stimulators are available as a kit of 2 or 4 stimulation channels.





Use your SAGE stimulator independently of your FES ergometer.



Unclip the SAGE controller from your FES ergometer and it becomes a versatile and stand alone multi channel FES stimulator. Create patterns to evoke a wide range of FES functional activities and exercises.

- Build a stimulation pattern utilizing up to 16 channels of stimulation
- Adjust parameters in realtime
- Configure a duty cycle
- Save the pattern for your patient's use



SAGE stimulator can also stand alone.

FUNCTIONAL ACTIVITIES AND EXERCISES

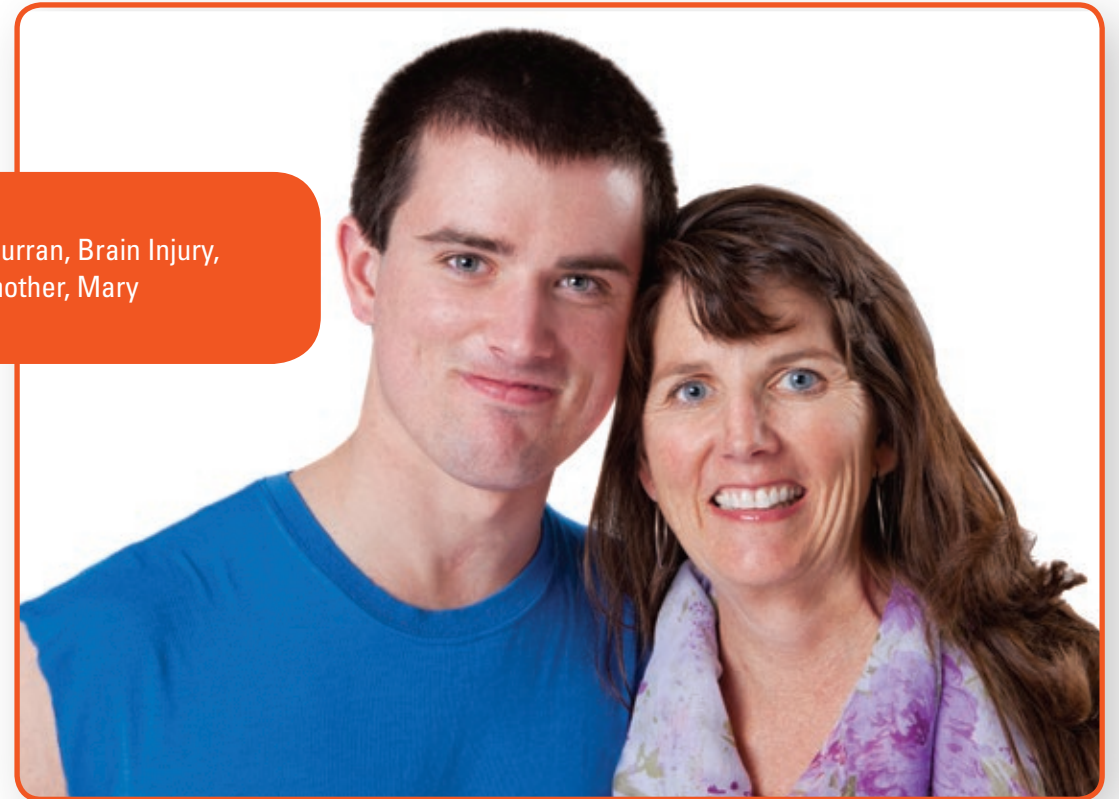
- Sit to stands
- Antagonist strengthening
- Lower extremity weight bearing
- Sitting balance / postural activity
- Antagonist strengthening
- Forward reaching
- PNF patterned activities
- Upper extremity weight bearing

FULL CAPACITY STIMULATION

SAGE stimulator provides the same full capacity stimulation that is available with your ergometer.

SAGE STIMULATOR SPECS:

Current	0 to 140mA, 1mA steps
Pulse width	50 to 500usec, 10usec steps
Frequency	10 to 100Hz



Andrew Curran, Brain Injury, with his mother, Mary

Visit www.restorative-therapies.com/testimonials to learn more from actual users.



Diana Price, Multiple Sclerosis, with her mother, Jean



Andrew Peffely, L4 Spina Bifida, with Wendy Warfield, Occupational Therapist



CLINICAL TRAINING CENTER

The Clinical Training Center (CTC) occupies 3,500 sq feet of accessible space in our Baltimore, Maryland facility. Walking distance to the Inner Harbor area's hotel facilities. The CTC includes a dedicated classroom for up to 18 students, break out room and fully equipped gym outfitted with our full range of FES systems. Local patients enjoy volunteering to support the program, providing excellent hands on training opportunities for students.

WHY TRAIN AT THE CTC?

- A dedicated training facility without your day to day interruptions
- Outfitted with a full range of FES and related therapy equipment
- Experienced clinical educators with on the spot access to engineering and research staff
- Classroom time to build background knowledge and understanding
- A learning atmosphere in which therapists can practice advanced application of FES power systems in a supportive environment
- Courses accredited for Continuing Education Units (CEU)

AVAILABLE COURSES:

ADVANCED FES SYSTEMS 2 1/2 days

This course provides instruction on FES principles with hands on training using all our FES systems.

EQUIPMENT SPECIFIC 2 days

These courses provide detailed training for a specific FES system with an optional focus on UE or LE.

INDICATION SPECIFIC 1 day

These courses focus on a specific indication (SCI, ABI, MS, CP) utilizing an FES system.

PEDIATRIC 1 day

This course is focused on the use of RT300 and RT600 in pediatric SCI and CP.

CUSTOMIZED COURSE

We are happy to customize a course to meet your specific training requirements.

ABOUT RESTORATIVE THERAPIES

With Restorative Therapies, you can count on technical innovation and world-class design, productive research and clinical relationships and ongoing commitment to our customers. In this, we are supported by our guiding principles:

PROVIDE YOU WITH THE BEST THERAPIES, SERVICES AND SUPPORT.

Restorative Therapies has more experience and data on FES powered systems than any other company. Our philosophy is to invest strongly in research and development to develop the highest quality, most technologically advanced products to enhance outcomes. We strive to deliver excellent customer service throughout the sales, insurance and installation processes. Once a customer has a system, our experienced clinical and technical support teams are there to help keep them progressing.

BUILD RELATIONSHIPS WITH HEALTH CARE PROFESSIONALS.

Restorative Therapies is committed to creating relationships with health care professionals who provide neurological rehabilitation. Our FES powered systems are being adopted by leading clinics everywhere and we continually provide clinical education and training. We're dedicated to the people who can help patients achieve their goals.

UPGRADE OUR RECIPIENTS WITH THE LATEST TECHNOLOGICAL ADVANCEMENTS.

You can be sure that we're listening to patients and clinicians as we work on new technical innovations. Our ongoing participation in research studies is advancing the field of electrical stimulation therapies. New products and free software upgrades are a part of our commitment to all customers.

Restorative Therapies can help you do more than you ever expected. We're committed to delivering exceptional electrical stimulation devices and therapies to help your patients stay active and stay ready to benefit from any medical breakthrough. It's our mission to help your patients achieve their full potential.

For full details please visit: restorative-therapies.com/cliniciantraining

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