Therapy Modules

The modules are listed in suggested order of completion—based on the severity of damage—with first modules attending to the heaviest impairment and continuing to the mildest. It is recommended to begin with Attention Training as attentional capacity is required for modules in Memory, Executive Function and Visual Field.

Modules can be assigned according to each patient's clinical presentation as well as their level of deficit in each area: mild (M), mild to moderate (M-M), or moderate to severe (M-S). Each module has multiple levels of difficulty providing an appropriate level of challenge and therapeutic progression.

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Key to Deficit Levels: M = Mild, M–M = Mild to Moderate, M–S = Moderate to Severe

Min. Age

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Attention

ALERTNESS
Intensity of attention and intrinsic alertness
For individuals 6:0–Adult

This module trains the alertness dimension of attention – the ability to temporarily increase and sustain the intensity of attention.

Indications
Suitable for training those with symptoms from attention deficit disorder, chronic fatigue syndrome, and depression as well as other disorders and some injuries.

The goal is to increase alertness - beginning with intrinsic alertness then proceeding with phasic alertness, strengthening cognitive control. For early phases of rehabilitation, this module can be used as a supplementary training for patients with neglect or as one criterion for driving suitability.

Therapy Task
The patient observes a realistic street scenario where objects will appear in their line of sight, requiring them to react quickly. The maximum response time can be set with two pre-selected variants. RehaCom recognizes correct, missed (omitted), and incorrect reactions.

Training Material
Objects such as vehicles, animals, and people will appear in the patient’s line of sight. There are 16 levels, and, as the level increases, the complexity also increases, which produces a demand on anticipation and intrinsic reactivity similar to real life scenarios. It is recommended that patients train for at least 10 minutes.

REACTION BEHAVIOR
Alertness and impulse control
For individuals 6:0–Adult

This module is used to train reaction speed and accuracy for single or multiple choice reactions to acoustic stimuli.

Indications
Suitable for training for those with reduced reaction speed that may occur as a result of ischemic dementia, traumatic brain injury, or tumor development.

Therapy Task
Traffic signs are displayed on the left side of the screen, and the patient must select the matching or target sign as quickly as possible from a larger array of signs on the right side of the screen.

Therapy Material
During the learning phase, the patient has to memorize traffic signs and the corresponding reaction buttons. During the therapy phase, relevant traffic signs are presented to the patient who must react within a certain time interval. In higher difficulty levels, irrelevant traffic signs are shown for which no reaction is required.
RESPONSIVENESS
Simple discrimination, initiation, inhibition, and differential responding
For individuals 8:0–Adult

This module improves reaction speed and accuracy to visual and acoustic stimuli. Simple reaction tasks, simple choice, and multiple choice reaction tasks are used to encourage the patient to react to certain stimuli as quickly and accurately as possible.

Indications
Suitable for training for those with impaired responsiveness that may occur after cerebral lesions, or with disorders of selective attention, or disturbances of visual and acoustic discrimination, cognition, and/or behavioral performance. The module is less suitable for people with severe ametropia (visual refractive error) or poor hearing.

Therapy Task
Responsiveness is trained using simple reactions, simple choice, and multiple choice reactions with visual and/or acoustic stimuli. The therapy contains either only visual (module 1) or visual and acoustic stimuli (module 2). After a stimulus has appeared, the patient must press a particular button on the RehaCom panel* as fast as possible. During learning phase, the patient memorizes the assignment of relevant stimuli to corresponding buttons. Reaction speed and accuracy are measured and evaluated.

Training Material
More than 200 visual stimuli and 6 acoustic stimuli in 3 variations each are included in the therapy. The therapist can add visual and acoustic stimuli through the integrated program editor.

* Recommended for many patients, but optional in some cases.

VIGILANCE
Sustained attention, tracking, and targeting
For individuals 6:0–Adult

This module develops vigilance and sustained attention. The patient’s task is to observe the conveyor belt and select those objects differing from the sample objects in one or more details. The goal is to improve the ability to maintain attention over a longer period of time.

Indications
Suitable for training for those with disorders or impairments of continuous attention of different etiology and genesis and especially useful in disorders affecting tonic (intrinsic) attention. Improvements in cognitive performances as well as transfer effects may be seen in patients with vascular brain damage, TBI, and dementia.

Therapy Task
The patient has to compare objects passing by on a conveyor belt with one or more permanently visible reference objects and identify all of the objects that differ from the reference object(s).

Training Material
Depending on parameter settings, concrete or abstract objects are presented. For concrete objects, 7 graphic pools with everyday objects can be used. For abstract objects, 3 graphic pools with symbols and geometric figures are available. Three modifications (easy, medium, and difficult) are possible for each object. In total, 80 objects with 4 pictures each are available.
SPATIAL OPERATIONS

Mental rotation, visual scanning, focusing, shifting, neglect
For individuals 6:0–Adult

This module trains spatial perception (one- and two-dimensional) in the following categories: estimation of positions and angles, estimation of relations (filling/emptying of containers), and dimensions.

Indications
Suitable for training basic cognitive functions of spatial perception. Non-verbal stimuli make this module suitable for patients with restrictions in language and comprehension. The module is less suitable for patients with severe intellectual impairment or distinct attention disorder. It is recommended that attention training be completed to a satisfactory level prior to training with this module.

Therapy Task and Training Material
When estimating the position, the left screen displays an object in a fixed position; the right screen displays the same object in a different position. The patient’s task is to move the picture in the right field to the same position as the left. When estimating angles, two angles are shown in both screens which have to be adjusted to the same size with the arrows on the RehaCom panel*. When estimating relations, containers with a given amount of liquid must be filled or emptied. When estimating size, one- or two-dimensional objects of different sizes are shown in both screens which must be adjusted to equal size with the arrows on the RehaCom panel. In higher levels of difficulty, short term memory for spatial perception is trained when the reference object disappears once the first changes are made to the object.

* Recommended for many patients, but optional in some cases.

TWO-DIMENSIONAL OPERATIONS

Rotate and compare two-dimensional visual stimuli, focus, and sustained attention
For individuals 10:0–Adult

This module trains relational positioning within a two-dimensional presentation. The patient’s task is to compare pictures in an array and choose the one that matches the target stimulus; however, the target picture has been rotated in the array.

Indications
Suitable for training for those with loss of performance in visual-constructive tasks, spatial orientation in patients with damage to the frontal lobe; and right hemispheric temporal and parietal damage or lesions. Also suitable for those with diffuse brain damage or low intellectual abilities. The therapy is less suitable for patients with severe intellectual impairment or distinct attention deficit disorder. It is recommended that attention training be completed to a satisfactory level prior to training with this module.

Therapy Task
On the left side of the screen, several objects are displayed which have to be compared to an object on the right side of the screen. The patient has to find the object matching the “target picture,” however, the target picture in the array has been rotated.

Training Material
Geometric figures like triangles, squares, hexagons, etc. are used as objects. In high levels of difficulty, the training material becomes more complex.
**SPATIAL OPERATIONS 3D**

Rotate and compare 3D objects, focus, and sustained attention
For individuals 8:0–Adult

This module is used for training spatial awareness and attention. Several three-dimensional objects are shown on the screen which must be compared to a reference object. All objects on the screen can be rotated freely, allowing a three-dimensional view. As an option, 3D glasses can be used.

**Indications**

Suitable for training for those with cognitive disorders, especially of spatial perception functions.

The module can also be used to continue attention training on a high level. Non-verbal stimuli make this module suitable for patients with restrictions in language and comprehension. The module is less suitable for patients with severe intellectual impairment or distinct attention disorder. It is recommended that attention training be completed to a satisfactory level prior to training with this module.

**Therapy Task and Training Material**

In the upper half of the screen, a three-dimensional object is shown. In the lower half, three to six objects are shown which are more or less similar to each other (depending on the level of difficulty). The patient has to find the object below which exactly matches the object in the upper half of the screen. All objects on the screen can be rotated in three dimensions. A total of 432 3D bodies in 67 groups are available.

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**ATTENTION AND CONCENTRATION**

Selective attention, visual scanning, focusing, shifting, and neglect
For individuals 6:0–Adult

This module is based on the principle of pattern comparison. The patient has to find one picture in a matrix that exactly matches the “target picture”.

**Indications**

This training is suitable for use with patients with disorders in attention and concentration.

**Therapy Task**

A target picture on the screen has to be compared to a matrix of pictures. The patient must find the picture in the matrix exactly matching the “target picture.”

**Training Material**

A total of 77 picture pools are available, each with 16 colored illustrations. All pictures are optimized for visibility and differentiability. According to parameter settings, either concrete objects (e.g., fruits, animals, faces), geometric objects (e.g., circles, rectangles, and triangles of different size and order), or letters and numbers are displayed.
DIVIDED ATTENTION
Train driving, up to 14 attention levels, visual stimuli
For individuals 6:0–Adult

This module is made for training attention deficits. Several stimuli have to be observed simultaneously as often demanded in everyday life. Like a train driver, the patient has to monitor the driver’s cab, regulate the speed, and react to different signals during the session.

**Indications**
Suitable for training for those with disorders of divided attention which occur with almost all diffuse brain damage as well as with local damage of the right hemisphere, especially of parietal parts.

**Therapy Task**
On the lower part of the screen, a driver’s control panel is shown, and the patient observes the view through the windshield of the driver’s cab. The patient must react to the elements on the control panel and to relevant objects and signals on the railway.

The patient is shown the driver’s view of a railroad track, including the controls. The patient must respond appropriately to objects on the railway and to feedback on the control panel.

**Training Material**
The driver’s display contains a variety of control elements including a speedometer, speed control buttons and an “emergency stop signal”. On the speedometer, a “target speed” is set that the patient must keep. The program provides a number of visual cues and signals that the patient must respond to using the appropriate control button. More cues and controls are introduced as the levels progress.

DIVIDED ATTENTION 2
Car driving, up to 22 attention levels, visual and acoustic stimuli
For individuals 8:0–Adult

In this module, patients have to pay attention to several external stimuli while driving a car. They have to observe the landscape passing in front of them as well as the car dashboard and react to visual and acoustic information in an appropriate way.

**Indications**
Suitable for training for those with impairment in the ability to focus on certain aspects of a task, such as reacting quickly to relevant stimuli while ignoring irrelevant stimuli. Deficits of this type occur in 80% of all patients after stroke, TBI, organic brain impairment (e.g. chronic alcohol abuse) as well as in other diseases of the central nervous system. Suitable for use with patients without significant developmental deficits.

**Therapy Task and Training Material**
On the screen, the view through the windshield of a car as well as at the car’s dashboard is displayed. A green area on the speedometer marks the speed the patient should drive. The patient must attend to and react to relevant stimuli and instructions while ignoring irrelevant stimuli while also maintaining target speeds.
Memory

WORKING MEMORY
Short term memory, selective memory, and mental manipulation
For individuals 6:0–Adult

This module trains the ability to memorize and manipulate information that has been presented and then removed. The ability to maintain selective attention and to resist distraction plays an important role. The activity is in the format of a fun card game, encouraging the patient to complete the activity.

Indications
Suitable for training those with working memory impairment which may be present after brain damage due to stroke or TBI.

The therapy module can be used to strengthen short term storage of visual impressions (visual-spatial sketchpad), storage of verbal information (phonological loop), and the functioning of the central executive for linking information to the long term memory.

Therapy Task
The patient has to memorize and manipulate an increasing number of cards, with the content presented visually or acoustically. Initially, the patient only has to memorize the items, but in higher levels, manipulation of the information is increasingly involved. This task trains not only working memory, but also accompanying abilities such as problem solving, deductive reasoning, speech comprehension, and calculation.

Training Material
A 52 card deck is used (on the screen). Diverse stimuli on the cards train the patient’s resistance to distractions.

TOPOLOGICAL MEMORY
Picture cards are turned over, memorize position and content
For individuals 6:0–Adult

This module trains topological memory. The patient has to memorize the position of cards with pictures (e.g. books, cutlery, television, camera, etc.) or geometric figures. When the cards are shown face down, the patient has to remember the correct location of each figure.

Indications
Suitable for training for those with memory disorders or impairments of verbal and nonverbal contents.

Amnestic syndromes can be observed for all diffuse cerebro-organic diseases (dementia, intoxications, chronic alcohol abuse, etc.) as well as for all left-sided or bilateral lesions of the medial or basolateral limbic lemniscus. Furthermore, vascular diseases, TBI, or brain tumors in prefrontal, temporal or parietal cortical areas can lead to memory deficits.

Therapy Task
In the “memorizing phase”, a variable number of cards with concrete pictures or geometric figures are displayed on the screen. The patient has to memorize the position of the pictures, and after a preset time—or manually by pressing the OK button—the cards are turned face down. The patient must find the picture matching the one indicated on the right side of the screen.

Training Material
464 pictures of concrete objects, geometric figures, and letters are available. The number of simultaneously displayed cards varies from 3 to 16.
PHYSIOGNOMIC MEMORY
Memorize faces, names, occupations, and phone numbers
For individuals 6:0–Adult

This module is important for treating the recognition of faces. The assignment of faces to names and professions is needed in everyday life. Faces are shown from different angles, and the patient has to decide whether he or she has already seen the picture of this person before. In higher levels of difficulty, the patient also has to memorize additional verbal information about the person.

Indications
Suitable for training for those patients with visual prosopagnosia where the ability to recognize faces and to connect meaningful associations to them is impaired or lost.

The therapy is indicated for all patients with right-sided or bilateral lesions of the temporal lobe in which facial recognition is impaired.

Therapy Task
During the “learning phase”, the patient has to memorize a specific number of faces then pick these faces out of a “line-up”. In higher levels of difficulty, a name and a profession are also shown, giving the patient the task of connecting the information to each face.

Training Material
A total of 47 people have been photographed from four different directions. It is possible to add photos from the patient’s environment with an integrated editor to personalize this therapy task.

MEMORY FOR WORDS
Memorize up to ten words in three degrees of complexity
For individuals 6:0–Adult

This module trains the ability to recognize specific words. During the “learning phase,” a specified number of words are shown on the screen. Once the patient has memorized these words, a conveyor belt appears displaying moving words. The patient’s task is to recognize all the words shown during the “learning phase.”

Indications
Suitable for training for those with impairment of vocabulary and reduced recognition performance, especially for patients with beginning amnestic syndrome. Also suitable for patients with functionally caused impairments.

Therapy Task
During the “learning phase,” the patient has to memorize a list of words (from 1 to 10 words). As the levels increase in difficulty, both the number of words and the difficulty of the words grows. The words presented during the “learning phase” must then be selected from a number of different (irrelevant) words.

Training Material
The words appear big and clearly visible on the screen. The movement of the words across the screen happens continually and fluently. The speed of the words “rolling by” can be adapted.
FIGURAL MEMORY

Figural content, picture-word association, captions, and aphasia
For individuals 6:0–Adult

This module is used for training the long term nonverbal and verbal memory (working memory). The patient has to memorize pictures with specific (nameable) objects. After the “learning phase,” words will appear like on a conveyor belt. The patient has to press the OK button whenever a word of an object shown during the learning phase moves by.

Indications
Suitable for training for those with all memory disorders (especially disorders of the working memory) for verbal and nonverbal content. The therapy module is also suitable for patients with impaired ability to name objects as well as with difficulties in conceptual classification (organically or functionally caused).

Therapy Task
At the beginning, pictures of concrete objects are shown. The patient has to memorize the names of these objects. The patient completes the “learning phase” by pressing the OK button. After that, different words move by on the screen from the left to the right. Whenever the name for an object shown during the learning phase passes through the marked area, the patient must press the OK button.

Training Material
About 200 pictures of concrete objects are used, of which 100 objects have a high classification safety. It is possible to adjust the speed of the words moving by. This ensures that patients (and children) who may have different reading speeds are able to use this module for therapy.

VERBAL MEMORY

Memorize details of a prose passage
For individuals 10:0–Adult

This module aims to improve the short term memory of verbal information. Short stories are displayed on the screen; the patients memorize the details in the story, and reproduce them after the story is over.

Indications
Suitable for training for those with disorders or impairments of the short or medium-term verbal memory which occur with almost all diffuse brain damage (dementia, alcohol abuse, etc.) as well as in bilateral or left-hemispheric lesions of different etiology.

Therapy Task
The patient must memorize as many details as possible of a short story that is displayed on the screen.

Training Material
More than 80 short stories are available and are chosen randomly by the computer or by the therapist. An extension of the pool of stories is possible by using an integrated editor.
Memory

PLAN A VACATION
Priorities, shortest route, and schedule optimization
For individuals 10:0–Adult

This module is closely related to everyday life. The patient has to implement daily plans of different scope. The aim is to improve executive functions with respect to establishing strategies for planning. “Plan a Vacation” makes demands on basic and—especially in higher levels of difficulty—more complex cognitive skills.

Indications
Suitable for training for those with disorders of cognitive functions, especially of planning skills. The ability to plan and to organize in everyday life is one of the most complex human skills. It can be affected by any brain damage, especially by damage to frontal structures or diffuse cerebral damage.

This module can also be used for training memory skills. It is not recommended in very heavily amnestic disorders. The presence of a therapist is strongly recommended for seriously impaired patients.

Therapy Task
The therapy task is to prioritize a list of tasks. For this purpose, a map is shown on the screen with different buildings and roads from a bird’s-eye view. Patients have to “visit” one building after another according to their time schedule and enter them into their diary. There are three different goals: note priority, minimize traveling time, and maximize the number of completed tasks.

Training Material
This module provides an almost endless number of different tasks since new combinations of tasks can be randomly generated.

SHOPPING
Virtual supermarket / hardware store, shopping list, and money
For individuals 10:0–Adult

This realistic task assists with improvement in memory function as well as selective attention and planning.

Indications
Suitable for training for those with deficits in working memory and difficulties in concept development and action planning as a result of TBI, stroke, cerebral tumor surgery, or cerebral hemorrhage.

The module can also be used for maintaining cognitive performance of older adults, but is not suitable for patients with attention deficits. It is recommended that attention training be completed to a satisfactory level prior to training with this module.

Therapy Task
The patient is provided a shopping list of articles to find in a supermarket or hardware store and put into a cart. When all articles are in the cart, the patient can complete their shopping by using the “cash” button. Beyond a certain level of difficulty, additional demands are made on the patient’s mathematical abilities (a certain amount of money is specified, the products are marked with prices, etc.).

Training Material
The therapy module currently uses more than 100 articles (food, household objects, etc.). Two shops can be chosen: supermarket or hardware store.
This module aims to improve logical reasoning. The patient has to complete a sequence using logical rules.

**Indications**
Suitable for training for those with acquired damage of the frontal lobe, where impairments in abstract logical thinking can be observed. Those losses of performance often occur in patients with chronic alcohol abuse, dementia, and schizophrenia.

The training module is best used with patients that are capable of comprehending simple abstract-logical conclusions.

**Therapy Task**
The patient has to observe an array of symbols and choose the one that continues the given pattern.

**Training Material**
A sequence of symbols of different shape, color, and size are displayed on the screen. If the answer is wrong, special pieces of information about the type of error (shape, color, and/or size) are given.
Visual Field

**SACCADIC TRAINING**
Eye movement training, hemianopia, neglect
For individuals 6:0–Adult

This module is developed for patients with reduced visual exploration ability and hemilateral visual neglect phenomena (neglect, hemianopsia, hemiamblyopia, etc.). The patients are instructed to push the left or right reaction button when a figure appears left or right from the center.

**Indications**
Suitable for training for those with impairments in visual exploration on one half of the visual field. They often occur in neglects or extended cerebral infarcts in the area of distribution of the middle or posterior cerebral artery. Other organic brain disorders can also cause these functional impairments.

**Therapy Task**
The patient can see a horizon on the screen with a very simple structured landscape. In the middle of the screen, a big sun is displayed. At irregular intervals, an object appears left or right of the sun. Whenever the patient notices an object, the patient has to press the corresponding reaction button (left or right arrow key of the RehaCom panel*).

**Training Material**
On the screen, a horizontal line is visible. At easier levels, a sun is indicated in the middle for a better orientation of the patient. In irregular temporal intervals, different objects or symbols, e.g. animals, cars, bikes, motorcycles etc., appear on the horizontal line. At higher levels of difficulty, the symbols become smaller, the horizon disappears, and additional deflecting stimuli are shown and fade again.

*Recommended for many patients, but optional in some cases.

**OVERVIEW AND READING**
Parallel and sequential search on homonymous visual field losses
For individuals 8:0–Adult

There are two modules included in Overview and Reading. Both modules are used for treating non-aphasic reading disorders and disorders in overview and visual search in patients with homonymous hemianopsia, visual neglect, or Balint’s syndrome.

**Indications**
Suitable for training for those with disorders of visual exploration and saccadic eye movement. These occur as a result of cerebral infarcts in the area of distribution of the middle or posterior cerebral artery. The training is less suitable for patients with severe visual deficiencies (visual acuity < 20%) or with alexia. Serious memory disorders as well as attention disorders will negatively affect the training, as well.

**Therapy Tasks**
**Reading:** Words or numbers of different length appear which the patient has to read aloud.

**Overview (Visual search):** On the screen, combinations of stimuli are shown with a defined stimulus serving as target stimulus, the other stimuli as distracting stimuli. The patient must search the screen quickly and carefully and indicate absence or presence of the target stimulus.

**Training Material**
Words of different length, short sentences, and numbers serve as objects for reading training. Length and display time can be adjusted individually. For visual search, letters and shapes of different colors are used.
RESTORATION TRAINING
Stimulates the reorganization of damaged, but not destroyed, neuronal structures through intense stimulation
For individuals 6:0–Adult

The visual restoration module is a computer-based training to improve visual function in patients with impairments due to neurological lesions. An intense visual stimulation is provided in the area of the border zone between intact and defective visual field.

Indications
The training is designed for use with patients with neurologically induced visual field deficits such as hemianopia or quadrantanopia. Different levels of difficulty and individually adjustable duration allows the module to also be used for patients with attention and concentration disorders or deterioration of motor and perceptual functions.

Therapy Task
The patient sits in a comfortable but fixed position in front of the monitor. Throughout the whole session they are required to look straight ahead at the monitor while keeping the optimum distance. A colored fixation point is presented. Every color change of the fixation point has to be noted. A bright stimulus moves from the intact visual field towards the blind area, and patients have to note every flash of the stimulus while concentrating on the fixation control point.

Training Material
A large white stimulus appears, starting in the intact visual field and moving slowly towards the impaired area of the visual field. An interactive algorithm ensures intense light stimulation exactly in between the border of the intact visual field to the blind area.

For more information visit PearsonClinical.com/RehaCom

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