

# BITS<sup>®</sup>

Bioness | Integrated | Therapy | System



|| VISION



|| COGNITION



|| MOTOR



|| BALANCE





# Bioness Integrated Therapy System

BITS is a multi-disciplinary therapy solution designed to motivate patients and enhance clinician efficiency. BITS' interactive touchscreen and diverse program options challenge patients to improve performance through the use of visual motor activities, visual and auditory processing, cognitive skills, endurance and balance training. Standardized assessments and progress reports make documenting outcomes quick and easy.



## PATIENT ENGAGEMENT

Motivate patients to progress with stimulating therapy exercises.



## CLINICAL UTILITY

Provide more training options with over 60 programs in a single system.



## CLINICIAN EFFICIENCY

Accomplish more with a single session and demonstrate outcomes over time.

**Engage patients across the continuum of care, expanding clinical utility and driving clinician efficiency.**

# Rehab's #1 Multidisciplinary Therapy Solution

BITS is an expandable platform technology that provides therapy challenges and assessment outcomes in one easy-to-use solution. BITS is a multi-disciplinary system that can be used by PT, OT and SLP. And with the various hardware configurations, BITS can be used for patients across the continuum of care from the acute care setting to outpatient programs.

With **NEW BITS Balance**, track patient movements during balance exercises using a body worn motion sensor or balance platform that detect posterior, anterior and lateral movement. Personalize and configure balance training sessions for patients at every level of mobility throughout their rehabilitation.



# Adapting the Power of BITS to Your Needs

Standing, Sitting or Supine, BITS is encouraging patient engagement at every stage of recovery.

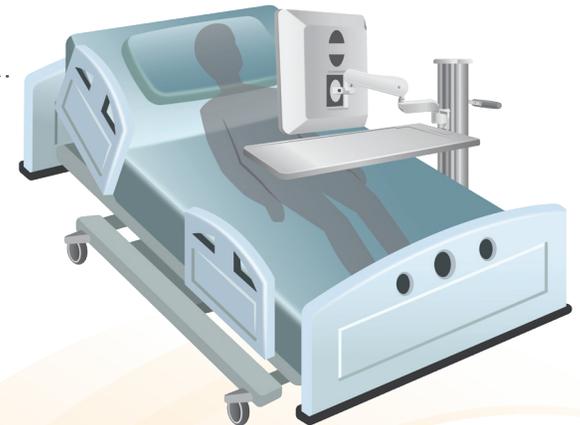


## ..... **55" DISPLAY CONFIGURATION**

The most popular choice, BITS 55" display is intended to be the ideal choice for visual field therapy, challenging balance, weight shifting, reaching and more.

## **BEDSIDE TABLE CONFIGURATION** .....

Designed for patients who are unable to be treated in a conventional therapy gym due to isolation or safety precautions. Promote patient engagement early by challenging cognitive and motor abilities.



## ..... **MOBILE CART CONFIGURATION**

Designed for smaller treatment rooms and speech therapy offices. Perform therapy while seated in combination with table-top activities or position close to the floor while patients perform pre-gait activities.



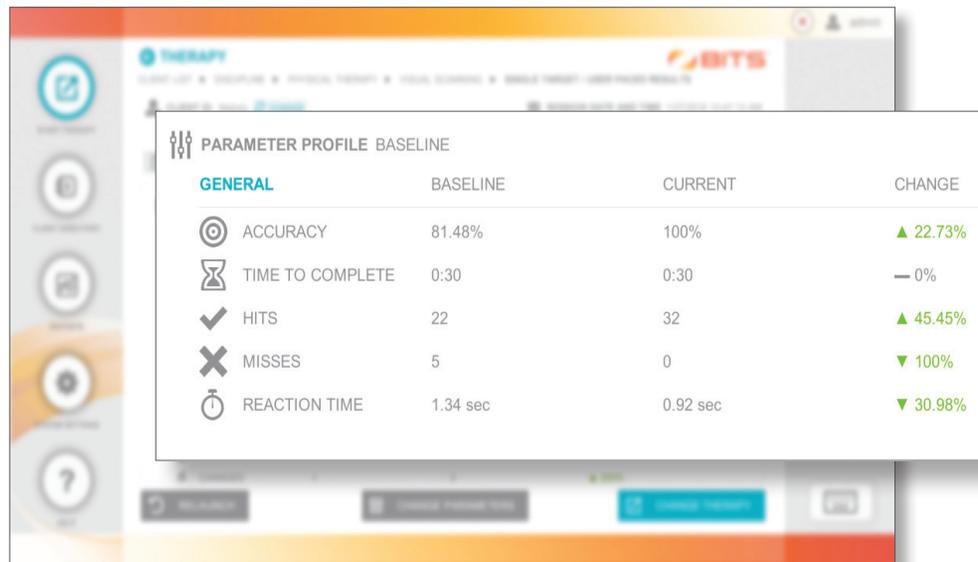
# Drive Efficiency for Patient Therapy Sessions

## SMART REPORTING

Documenting outcomes is easier than ever before. Save a baseline and track progress using the system's automated graphing capabilities. Reports can motivate and demonstrate patient progress to the patient, family members, referring providers, and payers.

## DIGITIZED STANDARD ASSESSMENTS

By digitizing paper-based assessments such as **Bell Cancellation**, **Berg Balance Scale** and **Functional Reach Test**, BITS reduces the time needed to administer tests and analyze results. Launch an assessment full screen to challenge a larger visual field, or scale it down to more closely replicate the paper test.



# BITS THERAPY CATEGORIES



# BITS Therapy Categories



## **VISUAL SCANNING**

Designed to challenge and assess visuomotor coordination, visual attention, peripheral awareness, hand speed, reaction time, and cognitive training.



## **VISUAL PURSUIT\***

Designed to challenge and assess visuomotor coordination, peripheral awareness, reaction time, and cognitive training.



## **COGNITIVE**

Designed to challenge and assess visual memory, auditory memory, visual/auditory motor planning, and cognitive training.



## **VISUAL MOTOR**

Designed to challenge and assess visual-motor integration, visual form perception, and peripheral awareness.



## **CHARTS**

Designed to challenge and assess visual search skills, accuracy, speed of response, and visual and auditory processing.

# BITS Balance Therapy Categories



## **STATIC BALANCE**

Designed to challenge and assess postural stability, postural orientation and trunk control while body is at rest. Balance exercises are combined with cognitive and visuomotor activities.



## **DYNAMIC BALANCE\***

Designed to challenge and assess weight shifting, postural control and limits of stability while the body is in motion. Challenge dual-tasking capability by combining vision, motor and cognitive activities with balance training.



## **OPTOKINETIC STATIC AND OPTOKINETIC DYNAMIC\***

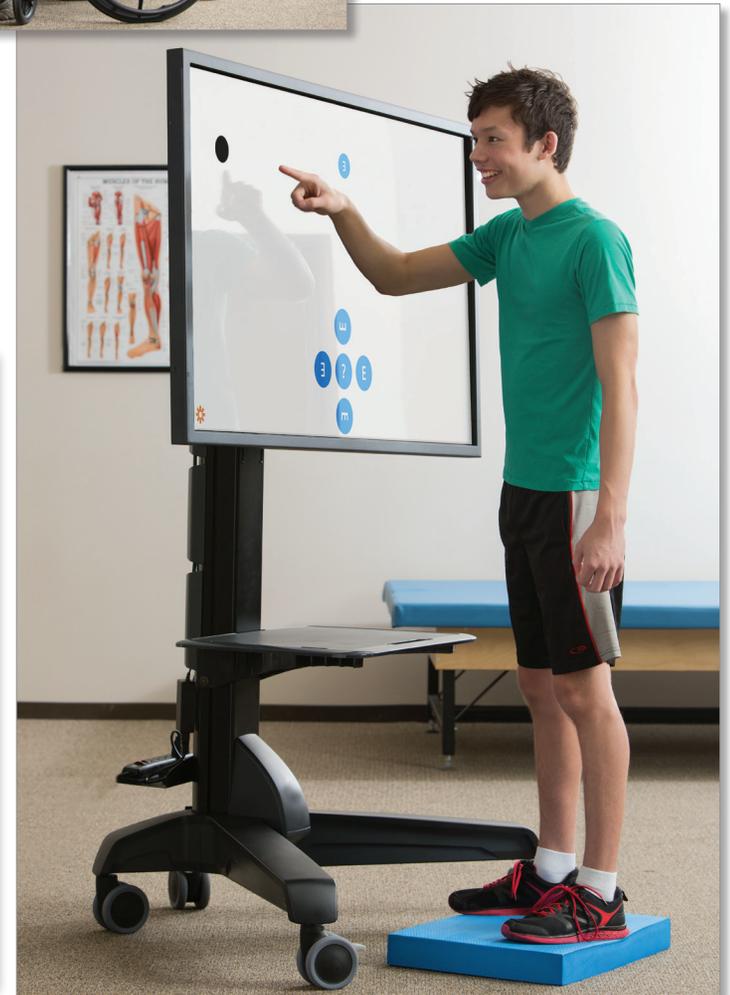
Designed to challenge and assess smooth and saccadic eye movements, image stabilization and vestibulo-ocular reflex. Incorporate visual distortion with static or dynamic balance therapy exercises.



## **VESTIBULAR\***

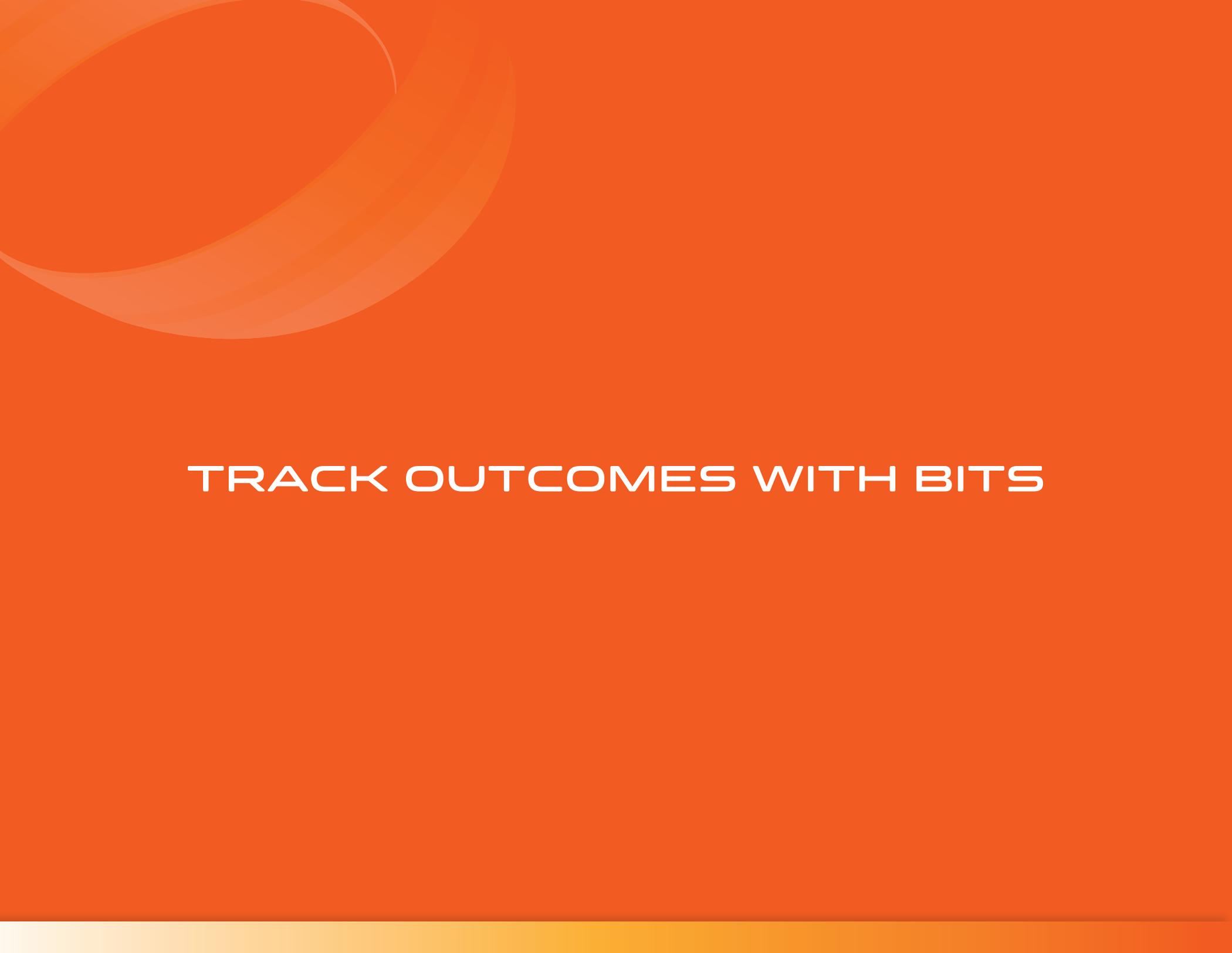
Designed to challenge and assess gaze stabilization and habituation, with or without head movements.

**\*Warning:** The programs found in the Visual Pursuit, Dynamic Balance, Optokinetic Static, Optokinetic Dynamic and Vestibular Therapy Category utilize moving and rotating graphics that may cause dizziness, vertigo, or nausea in sensitive patients. Individuals experiencing dizziness, vertigo, or nausea while using BITS should discontinue use immediately.



# Many Therapy Options for Broad Patient Use

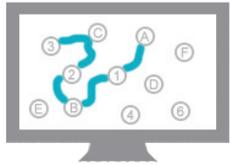
- 1| Utilize for **pre-gait activities** such as standing tolerance and balance while engaging the patient in upper extremity, cognitive, or visuo-motor tasks
- 2| Promote upper extremity therapy activities such as **reaching and crossing mid-line**
- 3| **Cognitive** training and **memory processing** post TBI/ABI
- 4| Hand-object-**eye coordination** activities – hitting targets with thrown ball or extended dowel
- 5| Challenge range of motion by reaching outside of base of support with **dynamic balance** activities
- 6| Push **limits of stability** during seated or standing balance therapy exercises
- 7| Assess balance control and **postural stability** post stroke
- 8| Engage patients in **dual tasking** by combining cognitive, motor or vision tasks with balance control
- 9| Incorporate **optokinetic stimulation** to serve as visual distortion and engage the vestibular system
- 10| Use **quadrant loading** for individuals with visual field deficits or unilateral neglect



TRACK OUTCOMES WITH BITS



# ASSESSMENTS



**Trail Making Assessment** challenges working memory, visual attention, and task switching.



**Bell Cancellation Task** allows for a quantitative and qualitative assessment of visual neglect.



**Berg Balance Scale** assesses static balance ability, fall risk and the executive functions of planning and foresight for patients with objective scoring measure.



**Functional Reach Test** limits of stability by measuring the maximum distance a patient can reach.



**Romberg Test** assesses the effect on static balance with varying visual and proprioceptive input.



**Sensory Integration Test (SIT)** assesses postural stability in stance with varying visual, proprioceptive & vestibular inputs.



**Maze Test** assesses attention, visuoconstructional ability, and the executive functions of planning and foresight.



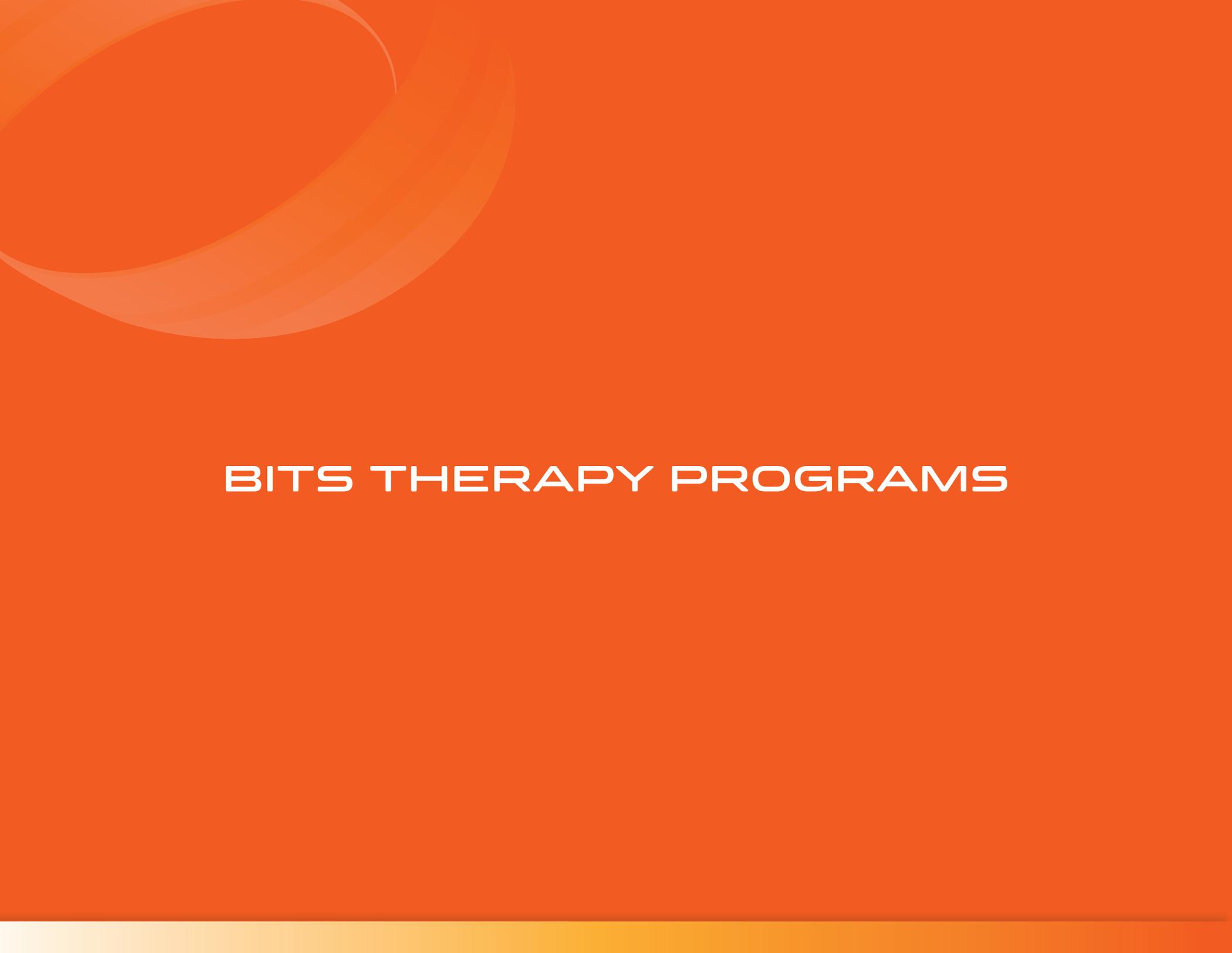
**Visual Scan & Motor Reaction** assesses visuomotor coordination, peripheral awareness, hand speed, reaction time, and endurance.



**Static Postural Sway** assesses patient's postural sway while maintaining balance in a fixed position.



**Dynamic Postural Sway** assesses weight shifting, range of motion and postural control with guided exercise.



# BITS THERAPY PROGRAMS



## || Category Description

These programs are designed to **challenge eye hand coordination, peripheral awareness, hand speed, reaction time and postural stability**. Targets appear on the screen one at a time. Users are instructed to scan the screen and quickly eliminate each stimulus as it is presented.

**USER PACED** – Allows patient to progress through therapy at their own pace.

**TIME PACED** – Challenge reaction time limits by adjusting the amount of time target appears on screen.

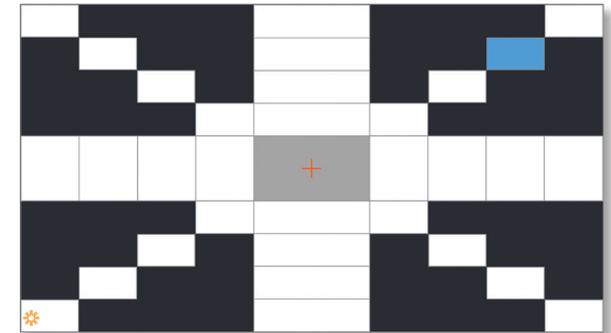
**REACTION TIME** – Assess peripheral vision, reaction latency (how long to lift hand) and response time (how long it takes to hit target).

**BALANCE TRAINING** – Challenge and assess balance ability with User Paced or Time Paced programs in Balance Therapy Module.

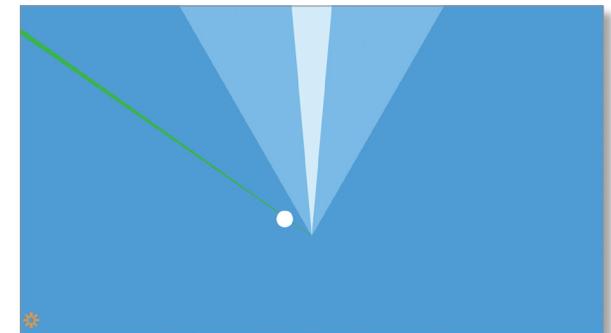
**STATIC POSTURAL SWAY** – Challenge endurance and postural control while maintaining balance in a fixed position.

**DYNAMIC POSTURAL SWAY** – Push patients' range of motion, assess limits of stability when in motion and reaction time.

**WEIGHT SHIFT** – Promote coordination, strengthening of the muscles in the lower extremities, and teach more precise movements by encouraging side to side movements through weight shifting.



Dynamic Postural Sway Therapy Screen



Weight Shift Therapy Screen



## || Category Description

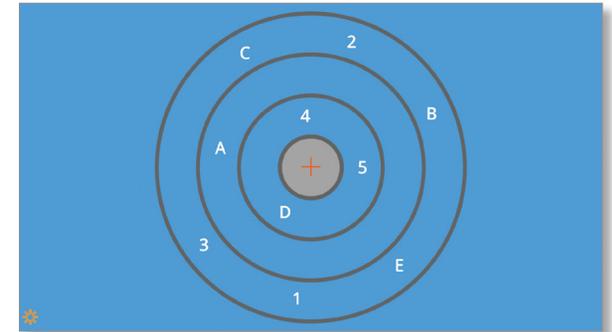
These programs are designed to **challenge a user's ability to visually scan and process a complex environment with multiple stimuli and maintaining postural stability during balance training.** The target stimuli must be eliminated in the correct sequence which demands cognitive effort, eye hand coordination, endurance and attention.

**SEQUENCE** – Train executive and cognitive functioning by eliminating alphanumeric targets in a specified sequence.

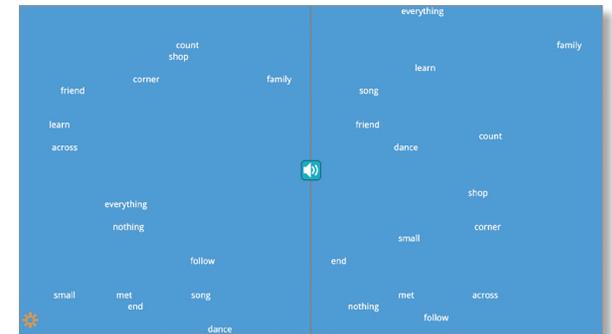
**VERBAL** – Challenge verbal cognitive ability, processing speed and dual-tasking capabilities.

**COMPETITION** – Garner high engagement and create a fun environment with competition between 2 patients. Program splits the screen in half with the computer telling the participants which alphanumeric target to hit, and scores a winner upon completion.

**BALANCE TRAINING** – Challenge and assess postural stability with Sequence or Verbal programs in Balance Therapy Module. Combine cognitive tasks with motor activities for dual task trainings.



Sequence Therapy Screen



Competition Therapy Screen



## || Category Description

These programs are designed to **challenge the user's ability to visually follow moving objects, plan and coordinate motor movements and maintain postural stability.**

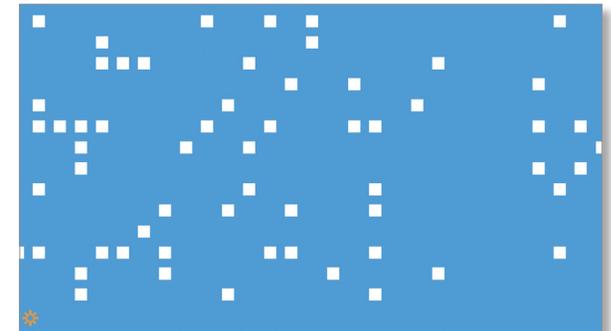
**SMOOTH PURSUIT** – This program guides patients to follow moving stimuli with their eyes toward the neglected hemisphere. Smooth pursuit eye movement training (SPT) uses optokinetic stimulation and may reduce visual, auditory, and haptic neglect.

### BALANCE TRAINING

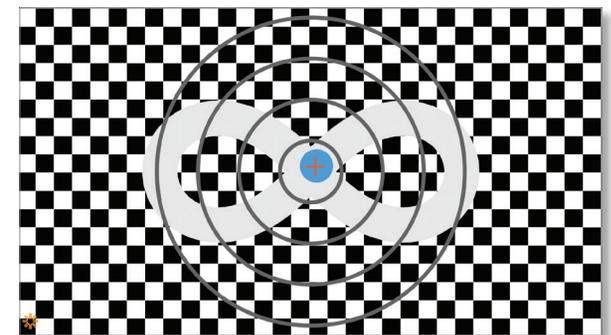
Balance Training programs in Pursuit category include:

**PATTERN & ADJUSTABLE PATTERN** – These programs guide patients to follow a moving stimulus while maintaining postural control. Challenge movement of the trunk and lower limbs and promote postural stability while weight shifting.

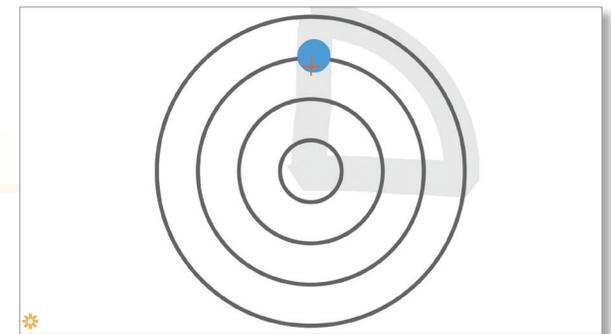
- Select from predefined patterns for the Pattern Program
- Draw a custom pattern for the Adjustable Pattern Program



Smooth Pursuit Therapy Screen



Optokinetic Pattern Therapy Screen



Adjustable Pattern Therapy Screen



## || Category Description

These programs **challenge the user's ability to visually track moving objects, plan and coordinate motor movements.** Multiple stimuli appear on a rotating wheel. Users are instructed to visually track the stimuli and accurately eliminate them one by one. Challenge patient's cognitive ability with Sequence and Gap Sequence Programs.

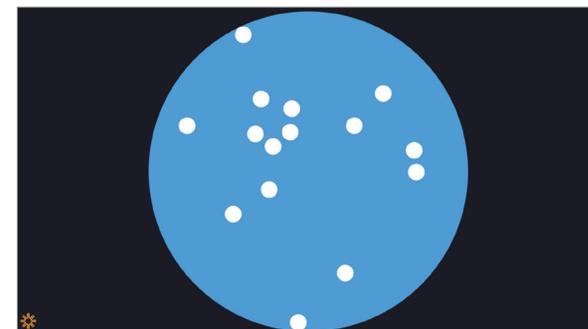
**SINGLE COLOR** - All targets on the rotator are the same color.

**MULTI-COLOR** - Multi-colored targets must be eliminated in a specified order.

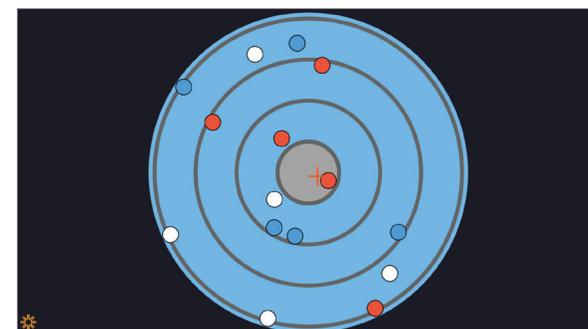
**SEQUENCE** - Alphanumeric targets must be eliminated in a specified sequence, normal (1-10) or reverse (Z-A).

**GAP SEQUENCE** - Alphanumeric targets must be eliminated in order with the added complexity of gaps within the sequence (2, 5, 8, 10, 15).

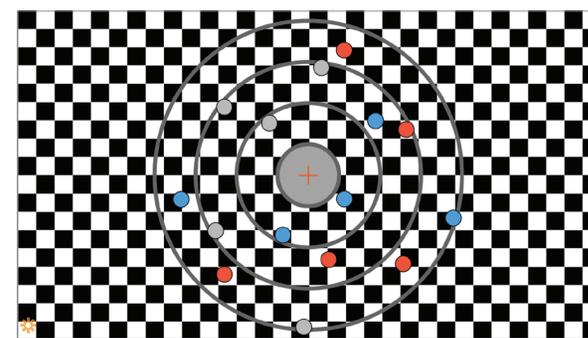
**BALANCE TRAINING** - Push limits of stability and range of motion with Rotator programs in Balance Therapy Module. Incorporate visual distortion with optokinetic stimuli for added challenge.



Single Color Therapy Screen



Multi-Color Therapy Screen



Optokinetic Multi Color Therapy Screen



## || Memory

### PROGRAM DESCRIPTION

This program is designed to **improve speed of recognition, visual memory, accuracy, visual/auditory motor planning while providing cognitive training.** Target stimuli are presented verbally and/or visually on the display screen. The user must remember the presented sequence, locate the correct images, letters, numbers, or words, and eliminate them according to the correct sequence.

## || Rhythm

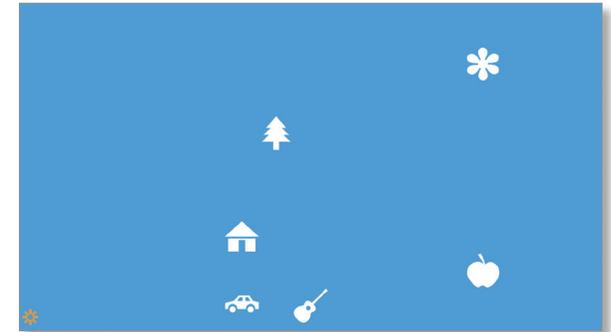
### PROGRAM DESCRIPTION

This program is designed to **improve timing, speed, accuracy, and visual/auditory motor planning.** The user must touch either of the two targets on screen at the selected rhythm in beats per minute.

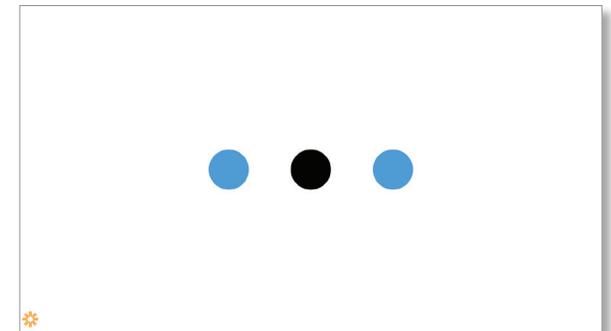
## || Balance Training

### PROGRAM DESCRIPTION

Encourage dual tasking by incorporating static or dynamic balance training for Memory and Rhythm Programs in Balance Therapy Module.



Memory Therapy Screen



Rhythm Therapy Screen



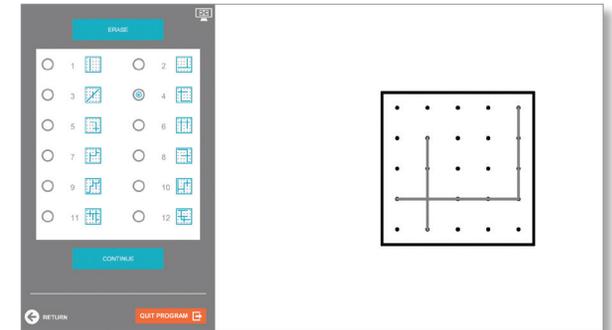
Optokinetic Rhythm Therapy Screen



## || Geoboards

### PROGRAM DESCRIPTION

This program is designed to **challenge a user's visual spatial processing skills, memory, and motor coordination**. Two geoboards appear on the display screen. One board will display a pattern on it. The user is instructed to recreate this pattern by drawing on the blank board.

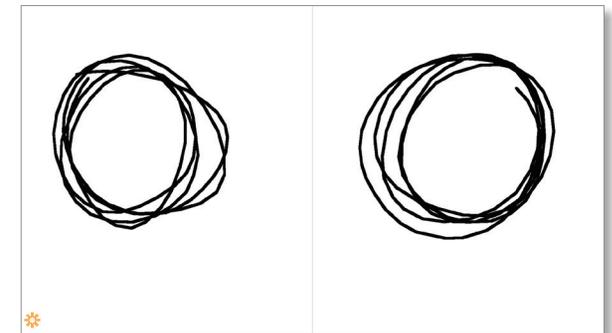


Geoboard Therapy Screen

## || Drawing Programs

### PROGRAM DESCRIPTION

These programs are designed to **improve visuomotor integration, visual form perception, and peripheral awareness**. The program group consists of four therapy programs: Symmetry, Trace, Replicate, and Between the Lines. Each program requires patients to interact with the program by drawing various shapes with their finger or a stylus.



Drawing Symmetry Therapy Screen

**SYMMETRY** – Open drawing canvas with the ability to assess bilateral symmetry and document activities like the Clock Drawing Test.

**TRACE** – Trace a given shape with a set buffer that provides visual and audio feedback if patient traces “off pattern”.

**REPLICATE** - Assess cognitive ability as patients replicate the shape by drawing it on opposite side of screen.

**BETWEEN THE LINES** – Challenge motor planning and coordination as patients draw within the borders of a set of default shapes with audio and visual feedback.



# CHARTS

## Category Description

These programs are designed to **improve visual search skills, accuracy, speed of response, and visual and auditory processing.** The Charts Therapy Category is divided into two Program Groups:

(1) Letter Charts and (2) Peripheral Letter Charts

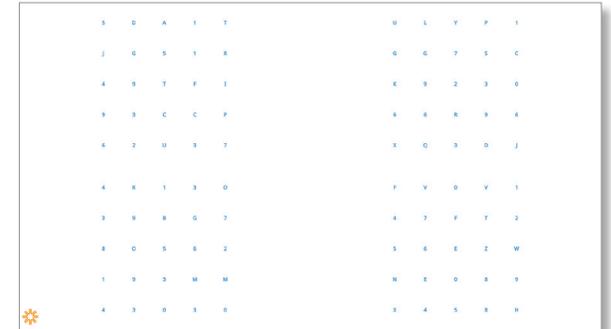
Challenge, assess and track divided attention with letter charts and cognitive ability with peripheral letter charts.

### LETTER CHARTS -

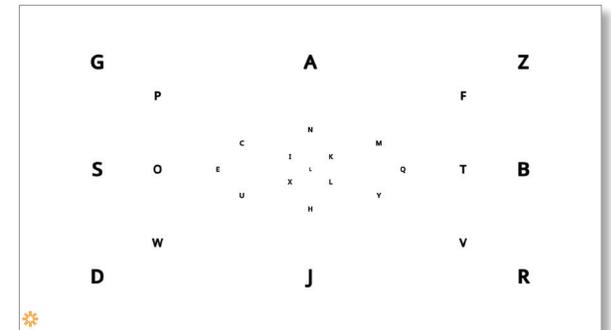
- 1| **Static** - original Hart Chart to read
- 2| **Motion** - sets the chart in motion
- 3| **Multiple** - display multiple charts on the screen
- 4| **Puzzle** - gives the patient a row and column coordinate to find letters to make up a word

### PERIPHERAL LETTER CHART -

- 1| **Sequence** - expanded chart with larger peripheral letters to hit in alphabetical sequence
- 2| **Match** - expanded chart where the patient hits the letter that matches the center letter



Letter Charts Therapy Screen



Peripheral Letter Charts Therapy Screen

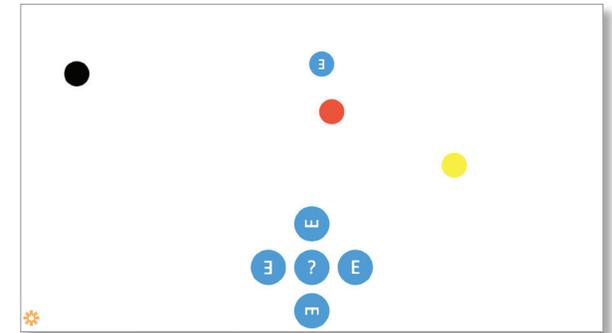


## || Category Description

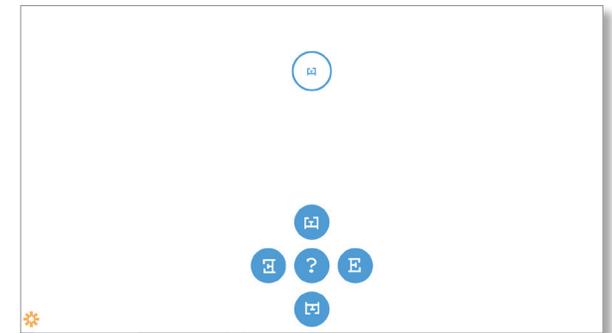
These programs are designed to **challenge and assess visual scanning, peripheral awareness, visual memory, gaze stabilization and habituation.**

**OCULAR MOTOR PROGRAM** – Challenge the eye’s ability to locate and fixate on an object in the field of vision. Assess patients’ coordinated eye movements and ability to attend and follow objects. Patient is required to follow the correct moving target stimulus with multiple distractor stimuli while keeping the head stationary.

**VISUAL ACUITY PROGRAM** – Assess the degree of vestibular deficits leading to loss of balance control. Patient identifies the correct orientation of the ‘E’ optotype while turning head at pre-selected beats per minute.



Ocular Motor Therapy Screen



Visual Acuity Therapy Screen



## Category Description

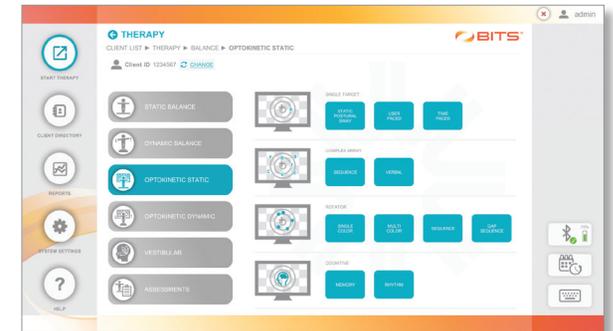
Programs featuring Optokinetic Stimulation layer visual distortion with static and dynamic balance therapy exercises.

These programs are designed to **challenge and assess smooth and saccadic eye movements, image stabilization and vestibulo-ocular reflex.**

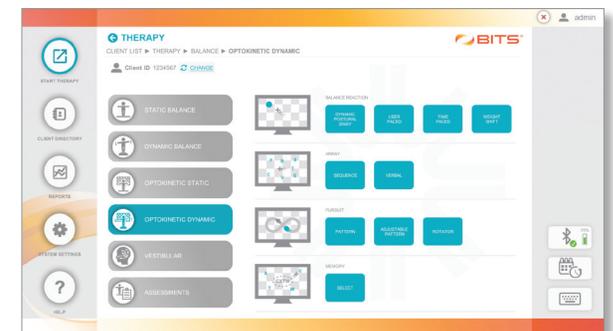
Therapy categories that feature Optokinetic Stimulation include:

**OPTOKINETIC STATIC** – Add visual distortion with static balance activities.

**OPTOKINETIC DYNAMIC** – Add visual distortion with dynamic balance activities.



Optokinetic Static

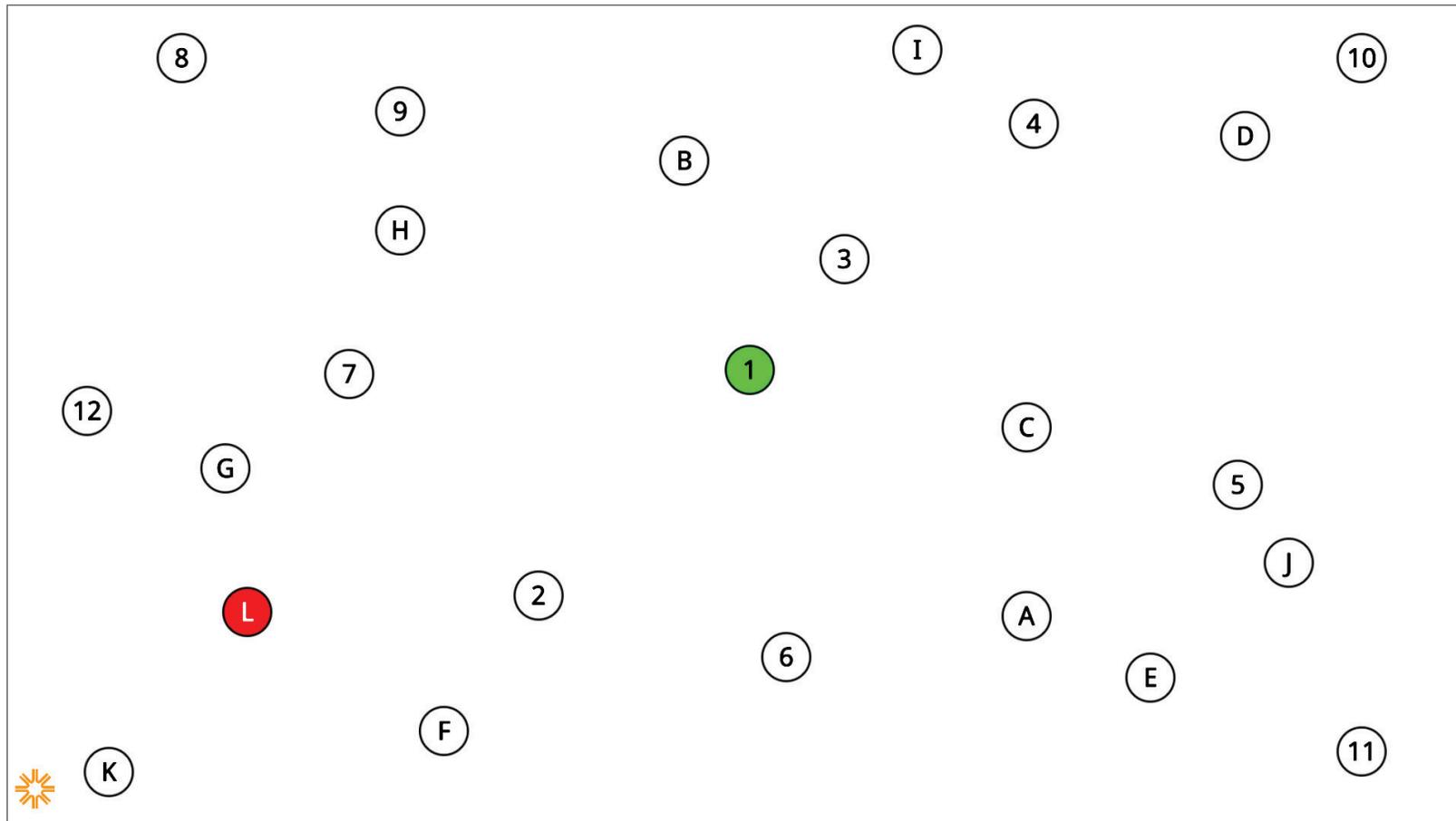


Optokinetic Dynamic

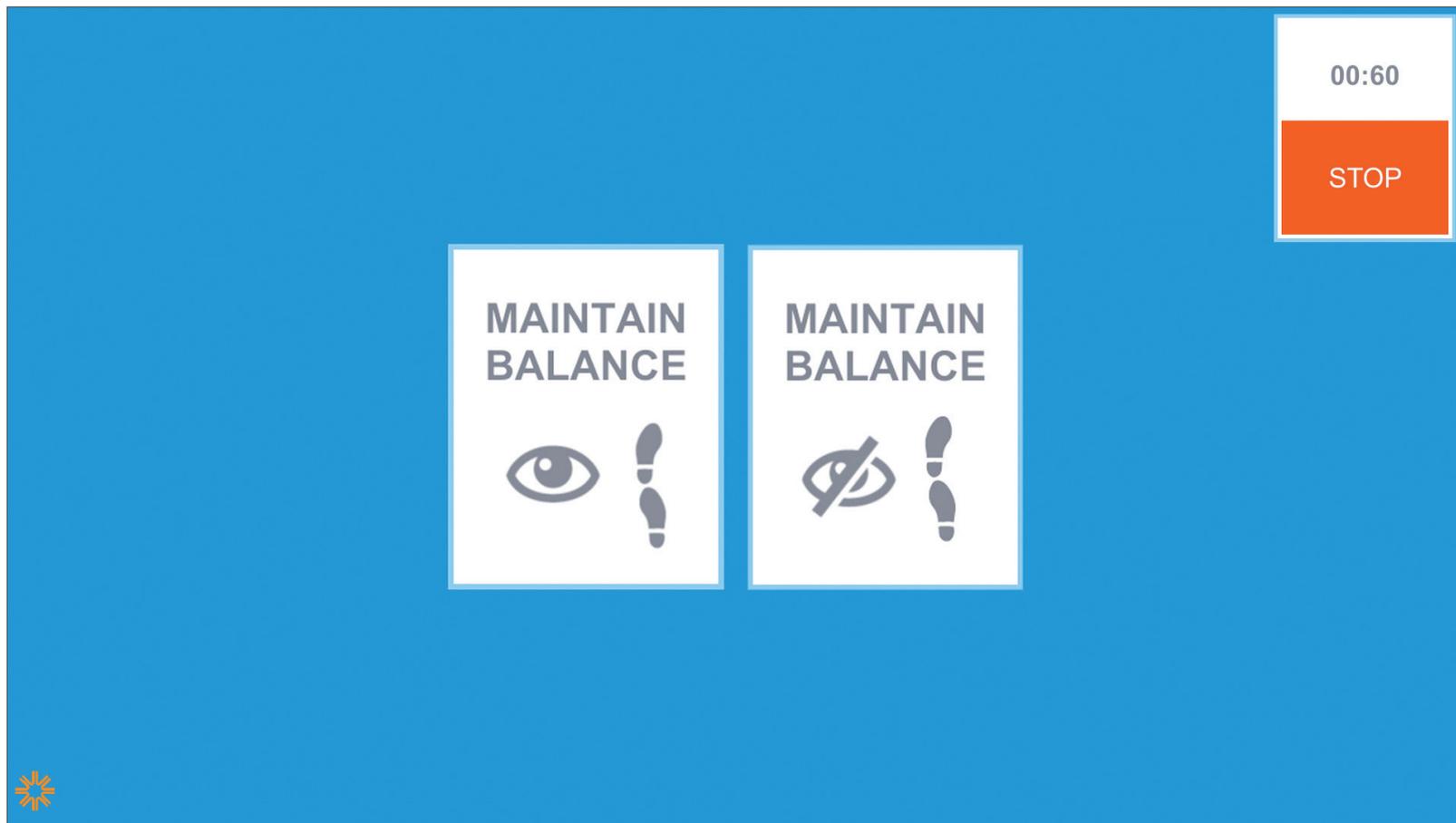
# TRY IT FOR YOURSELF!

Challenge and assess your own skills with the following exercise, which is a sample of one of the programs included with BITS! Pick up a writing tool and let's get started.

**TRAIL MAKING PROGRAM** – Challenge and assess visual search speed, scanning, speed of processing, mental flexibility, as well as executive functioning.<sup>1</sup> Connect the circles below as fast and accurately as possible (i.e. 1-A, 2-B) without lifting your writing tool from the page!



**ROMBERG TEST** – Assesses your static balance with varying visual and proprioceptive input. Stand with your feet in heel to toe position with eyes open for 60 seconds. Can you maintain your balance? Now try it with your eyes closed!





**BITS<sup>®</sup>**

**Unlock the Possibilities and Get More from  
Your Bioness Integrated Therapy System**

Engage the patient across the continuum of care, expanding clinical utility and driving clinician efficiency with BITS.

**Request a Demo Today!**

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BITS Balance only available for sale in the United States

Individual results may vary. Patients are advised to consult with a qualified healthcare professional to determine if this product is right for them.

Important Safety Information and Risks: For Indications for Use, Warnings, Precautions, and other safety information please refer to [www.bionesstherapy.com/safety](http://www.bionesstherapy.com/safety) also available in the BITS Clinician's Guide).

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