HASOMED

RehaCom®

Contents

Visit our HASOMED YouTube channel and
watch 'RehaCom Introduction'

Effectiveness
proven
in over 60
studies

RehaCom is a certified medical device

RehaCom has been developed by therapists for therapists for more than 30 years. The foundation was laid by Prof. Regel in 1986 with his first studies in the area of attention. The effectiveness of computer-aided training in general and that of RehaCom in particular has since been proven in over 60 studies. There is a general agreement that the frequency and intensity of training is an essential factor for demonstrable improvements.

Based on available studies, the guidelines of the Society for Neuropsychology (Gesellschaft für Neuropsychologie (GNP)) and the German Association of Occupational Therapists (Deutscher Verband der Ergotherapeuten (DVE)) recommend the use of RehaCom. Only two computer-aided cognitive rehabilitation programmes received recommendations.

We are interested in new studies to further prove the effectiveness of computer-aided therapy with RehaCom. We would be happy to support you in your project.

Please contact us!
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rehacom.de/studien

Cognitive therapy with RehaCom

Cognitive functions include mental activities and performances such as attention, perception, memory, abstract thinking or action planning. If one or more functions are impaired, e.g. after a brain injury or in the context of a mental illness, this can lead to problems in everyday life, work and family.

The basic principles of cognitive therapy are: to train cognitive problem areas in a targeted manner, to choose challenging, but not over-demanding tasks, to avoid boredom and monotony through different task contents, to teach solution strategies and to define clearly structured tasks. RehaCom covers a wide range of cognitive functional areas, has a large variety of content and is adjustable to avoid under- or overload.

RehaCom is an objective partner and observer: tasks can be presented in a standardised way and with great frequency and performance-specific feedback can be given. Even severely impaired clients can be 'picked up' by slowly increasing the requirements and the difficulty level and can experience their first successes in training.

Targeted training

Solution strategies

Performance-specific feedback

Modularity

The RehaCom therapy modules can be used to train the most important cognitive performance areas such as attention, memory functions, executive performance and visual performance. More complex performances such as action planning and strategy formation are carried out in scenarios that are close to everyday life.

Efficiency and Economy

At the beginning of the training it is important to agree with the client on the training goal. Many clients can work with RehaCom largely independently. The time required for clients is reduced, spare capacities can be used, for example, to communicate strategies.

Multilingualism / Dissemination

Clients should train in their native language. Therefore, the training modules are available in many languages at no additional cost. RehaCom has been used successfully for many years in neurology, psychiatry, geriatrics, paediatrics and vocational reintegration facilities.

Adaptivity / Individualisation

With a good system, therapists can create interesting and customised training for each client across multiple dimensions. RehaCom can be configured individually and the difficulty of the tasks can be automatically adjusted to the client's performance level. Learning processes are promoted through direct feedback from the programme. In addition, the programme supports clients by communicating compensation strategies and through assistance.

Continuity / progress monitoring

All results are stored in the system. Each new training session begins where the last training session ended. The training progress can always be controlled and parameters adjusted. The training results are shown in diagrams and tables, therefore allowing for a quick and clear evaluation of the training progress.

Frequency of therapy

At the beginning of cognitive therapy, we recommend training several times a day for about 10–15 minutes, Thereafter, at least three times a week for about 30–60 minutes. After the initial phase, home training is recommended for up to 3 months, depending on the type of disorder. (Details about home training on page 54).

Screenings & Training Modules

Attention

Category	Module	Code	Catalogue page	Level	Neurolog./Rehabilitation	Geriatrics	Psychiatry	Paediatrics	Neurodegenerative Diseases
Alertness	Alertness training	ALTA	15	16	●	●	●	●	●
Alertness	Reaction behaviour	REVE	16	16	▲	▲	▲		▲
Alertness	Responsiveness	REA1	17	20	●	●			●
Vigilance	Vigilance 2	VIG2	18	9	▲	▲	▲	▲	▲
Sustained Attention	Sustained Attention	SUSA	19	9	▲	▲	▲	▲	▲
Selective Attention	Attention and Concentration	AUFM	20	24	●	●	●	●	●
Divided Attention	Divided Attention	GEAU	21	14	▲	▲	▲	■	▲
Divided Attention	Divided Attention 2	GEA2	22	22	■	■	■	■	■
Visual-Spatial Attention (perceptive)	Spatial Operations 2	SPOT	23	11	▲	▲		▲	▲
Visual-Spatial Attention (cognitive)	Spatial Operations 3D	RO3D	24	24	■	■	■		■
Visual-Spatial Attention (cognitive)	Two-dimensional Operations	VRO1	25	24	▲	▲	▲		▲
Visual-Spatial (spatial-constructive)	Visuo-Constructional Ability	KONS	26	18	■	■	■		■

Memory

Category	Module	Code	Catalogue page	Level	Neurolog./Rehabilitation	Geriatrics	Psychiatry	Paediatrics	Neurodegenerative Diseases
	Working Memory	WOME	28	69	●	●	●	●	●
	Memory Strategy Training	LEST	29	18	▲	▲	▲	▲	▲
	Memory for Words	WORT	30	30	●	●	●	●	●
	Figural Memory	BILD	31	9	●	●	●	●	●
	Verbal Memory	VERB	32	10	■	■		■	■
	Topological Memory	MEMO	33	20	▲	▲	▲	▲	▲
	Physiognomic Memory	GESI	34	21	▲	▲		▲	

Executive Function

Category	Module	Code	Catalogue page	Level	Neurolog./Rehabilitation	Geriatrics	Psychiatry	Paediatrics	Neurodegenerative Diseases
	Logical Reasoning	LODE	36	23	▲		▲	▲	▲
	Shopping	EINK	37	18	■	■	■	■	■
	Plan a Vacation	PLAN	38	55	■	■	■	■	■
	Calculations	CALC	39	42	■	■	■	■	■

Language availability (columns in order): German, English, French, Spanish, Portuguese, Italian, Greek, Swedish, Finnish, Danish, Dutch, Belgian (Dutch), Russian, Polish, Czech, Slovenian, Hungarian, Latvian, Lithuanian, Chinese (simplified), Chinese (traditional), Korean, Japanese **NEW**, Turkish, Arabic, Hebrew, Farsi

Legend

Disturbance: ● strongly to moderately pronounced   ▲ moderately to weakly pronounced   ■ weakly pronounced

✓ available   · partly available   (blank) not available

Screenings & Training Modules

Visual field & Neglect

		Catalogue page	Level	Neurolog. Rehabilitation	Geriatrics	Psychiatry	Paediatrics	Neurodegenerative Diseases	German	English	French	Spanish	Portuguese	Italian	Greek	Swedish	Finnish	Danish	Dutch	Belgian (Dutch)	Russian	Polish	Czech	Slovenian	Hungarian	Latvian	Lithuanian	Chinese (simplified)	Chinese (traditional)	Korean	Japanese NEW	Turkish	Arabic	Hebrew	Farsi
Saccadic Training	SAKA	41	34	●	●		●	●	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Restoration Training	RESE	42	1	▲	▲			▲	✓	✓	·	✓	·	✓	·	·	·	·	·	·	·	·	·	·	·	·	·	✓	·	·	·	·	·	·	·
Exploration 2	EXO₂	43	18	▲	▲		▲	▲	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓

Visuo-Motor

		Catalogue page	Level	Neurolog. Rehabilitation	Geriatrics	Psychiatry	Paediatrics	Neurodegenerative Diseases	German	English	French	Spanish	Portuguese	Italian	Greek	Swedish	Finnish	Danish	Dutch	Belgian (Dutch)	Russian	Polish	Czech	Slovenian	Hungarian	Latvian	Lithuanian	Chinese (simplified)	Chinese (traditional)	Korean	Japanese NEW	Turkish	Arabic	Hebrew	Farsi
Visuo-Motor Coordination	WISO	45	96	▲	▲		▲	▲	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓

Screenings

		Catalogue page	German	English	French	Spanish	Portuguese	Italian	Greek	Swedish	Finnish	Danish	Dutch	Belgian (Dutch)	Russian	Polish	Czech	Slovenian	Hungarian	Latvian	Lithuanian	Chinese (simplified)	Chinese (traditional)	Korean	Japanese NEW	Turkish	Arabic	Hebrew	Farsi
Alertness	ALET	47	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Selective Attention	GONT	47	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Divided Attention	GEAT	48	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Spatial Numbers Search	NUQU	48	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Working Memory	PUME	49	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Memory For Words	WOMT	49	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Logical Reasoning	LOGT	50	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Campimetry	KAMP	50	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Visual Field	VITE	51	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Disturbance: ● strongly to moderately pronounced   ▲ moderately to weakly pronounced   ■ weakly pronounced

✓ available   · partly available   not available

Attention

Attention deficit disorders are very common in both neurological and psychiatric patients and affect all areas of life.

While we assume a uniform concept in everyday life and speak of „attention", science distinguishes between different sub-functions, such as alertness, sustained attention and selective attention. Depending on the disease or where the damage is located in the brain, different attentional functions may be disturbed and require specific training.

Alertness training

Training tonic and phasic responsiveness.

Indications: Deficiencies in the cognitive processing speed, e.g., with general deceleration or as supplementary training with neglect. The aim is to improve the ability to process environmental stimuli quickly and continuously.

Task: The task is to press the response button as quickly as possible as soon as a stimulus appears in the picture. According to the concept of alertness, there is only one response button. With each level, the demands on the client's response time increase. The program determines correct responses as well as errors (slow reactions, omissions, incorrect responses between the stimuli).

Training material: In changing traffic conditions (real images), objects suddenly appear in the foreground. In order to „brake", the answer button has to be pressed as quickly as possible. The complexity of the situation increases by varying the scenes, the number and size of the objects. This creates everyday demands on anticipation and intrinsic responsiveness. 16 levels are offered. An acoustic warning stimulus and the length of the response window can be individually adjusted.

2 x 16 Levels   27 Languages   ALTA
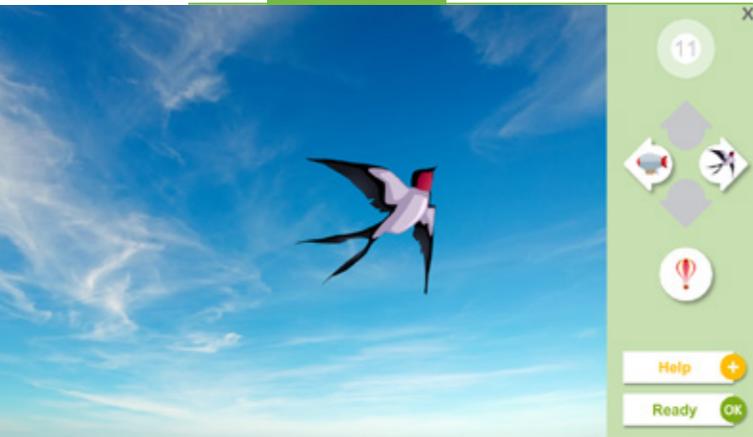
Reaction behaviour

Reaction behaviour training for single and multiple choice responses to visual stimuli.

Indications: Clients with reaction speed disorders or problems with changing reactions flexibly as well as inhibition (e.g., after a stroke, craniocerebral trauma or in the context of mental illness).

Task: When a particular object is visible, the client should press a key associated with the object as quickly as possible. As the degree of difficulty increases, the number of reaction keys increases. Optionally, inhibitive behaviour (by initiating irrelevant stimuli that do not require a reaction) can also be trained.

Training material: Over 100 different visual stimuli are offered. The choice of five subject areas enables varied training. The background image can be switched off for clients with visual problems.

Responsiveness

Training reaction speed accuracy to visual and acoustic stimuli through single and multiple choice response tasks.

Indications: Disorders of selective attention with impaired ability to react to acoustic or visual stimuli (e.g. after cerebral lesions or mental illness). The aim is to improve the ability to respond quickly, correctly and flexibly to environmental stimuli.

Task: When a target stimulus (object or sound) is presented, the client should press a key associated with the stimulus as quickly as possible. Depending on the type of task, selective responsiveness (presented object and required reaction button point in the same direction) and inhibition (presented object and required reaction button point in the opposite direction) can be trained.

Training material: Contains over 200 different visual stimuli and 6 acoustic stimuli. There are three modules with 20 levels each. Only visual stimuli are offered in module 1; visual and acoustic stimuli are offered in modules 2 and 3. The difficulty varies per level by the number of reaction buttons and variations in the temporal stimulus sequence. There are 5 types of tasks per level, which differ in the similarity of target stimulus and reaction button. An editor for creating individualised training is integrated.
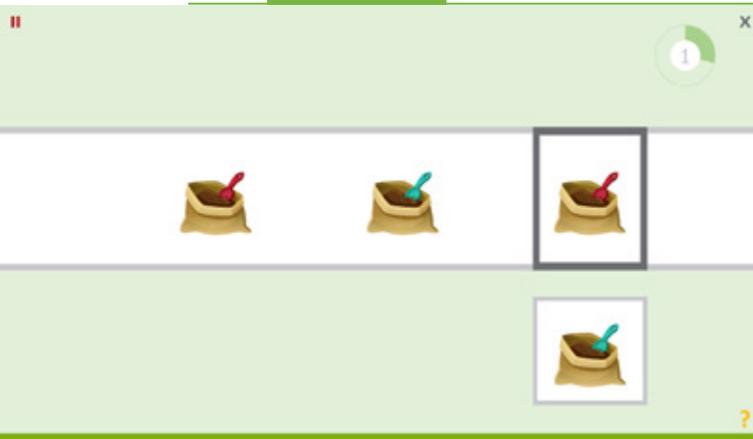
Vigilance 2

**Training for the ability to maintain one's level of attention in the long term despite a monotonous task.**

Indications: This training is for clients with problems in maintaining attention even when no relevant stimulus appears for a longer period of time.

Task: The clients work as „quality supervisors" on a production line in a factory. They have the task of comparing the products that pass by on the belt at different intervals with the original and eliminating faulty products. At the beginning of the training, the stimulus density (sequence of objects) and the number of objects to be sorted are high, but decrease as the training progresses.

Training material: Images with specific or abstract objects are available in 9 levels. For each original object there are 3 differentiations (differences in colour, contour or object details). The difficulty level is adjusted through the similarity of the objects to be sorted out, the increase in stimulus distance (lower stimulus density) and the number of objects to be matched. The flow direction and speed of the belt are adjustable.

Sustained Attention

Training the ability to maintain the level of attention in the face of high stimulus frequency and high demands over a longer period of time.
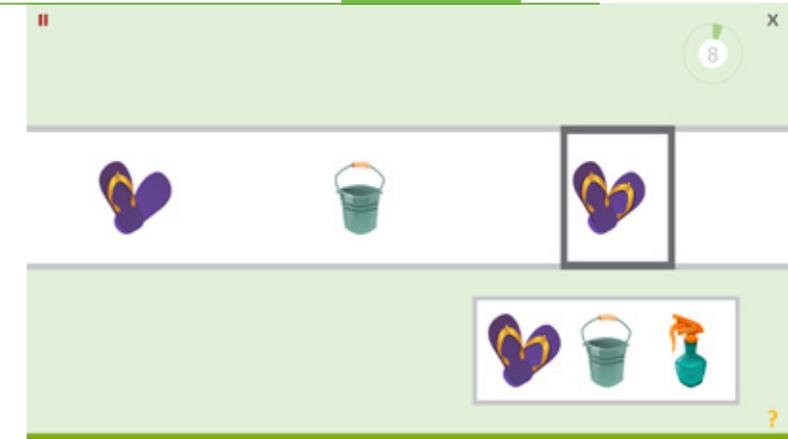
Indications: This training is for clients with problems maintaining attention and focusing for a longer period of time. Sustained attention disorders occur frequently after strokes or craniocerebral traumata.

Task: The clients work as „quality supervisors" on a production line in a factory. They have the task of comparing the products that pass by on the belt at different intervals with the original and eliminating faulty products. In contrast to Vigilance 2 training, the stimulus density (object sequence) and the proportion of objects to be sorted is increased during the course of the training.

Training material: Images with specific or abstract objects are available in 9 levels. For each original object there are 3 variations (differentiations in colour, contour or object details). The difficulty is adjusted by the number and similarity of the object, the speed of presentation and the number of missing objects. The belt's direction of flow and speed can be adjusted.
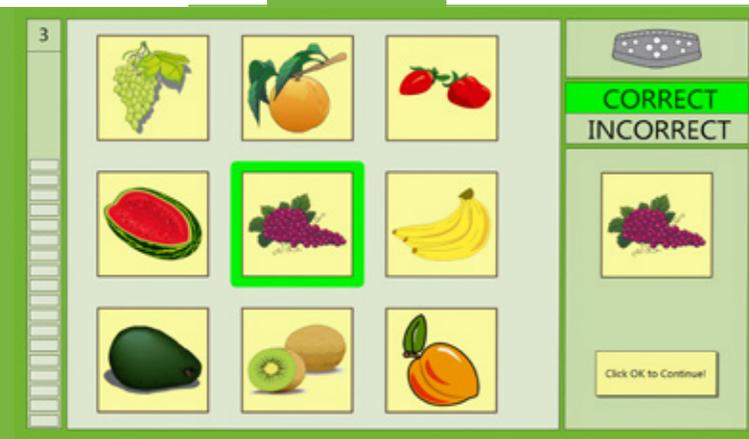
Attention and Concentration

**Selective attention training works on the exact analysis of visual information.**

Indications: The module is indicated for impairments of selective attention after stroke, SHT, diffuse axial damage and many psychiatric diseases.

Task: A reference image is displayed on the screen, which must be compared with other images. The task is to identify the image in the group of images that matches the reference image.

Training material: A total of 77 sets of images were created, each with 16 coloured illustrations. Specific objects (e.g., fruit, animals), (optionally selectable) geometric shapes or letters and numbers are depicted on them. The adaptive change of difficulty ensures that the client is neither over-challenged nor under-challenged. A total of 24 levels are available. As the level of difficulty increases, the objects become more and more similar. In addition, 3, then 6 and finally 9 similar objects are shown for each set of pictures in a difficulty level.

Divided Attention

The ability to divide attention is trained. Several items of visual information have to be observed at the same time and irrelevant information disregarded.
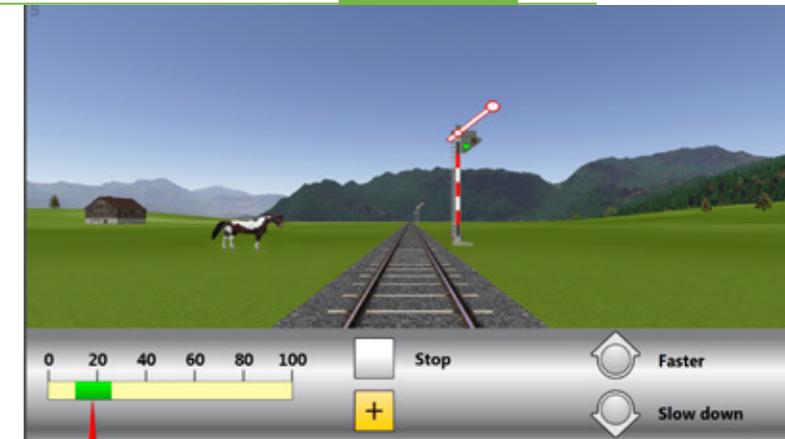
Indications: This training is for clients whose divided attention is impaired: after a stroke, with TBI, diffuse cerebro-organic impairments and psychiatric disorders.

Task: The lower part of the screen shows a driver's cab. Above this, the route can be observed (as through the windscreen of a locomotive). The clients have to simultaneously react to information in the driver's cab and to signals and objects on and along the route.

Training material: This training consists of 14 levels. Initially, the clients only have to regulate the train's speed, the specification of which changes at random. Step by step, further tasks are added. This includes reactions to various track signals, to the „dead-man lamp", to emergency signals and other objects. The difficulty is adapted by the increasing number, density and parallelism of stimuli and the reduction of the maximum allowed reaction time.

Divided Attention 2

The parallel processing of visual and acoustic information (3 visual and 2 auditory sources of stimulus) is practised in this module.

Indications: The module is designed as complex training for divided attention and is also useful for clients with attention focusing disorders or inhibition. Approx. 80 % of patients after a stroke, with TBI, and diffuse cerebro-organic impairment are affected.

Task: The task consists of driving a car along a certain route and reacting to parallel stimuli from up to three different visual channels (dashboard, landscape/traffic environment, rear-view mirror) and two additional auditory channels (directional information from the navigation system and car radio with traffic reports).

Training material: 22 levels with different scenarios. The screen shows the view through the front window of a car. Relevant and irrelevant visual objects move towards the viewer. In parallel, relevant and later also irrelevant acoustic stimuli are presented (direction change indications, traffic messages). The number of stimuli, the stimulus density and the number of distractors are varied.
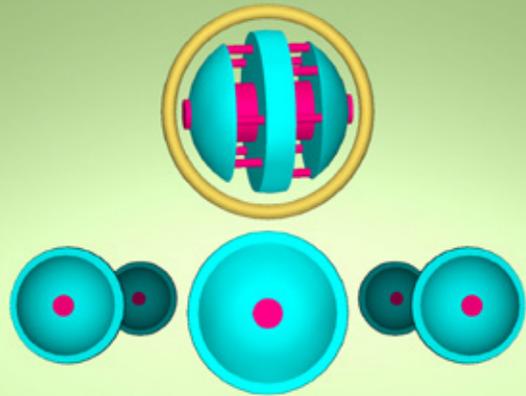
Spatial Operations 2

Training up to nine different spatial perceptive partial performances. Spatial memory is also used in part.

Indications: All spatial-perceptive disorders, especially in clients with parietal lesions and/or neglect.

Task: This module consists of nine different tasks, which differ significantly from one another depending on the spatial-perceptual partial performance. Mostly, training is done by comparing and matching a spatial property to a reference object. The following sub-skills can be trained: Position estimation, angle estimation, level estimation, size estimation in one and two dimensions, parallelism estimation, length estimation, dividing lines and speed/distance estimation.
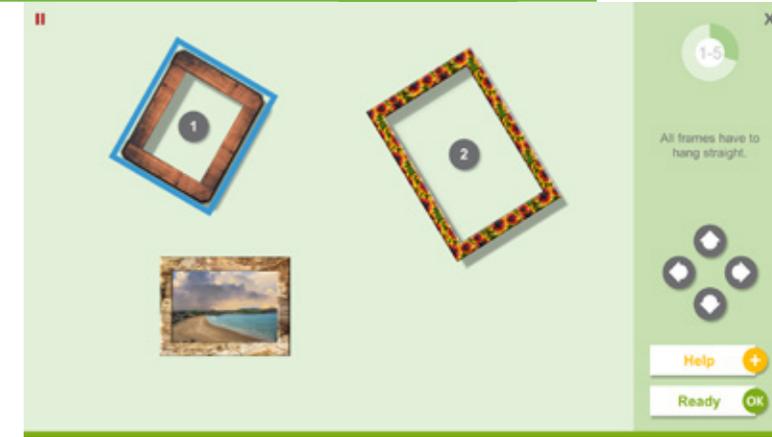
Training material: Several photorealistic images close to everyday life are available for each partial performance. The short-term memory for spatial perceptions is trained at higher levels by hiding the reference object. Reconstruction must then be carried out from memory.

Spatial Operations 3D

Training spatial imagination, attention and simple executive functions.

Indications: The module is suitable for clients with spatial perceptive disorders and mental rotation. In addition, it can also be used for demanding selective attention training. The task also places requirements on visual working memory.

Task: A three-dimensional object is displayed in the upper half of the screen. In the lower half of the screen there are 3 to 6 objects, which are more or less similar depending on the degree of difficulty. The clients have to find the object in the lower area, which exactly resembles the object in the upper half of the screen. All the objects on the screen can be rotated freely and therefore viewed from all sides.

Training material: A total of 432 three-dimensional objects in 67 groups are available. The module works adaptively with a total of 24 levels. The difficulty level is increased by the number (3 to 6 objects) and complexity (composite objects) of the objects to be compared.

Two-dimensional Operations

Training the perception of positional relationships and mental rotation. Positions, lengths and sizes are compared.
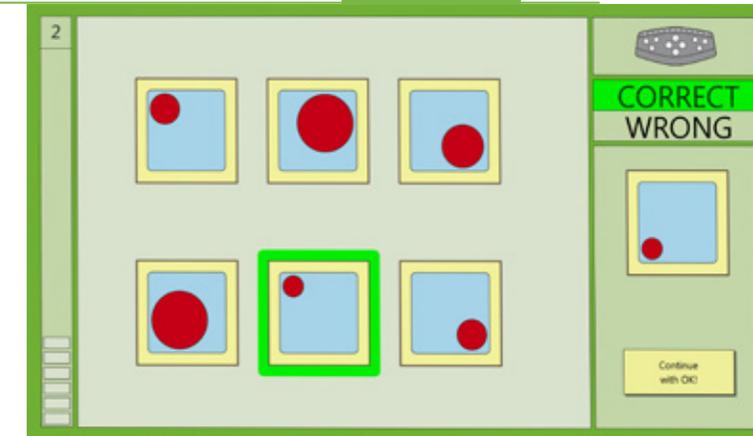
Indications: Loss of performance with regard to visual-perceptive requirements such as exploring spatial positions and spatial orientation. This training can also be used as demanding training for selective attention.

Task: Several objects to be compared with an object in the information area are displayed on the screen. The aim is to find an object from the set of objects, which corresponds to the „sample object", but rotated by 90°, 180° or 270°.

Training material: Geometric figures such as triangles, squares, hexagons are used as objects. In 24 levels, you work on 8 levels of difficulty, each with 80 to 160 objects. The difficulty is adapted via the number and type of objects and increasing similarity of the objects presented (simple geometric figures to complex objects) and the strength of the rotation.
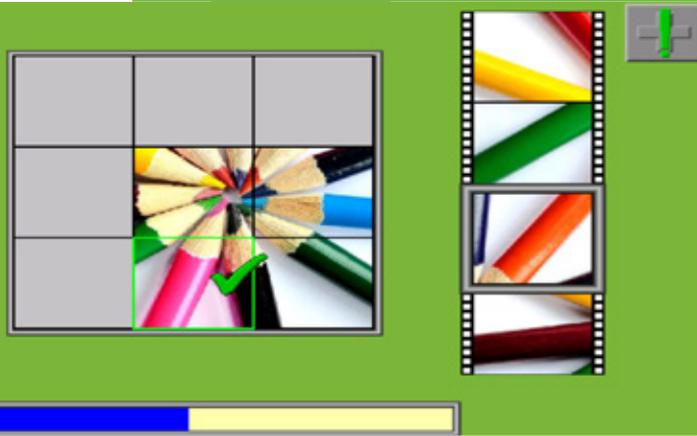
Visuo-constructional ability

Training visual reconstruction of images: After splitting the image into several puzzle pieces, the client has to put the pieces back together again.

Indications: This training is for clients with slight to medium losses of performance in the visual-constructive range. In addition to constructive skills, attention and (optional) memory skills are also required.

Task: This training was designed according to the principle of puzzles. At the beginning of a task, an image is shown that the clients have to memorise. After a defined or self-determined perception phase, the image is broken down into a number of puzzle pieces and needs to be put together again.

Training material: Photos and drawings are used in 18 levels, e.g., houses, faces, everyday objects or paintings. The essential components for changing the difficulty level are the number of puzzle pieces (4–36 pieces), the complexity of the images and, at the highest level, the rotation of image parts.

KONS   18 Levels   26 Languages

Memory

Impairments of memory occur both after damage to the brain and in the context of psychiatric illnesses. Different forms of memory (e.g., working, short-term, long-term memory) are distinguished.

In most cases, the absorption and permanent storage of new information is disturbed, while the recall of already stored information remains intact. For affected patients, memory deficits often have serious consequences. These can be reduced by training, but above all by teaching compensatory strategies.

Working Memory

Memory Strategy Training

Memory for Words

Figural Memory

Verbal Memory

Topological Memory

Physiognomic Memory
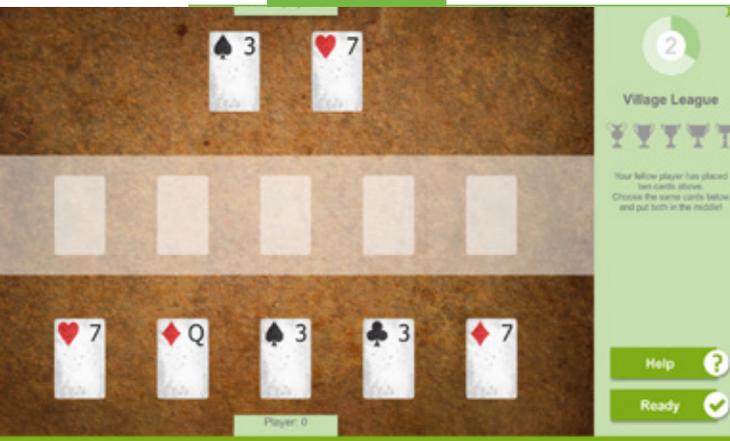
Working Memory

The working memory is an important interface between attention and memory. The aim is to train information absorption, selective memory and the processing of memorized information in the „working memory".

Indications: The module is suitable for clients with mild to moderate working memory disorders as a result of neurological or mental illnesses as well as for training complex attention and executive functions. Training is not recommended in cases of clear disorders of selective attention and short-term memory.

Task: The aim is for clients to remember the other player's cards and place them on the table. There are various types of tasks in which either all cards need to be memorised (memory system), only certain cards (selective attention) or the clients have to work with the memorised cards mentally, e.g., lay the cards again in reverse order (central executive).

Training material: A complete deck of cards (52 cards) with French, German or coloured cards is used. The training material is supplemented by distractors on the cards, distractors for delayed recall and a reward system to support motivation. This training offers 69 levels.

Memory Strategy Training

The therapy module teaches and consolidates learning strategies and thus trains the memorization and recall of information.

Indications: This training is suitable for clients with mild to moderate learning disorders. Clients with linguistic or figurative learning disorders can benefit equally from the training. For rehabilitation, we recommend the C-phase and upwards.

Task: The task is to memorise the presented objects. These can optionally be presented as words or images. During the learning phase, learning strategies (e.g., figurative imagination or body route) are communicated. After a simple distraction task, the clients must recognise the objects they have learnt.
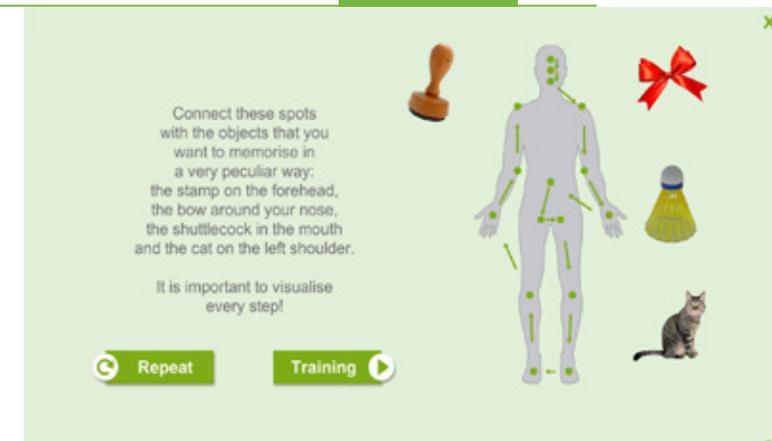
Training material: Two learning strategies are available. There are 18 levels with about 300 shown objects as high-resolution photos or words. As the degree of difficulty increases, the amount of information to be memorised and the number of deflective stimuli during recognition increases.
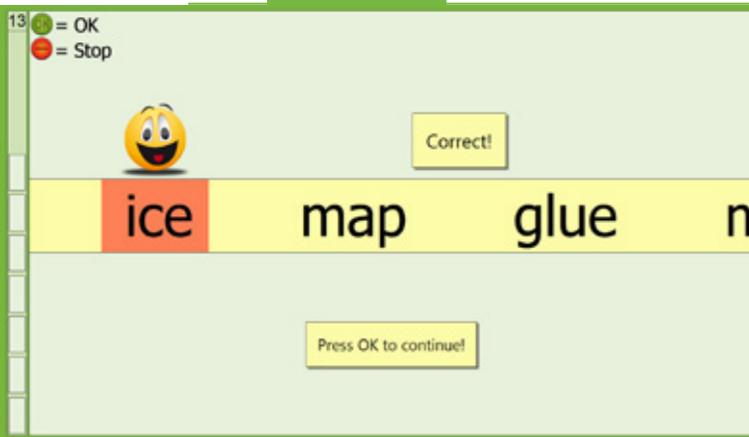
Memory for Words

Training is given in remembering and recognizing verbal information.

Indications: Memory disorders for verbal content after neurological diseases such as a stroke. The module is suitable for clients with impaired word span and reduced recall, especially with incipient amnestic syndrome. Other indications are verbal memory disorders due to post-acute depression or after intoxication.

Task: During the learning phase, the clients memorise a list of words (1 to max. 10 words). The difficulty level increases with the number and complexity of words. Those words that were presented in the learning phase must then be selected from a series of words not presented.

Training material: The words appear in clear and large script. The movement of the words is continuous and fluid. The speed can be adjusted. The words presented are divided into three groups of 200 words each, simple short, simple compound and complex compound.

Figural Memory

Training of the visual and verbal short-term memory.

Indications: This training is advisable for mild and moderate memory disorders of verbal and non-verbal content. It is also suitable for clients with impaired ability to name objects (difficulties in categorising terms).

Task: Pictures of specific objects are shown, which the client has to memorise. Subsequently, various objects roll across the screen on a conveyor belt. Whenever an object from the learning phase passes through the marked area, the client should press the „OK" button.

Training material: There are 9 levels with roughly 200 photos of specific objects. The number of specified objects in the learning phase corresponds to the level. An easy-to-read, large font was chosen for the additional modules with word recognition. The words or images move across the screen continuously and smoothly. The speed can be adjusted.

Verbal Memory

This training aims to improve the short-term retention of verbal information and to master a learning strategy.

Indications: The module was made for clients with short- to medium-term verbal memory disorders. Such impairments can take place in almost all patients with brain damage (e.g., stroke, TBI, inflammatory diseases or dementias).

Task: The client has to read a short text and memorise its content (names, numbers, events). The programme offers a learning strategy for this purpose (browsing, reading, repeating). Questions are then asked about the content of the text. Depending on the option that has been selected, the questions can be answered by multiple choice or by freely entering a text. Questions related to the content of this story should then be answered.

Training material: A total of approx. 100 reading texts on different topics are available; they are assigned to ten difficulty levels. With increasing difficulty, the scope and informative content of the story as well as the number of names, numbers and events/objects queried increase. Individual texts can be created through an editor.

Topological Memory

This module trains topological memory performance. As in a memory game, clients are required to remember the position of objects and later remember their location.
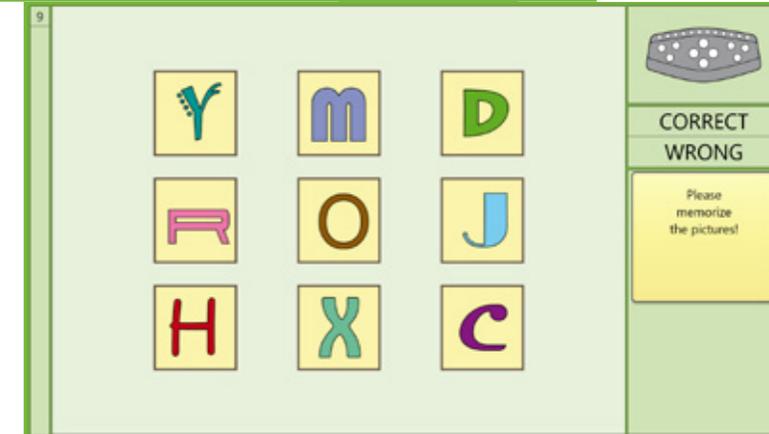
Indications: The indications for this training are all for verbal and non-verbal content memory disorders and impairments. Amnetsic syndromes and memory deficits occur with diffuse organic brain diseases, with certain lesions of the limbic loop, vascular diseases, TBI, brain tumours (prefrontal, temporal, parietal), manifest depression and intoxication.

Task: Images are presented on the screen. The clients have to remember where they see the pictures. After a preset time has elapsed or after pressing the OK button, the images are hidden and the clients are asked to indicate under which card the image they are looking for is located.

Training material: 20 levels and up to 464 images of specific objects, geometric figures and letters are available. The number of cards offered at the same time varies from 3 to maximum of 16. The difficulty level increases through increasingly complex objects and an increase in the number of cards.
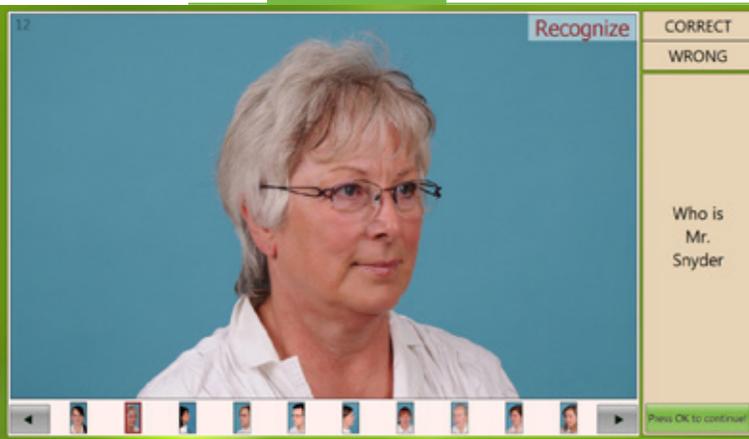
Physiognomic Memory

With this training, the recognition of faces and their assignment to names, professions and other characteristics is taught in a realistic way.

Indications: For clients who have problems in remembering faces and related information. The training is particularly suitable for clients who deal with many different people in everyday life and at work.

Task: The clients need to memorise faces in a learning phase. These faces must then be selected from a series of other faces. In higher levels, a name, later a job title and an initial 5-digit telephone number are given to the face. Afterwards, the clients have the task of finding out the face associated with a name, profession or telephone number.

Training material: 47 people in total were photographed from four different perspectives. By using an editor, this training can also be carried out with individual images, e.g., from the client's personal surroundings. The structure is as follows: Remember faces (6 levels), remember faces with names (5 levels), remember faces associated with names, occupation and phone number (5 levels).

GESI   21 Levels   27 Languages

Executive Function

Executive Functions are a collective term for various higher-order mental processes associated with action planning or goal-directed behaviour.

Clients with Executive function deficits show difficulties in planning and following rules, often have little sense of social norms and problems in suppressing unwanted behaviour. Executive Functions are closely linked to the frontal lobe. Neurological diseases or injuries of the frontal lobe as well as psychiatric diseases (e.g., schizophrenia) show abnormalities here.

Logical Reasoning

Shopping

Plan a Vacation

Calculations

Logical Reasoning

The training aims to improve reasoning skills. The clients have to continue rows of symbols that are built up according to logical rules or sort pictures according to categories.

Indications: Clients with deficits in problem analysis or logical reasoning. This type of loss of performance often occurs with clients who have suffered damage to their frontal lobe after TBI but also those who suffer from schizophrenia or chronic alcohol abuse.

Task: There are two types of tasks. The client's task is to analyse and continue the logical series (symbols or numbers). In the task type category, the clients have to find out to which categories (e.g. cars, plants) the displayed pictures belong and then sort them according to the categories.

Training material: In this module, patients work with pictorial representations of objects, numbers or geometric shapes. With increasing difficulty, more and more abstraction levels (including colour, size, shape, order, rotation) have to be considered for the solutions in order to continue the series logically. The categories become more complex in terms of content as the level increases.

Shopping

With this module, everyday action planning and action monitoring are taught. It can also be used as action-oriented memory training or complex selective attention training.

Indications: Clients with deficits in working memory, planning and structuring the implementation of actions, concept formation, as well as problems with memory retention.

Task: A shopping list contains items to be found in a supermarket or DIY store and placed in the shopping basket. Once all items are in the basket, the supermarket is exited via the checkout. At higher levels, additional requirements are placed on computational skills. An amount of money is specified and the client has to check whether the amount is sufficient for the purchase.

Training material: More than 200 photo-realistically illustrated items (e.g. groceries, household items and much more). These items appear on shelves from which they can be selected. The module has a voice output, which means that all items are named when they are selected. There are 18 levels and 2 stages: First, only items according to the shopping list are purchased. Difficulty increases with the number of items to be purchased. On the second level, prices must also be added and compared with the amount of money available.

Plan a Vacation

The aim is to improve problem analysis and planning ability. The module also places requirements on selective attention, text analysis, working memory and retention.

Indications: Clients who have problems with prioritising tasks and planning their daily routine. Due to the complexity of the module, there are also requirements for working memory and action monitoring. The ability to plan actions and organise tasks is one of the most complex human abilities. This can be impaired by acquired brain damage and mental disorders.

Task: The first part of the task consists of prioritising appointments. In doing so, the clients need to either
• find out which appointments are most important
• minimise travel times
• select appointments so that as many appointments as possible can be completed

Training material: The module offers 55 levels with different appointment combinations. The task is presented via text. These vary from simple, short sentences at lower levels to complicated sentences. The difficulty in prioritising and planning is also increased by the number of appointments to be chosen and by the conspicuousness of information on the importance of the appointments. A clear overview map of the fictitious holiday resort supports the chronological structuring of appointments.

Calculations

This module deals with training basic arithmetic skills (counting, addition and subtraction) and the handling of money

Indications: Impairments in arithmetic cognitive abilities. They range from disorders in estimating sizes and quantities to problems with carrying out basic calculations to difficulties in solving complex mathematical problems.

Task: The module offers a wide range of tasks. It starts with simple size and quantity comparisons and sorting tasks. The basic calculation methods for addition and subtraction are then practised both mentally and in writing. In higher levels of difficulty, the clients train very realistically how to deal with money. Among other things, the clients have to pay correctly, give money back or check the money they have received. Finally, multiplication and division tasks are available.
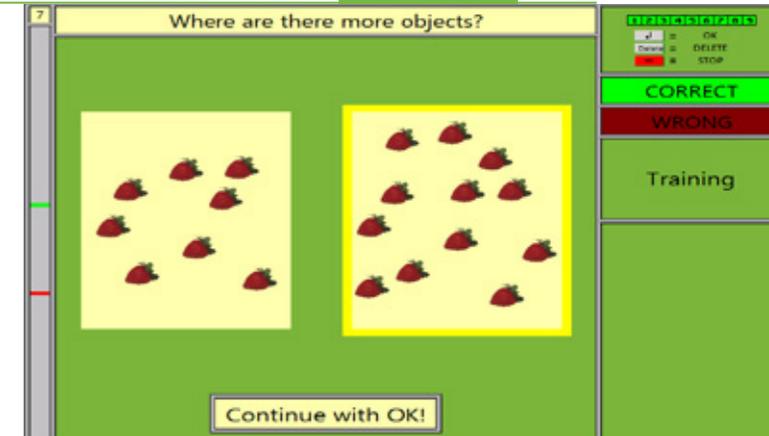
Training material: Size and quantity problems are practiced with pictures of simple objects before moving on to calculating with numbers. Written adding and subtracting is illustrated with small digits in the carryover. The handling of money is practised with images of real banknotes and coins. The module has 42 difficulty levels and works adaptively.

Visual field & Neglect

Visual field losses and Neglect are common side effects after a stroke or hypoxic brain damage.

Visual information is transmitted from the eye via the optic nerve and via optic radiation to the occipital lobe for processing. If there is damage to these neural pathways, the required visual information no longer arrives there and cannot be processed – this results in a loss of Visual field. In the case of Neglect, on the other hand, visual information from higher areas of the brain is no longer processed further, whereupon attention on half of the space affected is only possible to a limited extent. Those affected first and foremost have difficulties in reading and visual orientation. Targeted training can significantly reduce the impact on everyday life

Saccadic Training

A good introduction to therapy for visual field impairments or neglect with severely affected clients. The aim is to establish large gaze jumps (saccades) into the affected hemifield.

Indications: Clients with moderate to severe limitations after homonymous visual field defects, neglect, disorders to visual exploration abilities and saccadic visual movement. These occur, among other things, after cerebral infarctions in the supply area of the arteria cerebral media or posterior.

Task: The clients look at a sun/moon (fixation point) on the horizon of a simply structured landscape. At irregular intervals, objects appear to the left or right of the fixation point, accompanied by a beep. Whenever the beep sounds, the client has to find the object with large gaze jumps and indicate by means of the arrow key, whether it is located to the left or right of the fixation point. At low difficulty levels, the horizon line helps with orientation. Optokinetic stimulation can be switched on as an additional help with neglect.

Training material: There are 34 levels with differently designed backgrounds and objects. At higher levels, the objects become smaller, the horizon line disappears, and there are additional distractions. There are three difficulty levels available. These are defined by the size of the objects (3 sizes), the contrast to the background (black or grey object) and the state of the object (static or moving).

34 Levels   27 Languages   SAKA

Restoration Training

The module supports possible restorative processes in the case of visual field defects. Neuroplastic changes can be supported, especially with minor cerebral lesions.

Indications: For neurologically caused visual disorders, e.g. right or left sided quadrant anopsia and the resulting perception and processing disorders. Visual restoration training requires a high training frequency and duration. At best, daily training for at least 50 - 100 sessions is recommended.

Task: The aim of the training is to stimulate the peripheral area between the intact and impaired visual field. To do this, the clients keep their eyes on the fixation point. The light stimulus first moves from the intact visual field to the affected one until the client can no longer perceive it (limit of perception). At this point, the light stimulation lingers until the

light stimulus moves one line below or above the stimulation point again from the healthy area to the perceptual border in order to stimulate here. Determining the limits of perception as well as ensuring fixation in the middle of the screen are carried out by the client pressing a button.

Training material: Stimulation takes place via moving light stimuli. Sound signals additionally help increase attention. The programme adapts to the individual ability of the clients. The use of a chin rest is recommended to stabilise the head and maintain the distance to the screen.

Exploration 2

The module is used to treat visual exploration disorders and problems with spatial shifts in attention; it also places emphasis on selective attention performance.

Indications: The training is recommended for clients with exploration problems after homonymous visual field impairments or visual neglect and can also be used as visual-spatial attention training. It is suitable for establishing a previously acquired exploration strategy in unstructured training material.

Task: There are four different types of tasks. In the task type „Search for missing numbers", numbers scattered on the screen should be searched in order and the missing numbers should be identified. Find Items requires finding and clicking certain items embedded in scenes.

In the task type „Find and count objects", the number of given objects must be determined. The „superimposed figures" task is used to train detailed analysis. Simple figures are superimposed. The clients have to decide what the basic forms of the superimposed figure are.

Training material: Many detailed images and scenes are available for the tasks „Find objects" and „Find and count objects". The task „superimposed figures" contains many different simple coloured or black geometric figures.

Visuo-Motor

Human movements are based on the coordination of various motor, visual and proprioceptive systems.

Numerous „fine motor" activities in everyday life, such as using cutlery or tools depend on the exact coordination of eyes, head and hands. During the motor action, visual control plays an essential role - especially in the learning stage of movement sequences. Brain damage to the motor or sensory area, but also to the spatial or visual system, can result in serious visuo-motor problems.

Visuo-Motor Coordination

Visuo-Motor Coordination

Training of Visuo-Motor Coordination skills. The clients have to move the cursor to the centre of the rotor with a joystick/mouse and execute its trajectories.
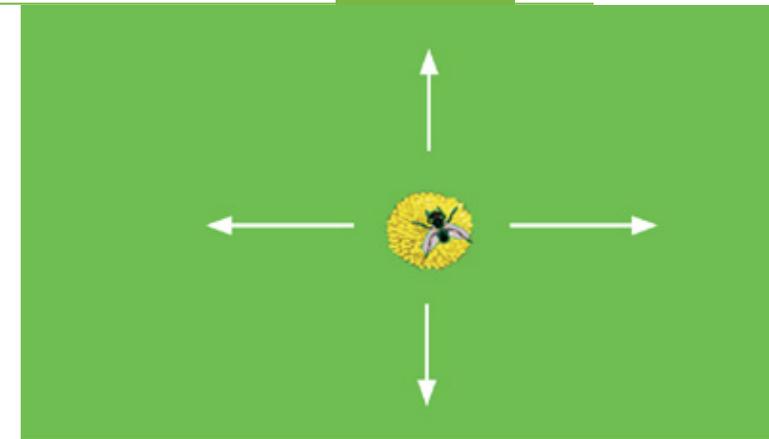
Indications: Fine motor skills disorders after damage to the sensory or motor cortex, the pyramidal tract or basal ganglia resulting in fine motor skills deficits. With many cerebro-organic diseases, eye-hand functions are also affected.

Task: On the screen, an object, e.g., in the form of a circle or a flower, moves irregularly across the screen. The client has the task of keeping the cursor, represented by a dot or a bee, on the object by controlling it with a joystick or mouse.

Training material: In order to make the training more interesting and diverse, especially for children, 25 pairs of images are used as a rotor/cursor in the „specific" mode. The difficulty is determined by the size of the circular disk, the speed at which the disc moves and the type of trajectory (e.g., unpredictable changes in direction, curves).

96 Levels   26 Languages   WISO

Screenings

Nine screening procedures are available in RehaCom for the sub-areas of attention, memory, executive functions and the visual field. The screenings provide an initial overview of the client's cognitive performance and thus enable orientation as to which areas require more differentiated diagnostics or training.

A performance assessment that does not include training is also required for progress monitoring, because during training, improvements take place in the tasks solely due to the effects of exercises and routine, without the underlying cognitive skills having improved. It is therefore important to record the initial situation and the final state with procedures that do not include tasks. This can be done through the screenings and the individual changes in performance can be objectified.

Progress monitoring through RehaCom screenings
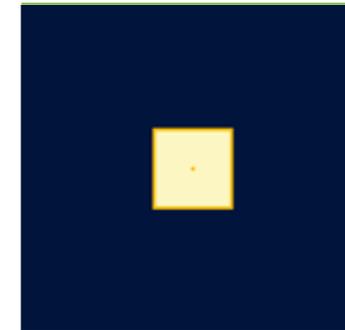
5 min.

48 visual stimuli, of which 24 with an acoustic warning signal

3-4 min.

20 GO and 20 NOGO stimuli

Alertness

Selective Attention

Measuring the simple response rate as a measurement of basal attention activation.

A stimulus is presented in the middle of the screen. The answer button has to be pressed as quickly as possible for each presentation. One round consists of twelve displays. Four rounds are displayed in an A-B-B-A design. In rounds 2 and 3, an acoustic warning signal announces the stimulus (phasic activation). In rounds 1 and 4, the stimuli appear without an acoustic warning signal (tonic arousal). In addition to the response times for tonic and phasic alertness, the evaluation also shows the response time trend. A slowdown in the response times can indicate fatigue and therefore lowering of the tonic arousal.

Measuring the selective response performance, i.e., the ability to react to relevant stimuli and to inhibit responses to irrelevant stimuli.

A sequence of two different stimuli is presented in close succession in the middle of the screen. If a stimulus is relevant (GO condition), a key must be pressed. If the stimulus is not relevant (NOGO condition), the response pulse must be suppressed. The client's performance is evaluated with regard to reaction speed and response control (impulse control for NOGO stimuli).

ALET   🌐 27 Languages

GONT   🌐 27 Languages
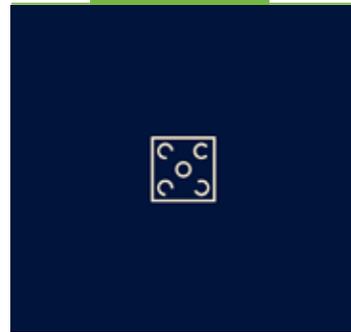
⏱ 4 min.

🚩 160 auditory stimuli, 80 visual stimuli

Divided Attention

Measuring the ability to divide attention between two information channels.

The task is to check optical and simultaneously presented acoustic stimuli for certain stimulus conditions and to react as quickly as possible by pressing a button when they occur (dual task). While both tasks per se are relatively simple, the simultaneous review of the two modalities places considerable demands on attention with the inclusion of executive processes. Correct and incorrect reactions are evaluated for both modalities.

⏱ 4-5 min. (max. 8 min.)

🚩 24 double-digit numbers

Spatial numbers search

Measurement of general cognitive performance speed and lateral preference when solving a simple visual search task

24 double-digit numbers (01–24) are presented on the screen. The task is to search for and click on them in ascending order. The prerequisites are sufficiently preserved visual acuity and a basic understanding of language. When using the mouse for entering, the client must be able to control the mouse properly. The processing speed is evaluated. In addition, indicators for increased fatigue and neglect symptoms are output.

GEAT	🌐 27 Languages
NUQU	🌐 27 Languages
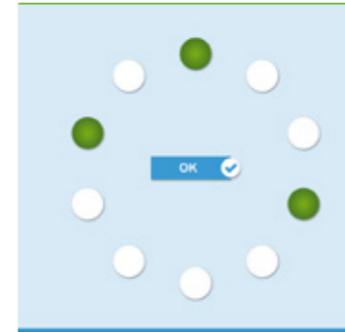
⏱ 3-7 min.

🚩 10 points arranged in a circle

Working Memory

Measuring the visual-spatial memory span

There are ten small circles arranged in a circle on the screen. When the test is given, these light up in different positions one after the other. The client's task is to memorise the sequence of the illuminated circles and to repeat it in the same order by clicking on them with the mouse or via touchscreen (immediate memory span). The number of illuminated points is continuously increased. After two successive rounds with errors, the test is terminated.


⏱ 10 min.

🚩 72 words in blocks of 12 words each

Memory for Words

Measuring verbal learning ability (aspect of verbal memory)

This test assesses the ability to learn words. The same twelve words are shown to the client in five rounds. Each time, the clients must decide whether they have already seen the word concerned or not. Five further rounds with twelve words each are then presented, in which five of the previously presented ones are repeated. These must be identified and confirmed by pressing a button.

PUME	🌐 27 Languages
WOMT	🌐 25 Languages
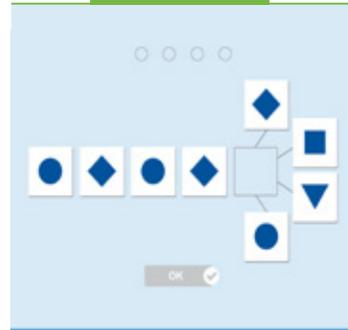
🕐 5-7 min. (max. 13 min.)

🚩 13 image sequences

Logical Reasoning

Measuring the ability of analytical and reasoning thinking

Symbols are presented on the screen which need to be continued or completed as a logical series. The task is to identify regularities, continue series and draw logical conclusions. The result can show deficits, but does not clarify which components have contributed to the performance deficit. Above all, it is advisable to additionally check working memory and attention performance. Convergent deductive reasoning is a prerequisite for problem-solving and is a basis for being able to perform executive functions.
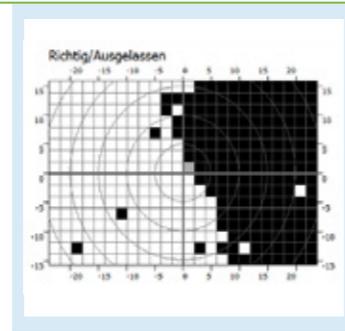
🕐 About 15 min.

🚩 404 relevant stimuli, 81 fixation controls

Campimetry

Measuring the visual field

The field of view can be examined binocularly or monocularly in two dimensions with campimetry screening. In the test, stimuli appear on the screen at random time intervals and at different spots. While the clients keep their eyes fixed on a central point on the screen, they should perceive these stimuli and confirm them as quickly as possible with the answer button. To check fixation, the fixation point changes its colour or shape at irregular intervals. The use of a chin rest is recommended for stabilising the head and maintaining distance to the screen.
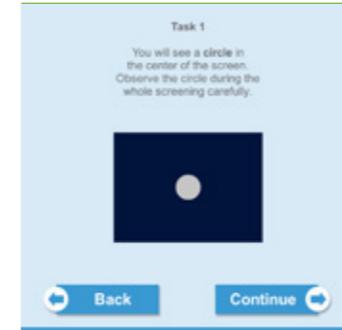
🕐 Approx. 10 min.

🚩 96 relevant stimuli, 58 fixation controls

Visual Field

Measuring the visual field with requirements for selective attention

The peculiarity of this measuring method lies in the tachistoscopic presentation of the peripheral stimulus. As a result, spontaneous explorative movement towards stimulus can be better controlled. Changes in the central stimulus in the fixation point can only be clearly seen with fixation. The cognitive tasks for fixation stimulus and peripheral stimulus are similar, whereby the requirement for shared attention, which is claimed in all tests with different central and peripheral tasks is reduced.

With the peripheral task, a selective reaction is required to differentiate between a target stimulus and a distraction stimulus. A diagram with a local representation of the omissions and errors clearly shows the measurement of the visual field in 3 shades. Fixation quality and selectivity are output separately so that the validity of the measurement can be easily estimated.

LOGT	🌐 27 Languages		KAMP	🌐 27 Languages

VITE	🌐 27 Languages

Scientific Partner

We would like to thank all partners, employees and teams who have been involved in the development of RehaCom and continue to be involved in this valuable work. Any successful and approved therapy system, such as RehaCom, strongly relies on excellent cooperation.

All RehaCom modules are continuously revised and improved with the help of a 10-headed neuropsychological advisory board. Many thanks to all involved.

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RehaCom
for home use

Motivating
and diverse

Home training

Ideal for further training accompanied by therapy!

After rehabilitation as an inpatient, further cognitive training is required. Under supervision, clients can continue their RehaCom therapy started in the clinic at home. The therapists prepare an individual therapy plan, which is adapted to the individual needs and the actual performance of the client. If the client wants to train, the RehaCom system downloads the plan from the internet.

The client carries out training at home, whereby the results are automatically saved. The therapist supervises the home training, sees that it is implemented and checks the results. There is always the possibility to choose tasks for the clients and to communicate directly with them.

The involvement of relatives is possible and desirable for patients with particularly severe disorders. In the long term, this is the only way to sustainably improve the rehabilitation and participation of those affected. The aim is to ensure the continuous transition of cognitive therapy from the clinic via the GP and neuropsychology/ergo therapy to training at home.

RehaCom for home – motivating and diverse!

Observational study for home training

Therapy: 2849 therapy hours, Ø 40.1 hours per client

■ Visual perceptive function
■ Attentional function
■ Memory function
■ Executive function

Favourites:
Occupational
rehabilitation: 12.6%
Overview and reading: 8.8%
Divided att. 2: 15.5%
Working memory: 17.5%
Plan a Vacation: 6.8%
Other: 38.7%

Objectives:
Function, compensatory strategies,
reserve capacity, break management

You can find the observational study by Dipl. Psych. A. Knop at www.rehacom.de

14,6 %
17,5 %
24,0 %
43,1 %
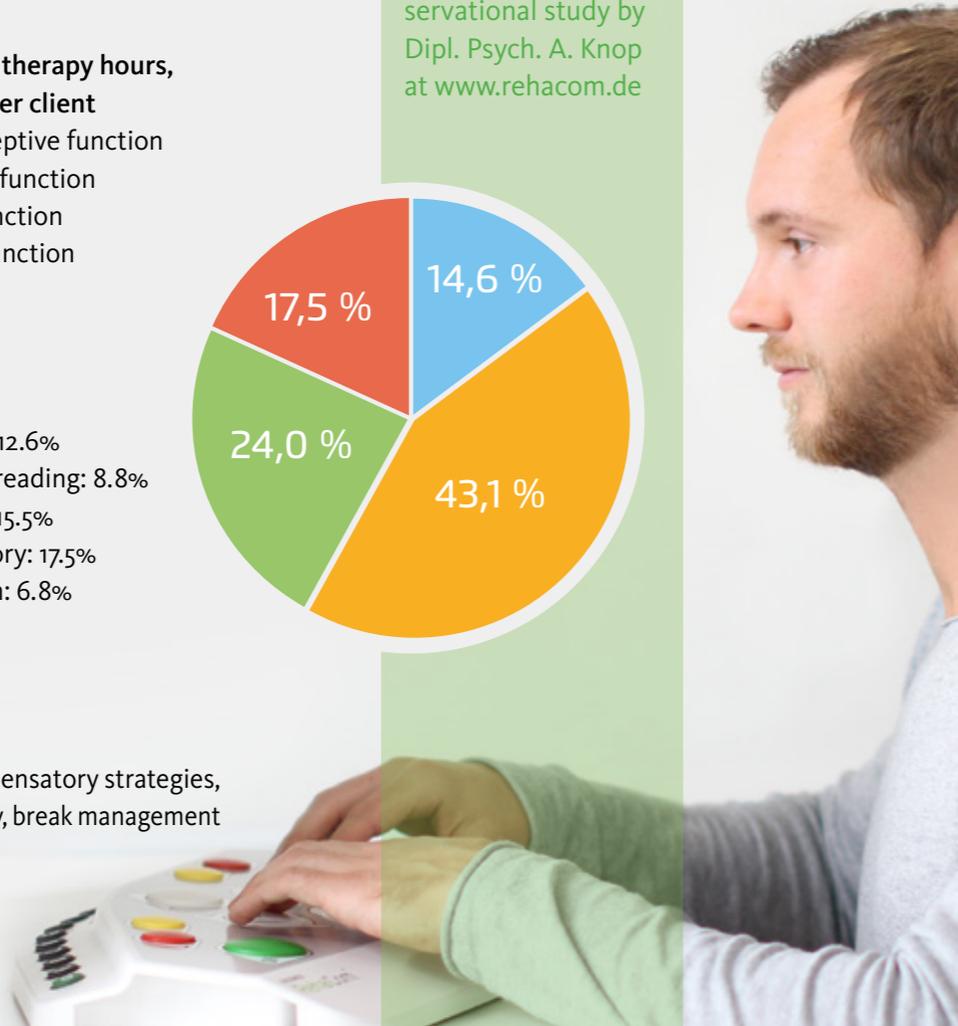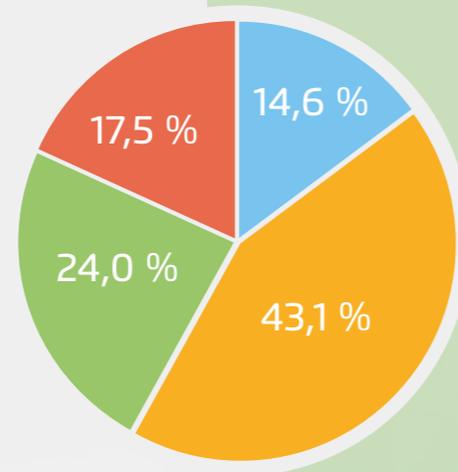
System requirements

- Processor: Intel Core i3, i5, i7 – 6th generation or equivalent
- Memory: 4 GB RAM
- Graphics card: DirectX 10.1 compatible; Intel HD530 or higher
  (at least 2 GB graphics memory)
- Hard drive: 10 GB free
- Sound card: available
- Monitor: Size according to the patient's requirements;
  Resolution: At least 1024 x 768 px for 100% font size;
  with a font size of 120%, 1024 pixels are required vertically
- DVD drive: for software installation (alternatively via USB/network)
- Console: RehaCom panel; RehaCom keyboard;
  USB terminals after conversion by HASOMED GmbH
- Operating system: Windows 10
- Equipment: Printer

RehaCom Software and Accessories

Software

To work with RehaCom and depending on the form of subscription, clinics and practices can acquire unrestricted use of the training courses at several workplaces at an affordable price for a period of 12 months.

RehaCom Keyboard

A PC keyboard is not always suitable as an input medium. RehaCom offers a special keyboard with which clients with severe motor impairments or clients who have little experience in using a PC can train.
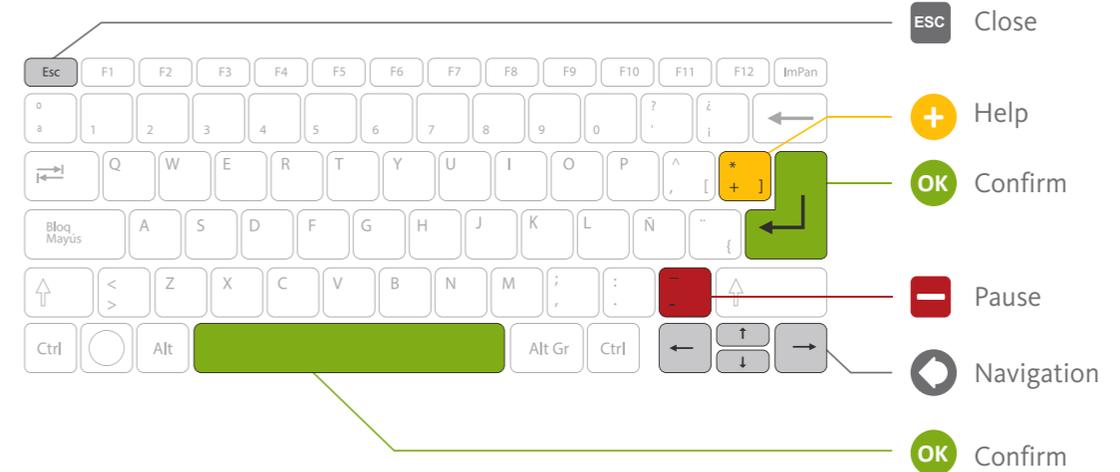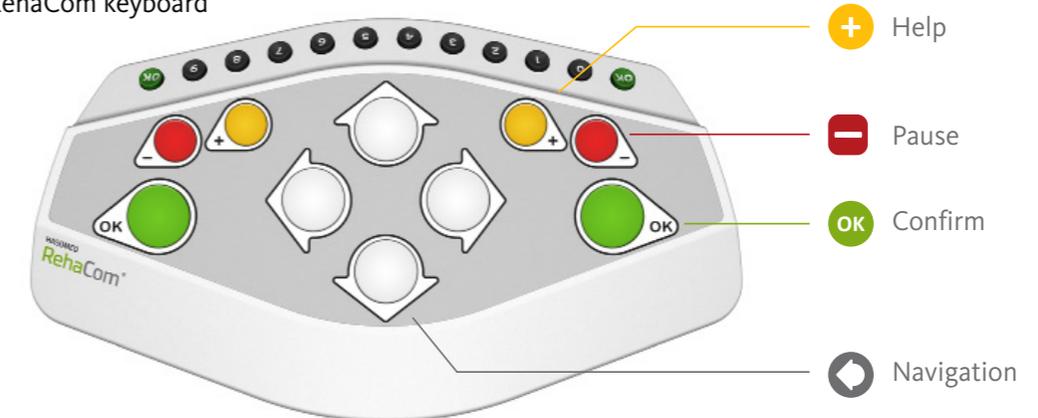

Keyboard adhesive kit

With the adhesive kit, you can stick the corresponding keys on the keyboard and therefore highlight them in colour (see picture on page 59).

Keyboard Layout

For PC keyboard

ESC   Close

+   Help

OK   Confirm

—   Pause

Navigation

OK   Confirm

For RehaCom keyboard

+   Help

—   Pause

OK   Confirm

Navigation

RehaCom Licensing and Solutions

	Requirements	Item to be purchased	Accessory (opt.)
Single Computer	• windows based PC	• License for 1, 3 or 7 years • Patient Keyboard or (dongle)	
Server Network	• existing clinic server • existing integrated client PCs • note: training data stored on central server data base in the clinic	• Server network license for 1, 3 or 7 years • Server dongle	• Patient Keyboard
Internet/Home training	• windows based PC with internet connection (therapist and patient)	• Internet time Licenses (based on training hours consumption)	• Patient Keyboard

Global RehaCom Distribution Partners
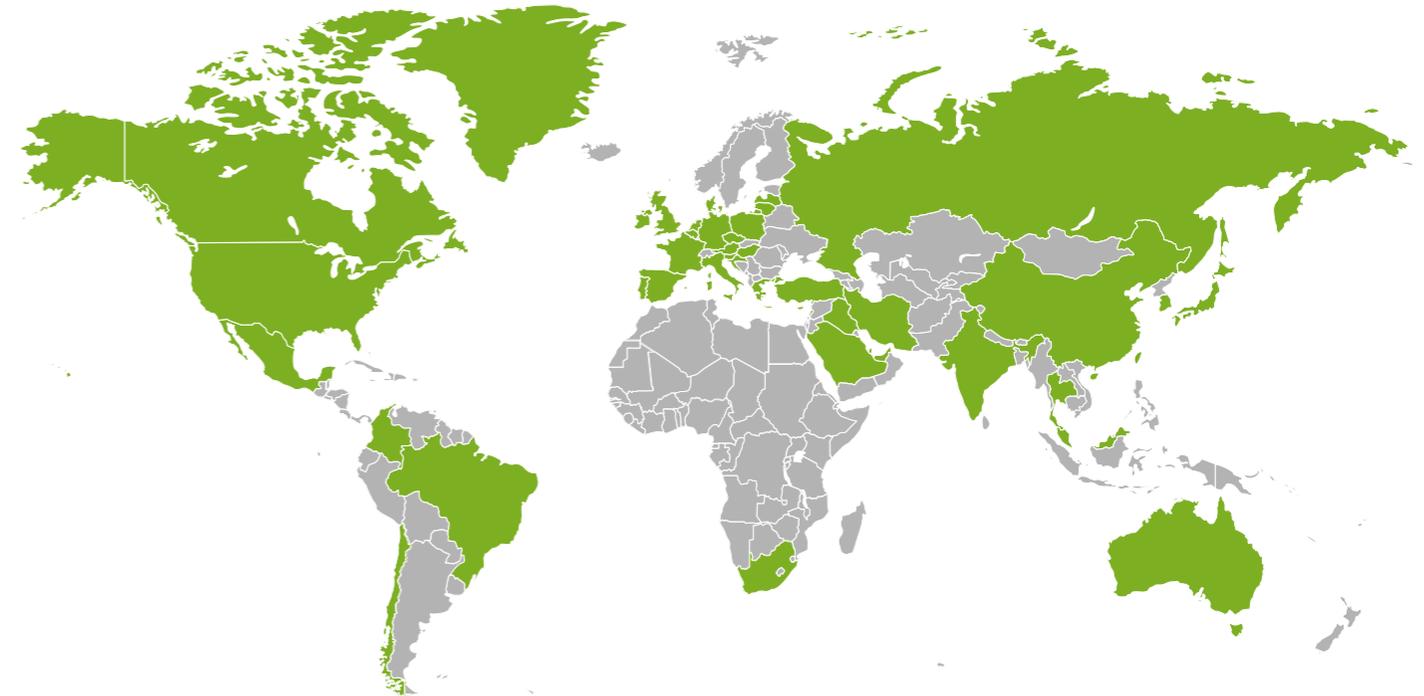
Many partners across the globe are involved in research, product development, distribution and rehabilitation. Please contact us and we will bring you in touch with your local HASOMED distribution partner.

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Notes