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RehaCom®

Cognitive therapy and brain training

RehaCom - Basic manual

www.rehacom.com

HASOMED®
Hard- und Software für die Medizin

HASOMED RehaCom®

Cognitive therapy and brain training

by Hasomed GmbH

This manual contains information about using the RehaCom therapy system.

Our therapy system RehaCom delivers tested methodologies and procedures to train brain performance .
RehaCom helps patients after stroke or brain trauma with the improvement on such important abilities like memory, attention, concentration, planning, etc.

Since 1986 we develop the therapy system progressive. It is our aim to give you a tool which supports your work by technical competence and simple handling, to support you at clinic and practice.

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1 Introduction

1.1 System RehaCom

RehaCom is a **computer-assisted therapy** system for cognitive functions whose efficiency is proven in evaluating studies. The system consists of a basic programm and a number of training procedures. Using RehaCom is very easy. Aside from sources of help available in all RehaCom components (pressing button F1), this **Basic manual RehaCom** gives basic information. Knowing this manual is precondition for an efficient use of RehaCom.

Before working with RehaCom some adjustments are necessary which you find in the chapter Before the first training.

The chapter Crash course RehaCom gives a short introduction enabling you to work with RehaCom.

For every RehaCom module there is a special manual which

- in a **theoretical part** describes the cognitive function to be improved,
- lists relevant groups of patients,
- describes the specific design of the training, the feedback, the levels of difficulty and the training parameters, and
- makes suggestions about how to analyse the process data in order to ensure the best possible training strategies.

Further information about computer-assisted cognitive rehabilitation and rehabilitation **strategies** can be found in the chapter Theoretical basis.

1.2 Before the first training

Before putting RehaCom into commission, some system adjustments are necessary which are described afterwards. If you happen to have a demo version this will be of no interest for you.

For an installation of RehaCom from the CD on your PC, you need to carry out system adjustments.
RehaCom can be obtained

- as demo version without additional devices,
- with a RehaCom panel or
- with a dongle.

If you obtained the system with a special RehaCom ***panel***, this panel is connected to the serial interface of your computer, situated mostly at the back of the PC. The new flat RehaCom panel (from 1998 on) needs no power supply of its own

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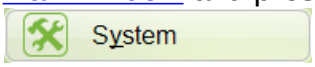
whereas the older panel does. So if necessary make sure the power supply is plugged in!

For therapists whose clients are not motor handicapped RehaCom can be used with a ***dongle***. For training then only the traditional PC keyboard is needed. However, some of the RehaCom procedures need the panel (as described above). The dongle is a matchbox-size plug connected to the printer jack. The printer cable is then plugged into the back of the dongle allowing printing as usual.

from version 5.00:
Since 2002 is a new variant of RehaCom-panel available. This panel is connected via USB-link to the PC (An USB-connector isn't available at older computers (operating systems Win95 and WinNT4)).
You can connect additional input-devices to the USB-panel (e.g. foot-switches for reaction training).
A RehaCom-dongle is now available in addition as USB-device.

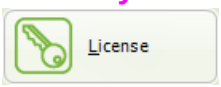
RehaCom needs to check if a panel or a dongle is plugged in. For that, go to the main window and press



and afterwards

RehaCom will then tell you whether it recognized the component.

Finally the ***license codes*** are inserted. The procedures can be used only after YOUR RehaCom has been set up with the corresponding codes. Otherwise only demo versions appear on the screen. To enter your **license code** press the button **System** and then



In the window license you insert the enclosed license code(s) in the lower input field, singly and one after the other, and finally press the button **insert**. If you made a mistake you will be told so.

Now you can start working with RehaCom. The Crash course RehaCom helps you with your first steps.

Prescriptions / Internet:
From version 5.3 RehaCom can be used by Internet licensing. As therapist or patient you have to be registered at the RehaCom Internet server. From this time RehaCom licensed are managed online. More information you will find at chapter

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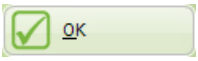
"Prescriptions / Internet".

1.3 Crash course RehaCom

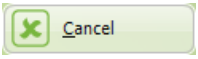
Before you can use RehaCom the first time, some system adjustments are necessary. For that please refer to the section Before the first training.

One of the most obvious advantages of a system like RehaCom is that by knowing certain identical keys the therapist is really quickly able to manage the system. In a few steps these keys are explained now.

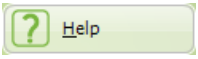
Those keys always have the same function:



closes the window ***taking over everything*** inserted



closes the window ***ignoring changes***. Alternatively Esc can be used.



opens up a help window giving information about content and function of the current window. Alternatively F1 or the ***question mark ?*** in the up right corner of any window can be pressed.

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After starting RehaCom this main window appears.

Main window RehaCom.

In order to work with RehaCom the following steps are always essential:

- enter a client into the RehaCom data base,
- choose a procedure for a client,
- carry out the procedure and
- analyse the process data.

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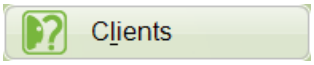
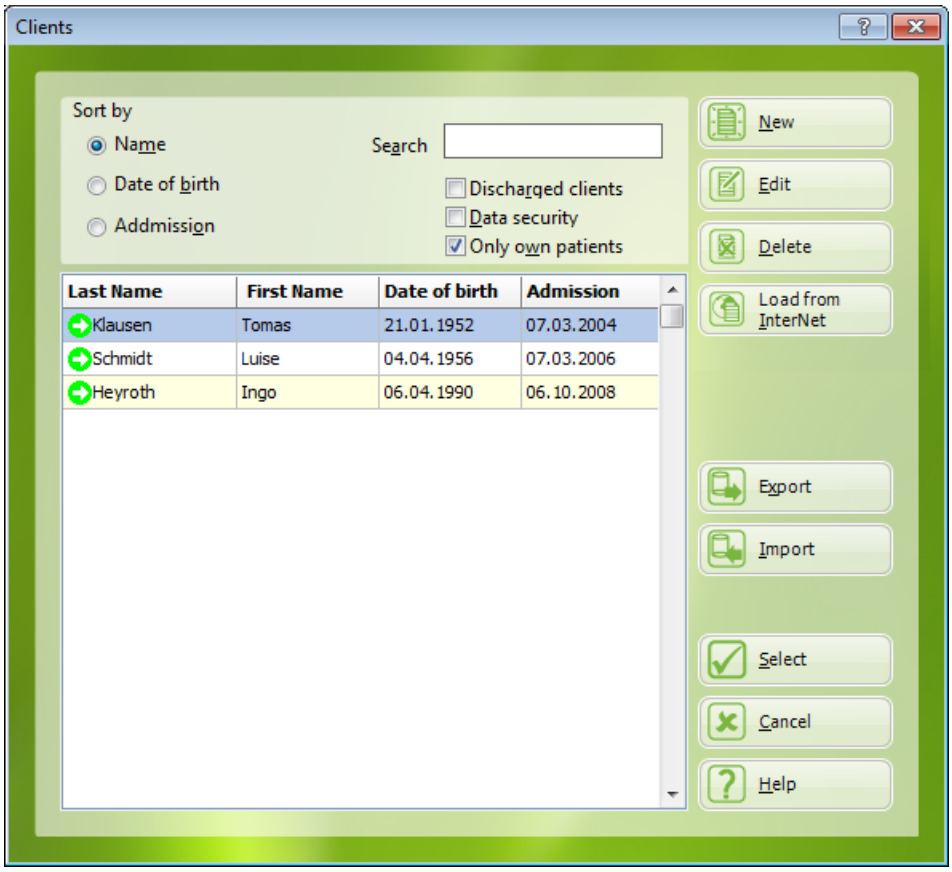
In order to enter a client into the data base press the button



The window **Clients** opens up.



Window Clients.

In order to enter a client newly, press New. The window Client data appears.

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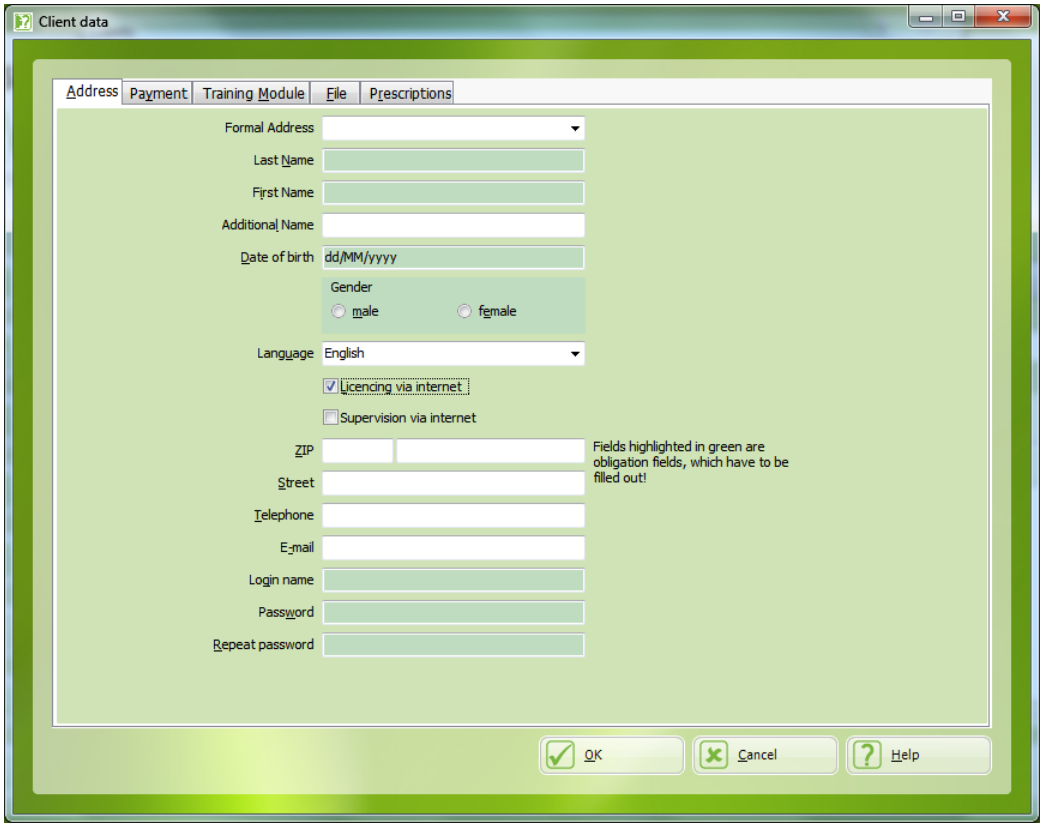

Window Client data.

Enter at least the client's Name, First Name, Date of Birth and the client's Gender and press OK. Now the main window shows up with the new client you just entered in the field Current client.

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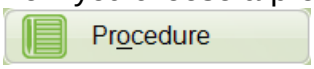
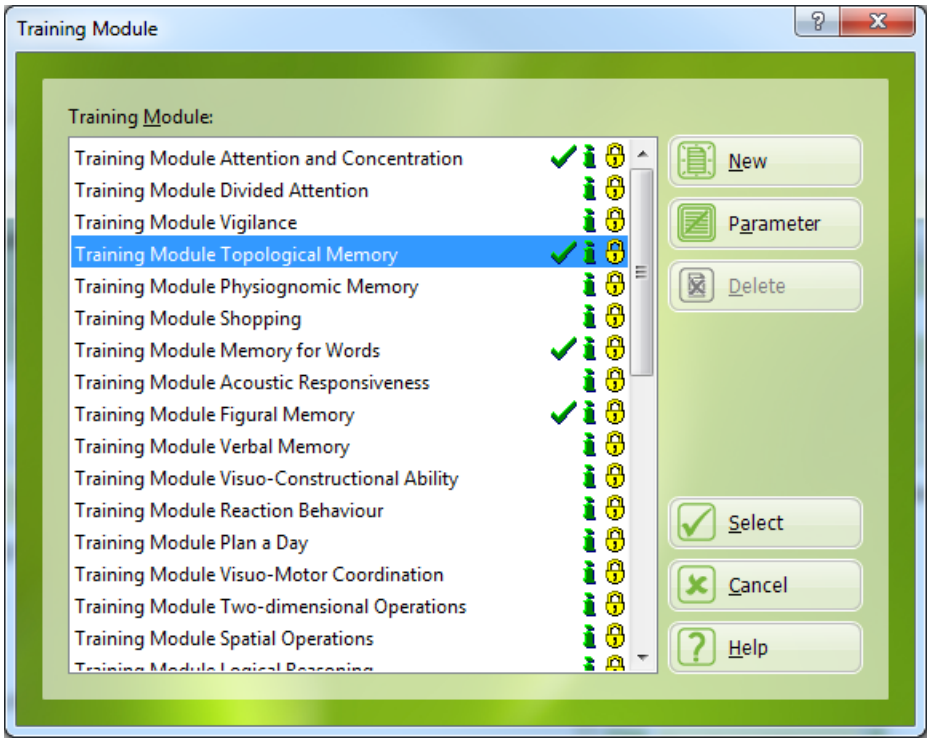
Now you choose a procedure for the client by pressing



The window **Procedures** opens up.



Window Procedures.

The desired training procedure is chosen from the list with a double click. You then come back again to the main window. In the field **Current procedure** you find the one you just chose.

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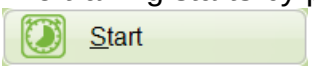
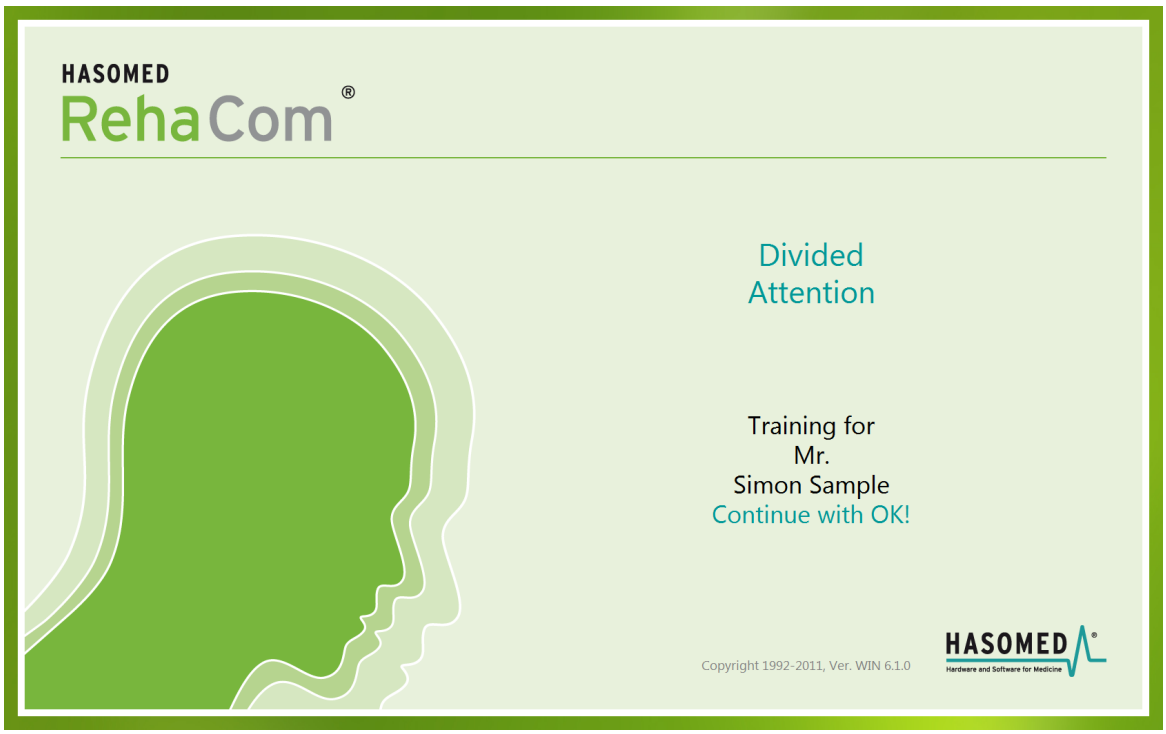
The training starts by pushing



A starting picture specific to each procedure appears.



Example Starting picture of the procedure "Divided attention" for the client Simon Sample

For control purposes the name of the RehaCom procedure and the client are displayed. To start training push the RehaCom panel OK-button. For every procedure there is a special manual describing it.

Each training session consists of a client's instruction and the actual training.

A client`s first two sessions with a new procedure automatically include an instruction with an explanation of the task, of how to use the panel and further specific aspects. In very weak clients and people with impaired sight this instruction can be used for a spoken instruction through the therapist. In many procedures the client is instructed via "learning by doing". The instruction can be started any time in the therapist menu (see bottom) with the button Start with instruction.

Then the first training task starts. Some keys of the RehaCom panel have the same function in any procedure:

- panel OK-button: going over to the next instruction or often for confirming of an

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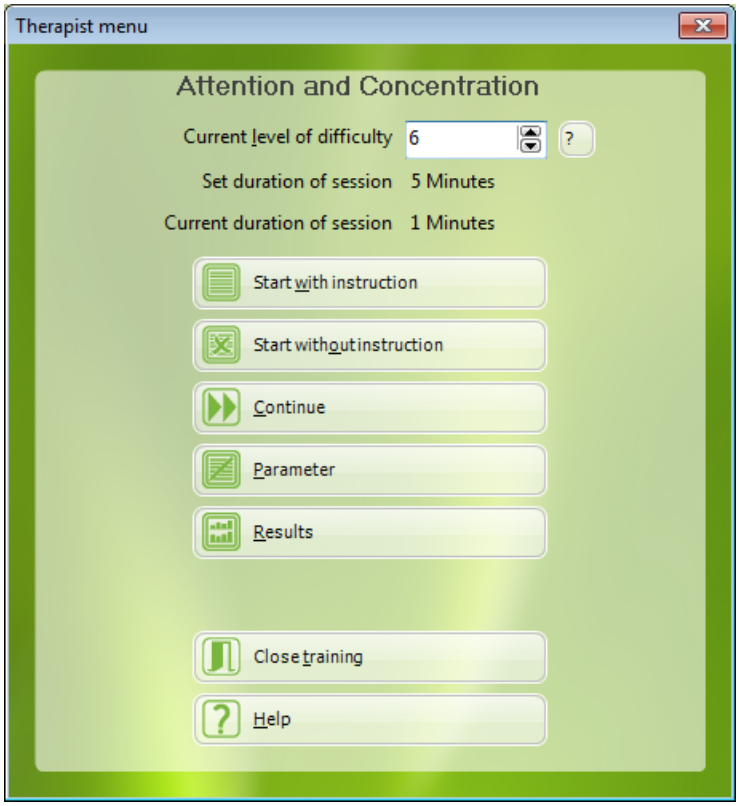
input

- yellow plus **+**-button: the last instruction is repeated orally.
- cursor buttons or joystick: moving the cursor in the procedure.

In order to interrupt the session there are two possibilities:

- The client presses the red **"-"** -button on the panel. He can have a break then, continue the training or go through the instructions once more.
- The therapist interrupts the training with **Esc** on the PC keyboard. All process data of the started task are lost then. The therapist menu appears.



Therapist menu.

In the upper part of the therapist menu Set and Current length of session tell about the training time gone by so far. The Current level of difficulty is displayed and can be changed.

Pressing Start without instruction starts the current procedure anew. Process data acquired so far will be lost. Start with instruction includes the instruction phase as described above. By pressing Continue the session is continued with the next task.

With the button Parameter procedure specific parameters can be adjusted (see Training parameters). Aside from the system's ability to adapt to clients' performances, further adjustments can be made here. The manual of each

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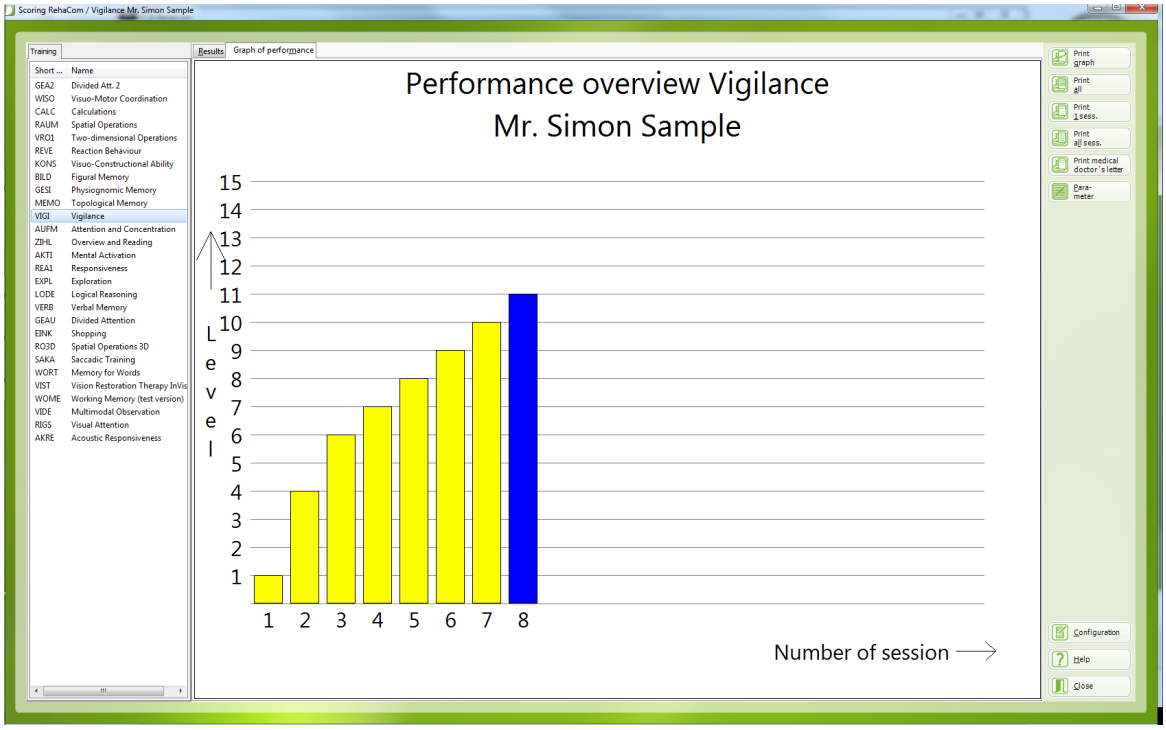
procedure provides detailed information about that.

The button Results allows an analysis of the process data acquired so far. Already during the training the therapist can recognize and influence deficits and capacities in the client's performance (see chapter Analysis of process data)

Finally the Close buttons allow to break off the training or a procedure in case a training unit (battery) consists of several procedures (only then the button Close procedure is visible)

If the set time is over, the training is finished. If at mainwindow the checkbox Non-Stop is not marked, a graph of performance appears documenting the progress from session to session with simple lines. The higher the line reaches, the higher is the performance achieved. On this basis the therapist leads the final talk with the client about the session in which he comments on the current performance and further strategies are discussed together. More detailed information for the therapist can be found in the file Results allowing exact deficit analysis (see Analysis of process data).



Window Graph of Performance for the client.

Then the training is finished.

Crash course RehaCom only provides a short overview about how to use the

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system. More specific information can be found in the following chapters.

1.4 Main window

Starting RehaCom, the ***main window*** appears.

Main window RehaCom.

This is the centre from which RehaCom is operated. There are different possibilities to use it.

One way using the big buttons is described in the Crash Course RehaCom. With the big buttons

- a client is entered in the data base or picked out for a session,
- a procedure or a training unit is defined or chosen for a client,
- training parameters are checked or changed before the start,
- the training is started, and finally
- the process results can be analysed.

Furthermore the menu list at the upper edge of the window can be used, after a mouse click it opens up and shows further functions.

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Therapist	Management therapists
new	a new therapist is inserted
choose	a therapist is chosen
edit	editing therapist data
Client	Management clients
new	a client is newly entered
select	select a client for training
edit	edit client data
Procedure	Management procedures and training units
new	define a new training unit
select	select a procedure/ training unit
edit	edit a training unit
Parameter	change training parameters for the current procedure
Start	Start training
Results	see the training results
System	check the system functions
Network/Directory	lay down rules for the network
User mode	which kind is the RehaCom user
Licensing mode	how the procedures are licensed
Pult/Dongle	Check the RehaCom-panel or dongle
License	License administration
Backup/Restore	Make a safety copy of the data
Start Service	error analysis for the RehaCom-Service
Client font	adjusting a font for the training
Volume	Check volume RehaCom-Sound (Fehler Ver. 6)
Patients mode	the RehaCom system is switched to patients mode

Aside from operating RehaCom with the big buttons or the menu list, the main window informs about the current client and the client's current procedure.

After pressing at the right edge of the field current client, however, a list of all clients entered in the data base shows up. This gives another possibility of selecting a client.

A third possibility to find a client is to insert the first letter of the patient's surname with the PC keyboard, and the list will "jump" to the first client whose name starts with that letter.

In the same way the current procedure can be adapted.

from version 5.00:

In the middle of the main-window (current procedure) are all usable training procedures listed.

Procedures are sorted by disturbances. After double-click on name of disturbance all procedures are listed in a tree-structure, which can be used to treat a special damage.

The first entry procedures of client lists all procedures, which are used by the

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client so far.
The last entry modified procedures/batteries lists all procedures, which are created by the therapist.
At the list of procedures are several text-colors are used. If you see a procedure name at lightgray font, is this training procedure not installed. If you see a procedure name at darkgray font, is this training procedure not licensed (see demo-version and window licenses). Installed and licensed procedures are listed in black font color.
If you don't want to show all procedures to the client, you can change the look at the window network/directory.

In the selection window for the current procedure you find the icon behind different procedure names. This icon indicates that a translation into the national language of the patient is present for the procedure.

At the bottom right three more buttons are situated: Close (finish RehaCom), Help (provides help information about this window) and System. With the button System

- system adjustments are carried out to your specific requirements
- license codes are inserted
- the functions of the RehaCom panel are checked
- routines for saving data are carried out etc.

1.5 Demo version

RehaCom-modules with no license are available as demo versions only. The highest and the lowest level of difficulty only can be experienced. The therapist will be able to realize the module's potentials and possibilities.

In order to make your demo version a full working procedure, you need a so-called license code. License codes are a combination of letters and numbers which have to be inserted in the PC with the keyboard. License codes are available from your RehaCom sales partner. Making a late order is possible any time.

from version 5.00:
If you own a panel or dongle, but you want to try out same procedures at demo-version, you can change between demo-version and full version every time you want. In this case you have to use the menu System->License-mode.
Users, that have tested RehaCom at demo-version, bought a panel or dongle and want to switch to licensed mode, have to use this menu too to switch to "panel/ dongle" or "Internet" one-time.

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2 Theoretical basis

2.1 Computer assisted rehabilitation

RehaCom is a system by the therapist for the therapist.

With the training procedures of the system RehaCom an improvement of psychological capacities in people with impaired cognitive performances is achieved. These impairments might be caused by different athiopathogenesis.

RehaCom is not only a product but an overall concept based on 5 principles:

- modular structure of the modules from training basic functions up to complex demands,
- optimal interaction therapist- client- computer as fundamental element.
- adaptation of training difficulty to the performance capacities of the client,
- effective feedback for best possible motivation of the client and
- effective process data measuring for finding deficits and performance reserves.

2.2 Modular structure

RehaCom has a modular structure. At the moment procedures are available to train the following cognitive skills:

- ***Attention, concentration and vigilance***
- ***Memory and learning ability***
- ***Visuo- motor co-ordination***
- ***Reaction time and precision***
- ***Visuo- construktive ability***
- ***Solving problems and developing strategies***

Furthermore there are modules for ***Sakkade and visual field training*** for clients e.g. with hemianopsie and neglect. Additionally there are training units serving the compensations of deficits and the ***imparting of abilities and skills*** even more complex. An important meta- aim is the integration of processing information of different sensoric modalities via stimulating several channels.

RehaCom is in a process of constant development in which established procedures are mirrored in the experiences of the clinical routine, and new procedures are created. Basically an optimal individualisation of the computer-assisted training is wanted. Highly realistic procedures are of growing importance. Of particular significance is the proportion between procedures training basic functions and training units with higher demands.

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2.3 Interaction therapist-client-computer

The relationship "therapist- client-computer" must be set up in a way that therapist (psychologist/ doctor)- client remain the basic element. The therapist should be released from routine work. The client must experience the computer as part of a therapeutical overall concept and feel that he is given attention. The procedures are structured in a way allowing the client to train on his own in general for a longer time, instructed and motivated by the computer. ***The computer, however, can, should and must never substitute the therapist!***

Especially at the beginning of each session the co- work of therapist and client is desirable, in order to arrange today's training aim, estimate the current emotional and motivational state of the client and his performance capacities. The same applies for the end of each session- both should evaluate together and talk about difficulties and problems that occurred.

The patient panel as central element of the RehaCom system is reduced to the minimum necessary:

- 5 extensive buttons,
- 2 special buttons,
- a joystick and
- number buttons in older panels.

The rugged, extensive reaction button enable also motor impaired clients to move securely. If desired, the feet can be used.

Some buttons of the patient panel are used similarly in all RehaCom modules. First of all there is the big central OK- button, generally used for confirmation or for going on to the next instruction. The other 4 big buttons are mainly used as cursor buttons e.g. in order to move an element over the screen. With the Minus- button the client can interrupt the training anytime.

2.4 Adaptation to difficulty

RehaCom works adaptively and adjusts to the client's capabilities optimally. Over- or undertaxation is avoided. Ideal preconditions for a maximum motivation for working with the system are created.

With the parameter menu further adjustments to a client are possible. Also, with the so-called Editors client-specific elements can be integrated (e.g. pictures of relatives can be used in the procedure Physiognomic memory).

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Client as well as therapist can interrupt or finish the training anytime.

2.5 Process measuring, and feedback

For measuring the processes module specific data are recorded. They are the basis for a change of the level of difficulty and for feedback. They are saved in an archive and help operating intervention processes. These data may also be used for a diagnosis accompanying the training.

When working the client receives information about his performance with simple graphic elements on the screen, or with sounds.

Furthermore the client is verbally informed when there is a change in the level of difficulty, and with which level it will go on. Mostly an error analysis of the last task is included. However, different forms of helping criticism are used, such as hints to further necessity to practise, and information is provided about which aspects of the training the client shall concentrate on.

After finishing a session, therapist and client can have a look at the graph of performance (see Analysis of process data). It is the basis for the final talk at the end of each session. Aside from that, the therapist receives further details about the performance. Training parameters and client and process data can be exported for scientific investigations into an ASCII- compatible file.

A report can be printed out as proof of treatment for the insurance company etc., containing and summing up the training.

ab Ver. 6.2:
Zur Einschätzung der kognitiven Leistungen des Trainierenden und zur Verbesserung der Kontrolle des Therapieerfolges, wurden eine Option zum Screening kognitiver Leistungen integriert.
Die in RehaCom integrierten Screening-Module finden Sie in Hauptfenster auf der Karteikarte "Screening".
Nähere Informationen erhalten Sie im Kapitel "Screening und Diagnostik".

2.6 Training strategies

The overall aim of cognitive rehabilitation is to reduce the impairment caused by the brain damage. Training aim is for the client to achieve as much independence as possible through as much of his own means as possible. The main criteria of success is the client's subjective opinion about the change of his quality of life.

When selecting a therapy method, aspects of motivation, understanding of the disease, ability to abstract and anticipate sequences of actions (or the extent of their impairment) have to be considered. Precondition for an optimal

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individualisation of the treatment are a detailed neuro-psychological diagnosis of the separate cognitive functions and a detailed planning of the overall treatment concept based on that diagnosis.
The major possibilities of ***computer- assisted neuro-psychological therapy*** are this maximum individualisation and intensivation of cognitive brain performance training.

Wilson (1989) differentiates between 3 rehabilitation theories:

- ***restitution of functions***
- ***compensation of functions and***
- ***substitution through intact functions.***

Resource orientated therapy approaches (Matthes, v. Cramon & v.Cramon, 1995) emphasize those components or remaining skills of the client which can be used in order to reduce the impairment. This aim is followed up with these treatment approaches:

- ***procedures of exercises,***
- ***imparting internal strategies,***
- ***supporting meta-cognition and***
- ***using external help.***

Basically the training should orientate to the specific disturbance. The more exactly the disturbance is described in terms of behaviour, the more individual a training plan can be set up, and the higher is the validity of the indicators of the training performance.

Computer-assisted training of functions mainly consists of repetitive exercise and needs the therapist to impart strategies linking to daily routine. Future RehaCom procedures will support the therapist in this strategy finding. Aside from activating and training existing knowledge and abilities, new skills are learned.

Through developing ecologically valid computer- aided procedures, a transfer of the acquired skills and strategies to daily routine is possible. Meta-cognition, i.e. the individual knowledge about personal cognitive processes and the strategies necessary to perform tasks, is specifically supported. This and the adaptation to spontaneous strategies of the client contribute to an individualisation of the training.

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3 Management therapists

3.1 Choose therapist

from version 5.4:
Therapist management is used to assign patients to a defined therapist. So you can determine after a training, which training is made by which therapist.

Additional a therapist management is necessary, if a therapist want to buy licenses by **Internet**.

Therapist management can only be used at user mode "as therapist". Works a therapist "without Internet-support", is the usage of therapists data optionally.

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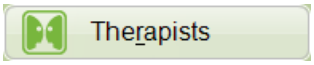
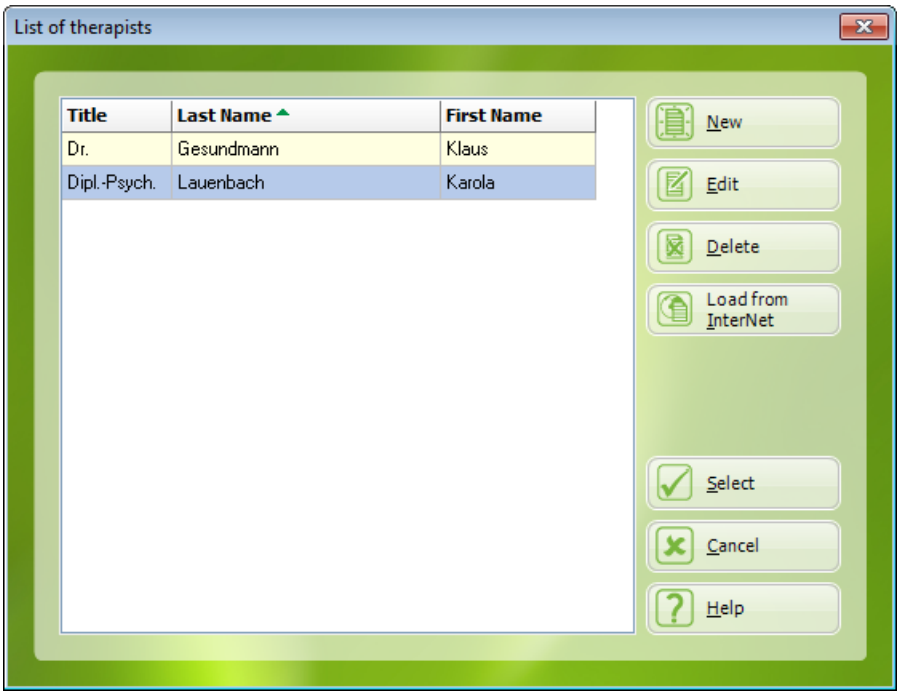
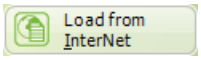
By button 

you reach the window "List of therapists".

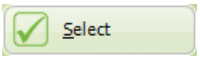


Window "List of therapists"

At this window you can input a new therapist, change therapist data (Edit) or delete a therapist.

The button 

becomes visible, if the therapist works "with internet-support" (see User-Mode) or if RehaCom-procedures licensed by Internet (see License-Mode).
This button can be used, to import a therapist to this PC, which is already registered at Internet at an other computer.
At appearing window type "Username Internet" and "Password" (see Edit therapist), at the stored therapist data will be loaded from Internet.

By the button 

the therapist chosen at list will be made to "current therapist".

The selection of "current therapist" can also be made at mainwindow. Please use combobox "Current therapist".

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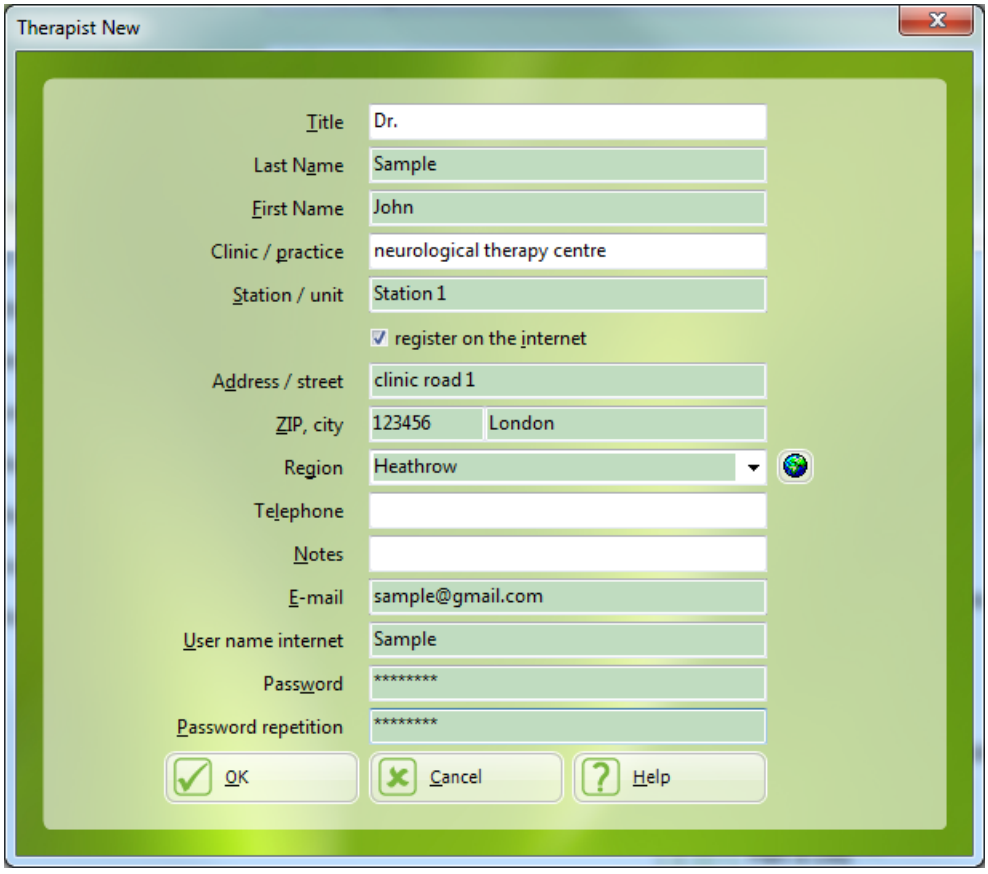
3.2 Edit therapist

from version 5.4:
This window is opened by buttons "New" or "Edit" at window List of therapists (or by menu at mainwindow).

To use therapist data only at clinic or practice, the minimal inputs are "Name", "First name" und "Station / department".
To register a therapist at Internet, additional data are necessary. All necessarily fields are marked green.



Edit therapist data (the button "globe" is used to load actual list of regions from RehaCom webserver)

If the field "register at Internet" is checked, therapist data will be stored at RehaCom web server after clicking "OK".

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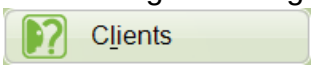
4 Management clients

4.1 Select a client

Before the first training the client's data have to be inserted in the data base once (see chapter New/ editing client). Selecting a client for training or process data analysis starting in the main window is possible in 3 ways:

- pressing the little button at the field **Current client**. A list of all client opens up. Inserting the initial letter of the patient's surname, the list "jumps" to the first client whose name starts with this letter.
- clicking at the upper menu list **Client**/ **select**.
- clicking at the big button **Clients**.



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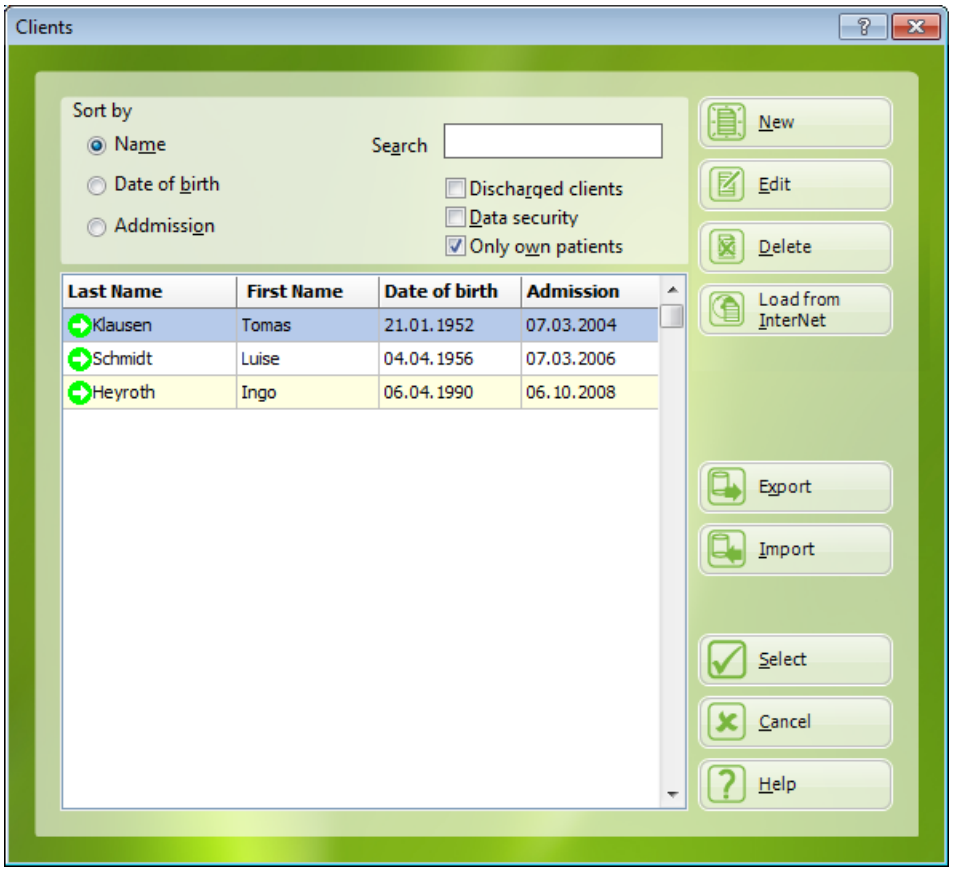
When using the upper menu or the big button **Clients**, the window **Clients** opens up.



Window Clients.

A list of all clients contained in the data base is displayed.

To select a client for the next procedure or the process data analysis, double-click at the client, or mark the name (with the mouse) and press the button **Select**.

The client list can be sorted by **Name**, **Date of birth** or date of **Admission**. A search function is implemented. Inserting a letter in the field **Search**, the list displays all clients whose surname starts with that letter.

If the option **Discharged clients** is switched off, only the currently treated clients are displayed in the list. If you switch it on, e.g. with the mouse, discharged clients will be marked ⛔ and current clients 🟢.

Is the option **Data security** switched on, the surnames of patients are only shown with two letters. A choose of patients is possible without showing all patients names. If you want to choose a patient with his full name, you must use the field

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"Search".

The option **Only own patients** is used, if the system works with some therapists. Is this option is switched on, only patients shown at list, which had performed a training under observation of the chosen therapist.

With the button **New** a new client is taken in. With the button **Edit** client data in the data base can be changed. For further information about the client data saved in the data base see chapter Client data.

The button **Delete** removes a client, including all process data, from the data base. Generally a client should not be deleted, but rather be "inactivated" and marked as discharged. For that mark the particular client and open up his Client data. Now chose the file **Payment** and insert a last day of therapy (=date of discharge). Thus the client and all his process data remain available in the data base. In the state of a **discharged client** he no longer appears in the list of the current clients. Discharged clients, however, can be reactivated if desired for further treatment.

All things described above are only true at standard: RehaCom works with a local database or with a network database.
If you want to disconnect RehaCom from "stationary" database and work with a second database "mobile", a change of client data is impossible. At this mode you can only choose an already existing client. If you want to change patient data, a connection to main database is necessary!

Prescriptions / Internet:

The button **Load from Internet** is only visible, if at License-Mode the option "Licensing by Internet" is chosen or if at User-Mode "with Internet-support" is chosen.
By this button you can load a client to local system. The client has to be stored to RehaCom webserver at an other computer. The reason can be for instance, if as client changes from clinic to ambulant rehabilitation and RehaCom data want to be transferred by Internet.

The button **Licenses** is only visible, if at Licensing-Modethe option "Licensing by Internet" is chosen and the client is registered at RehaCom webserver.
By this button you have the opportunity to order therapy licenses over Internet.

By the buttons **Export and Import** you can save all RehaCom data of one client to a file (e.g. at disk). So you have the possibility to transport client data from one PC to another PC without network.

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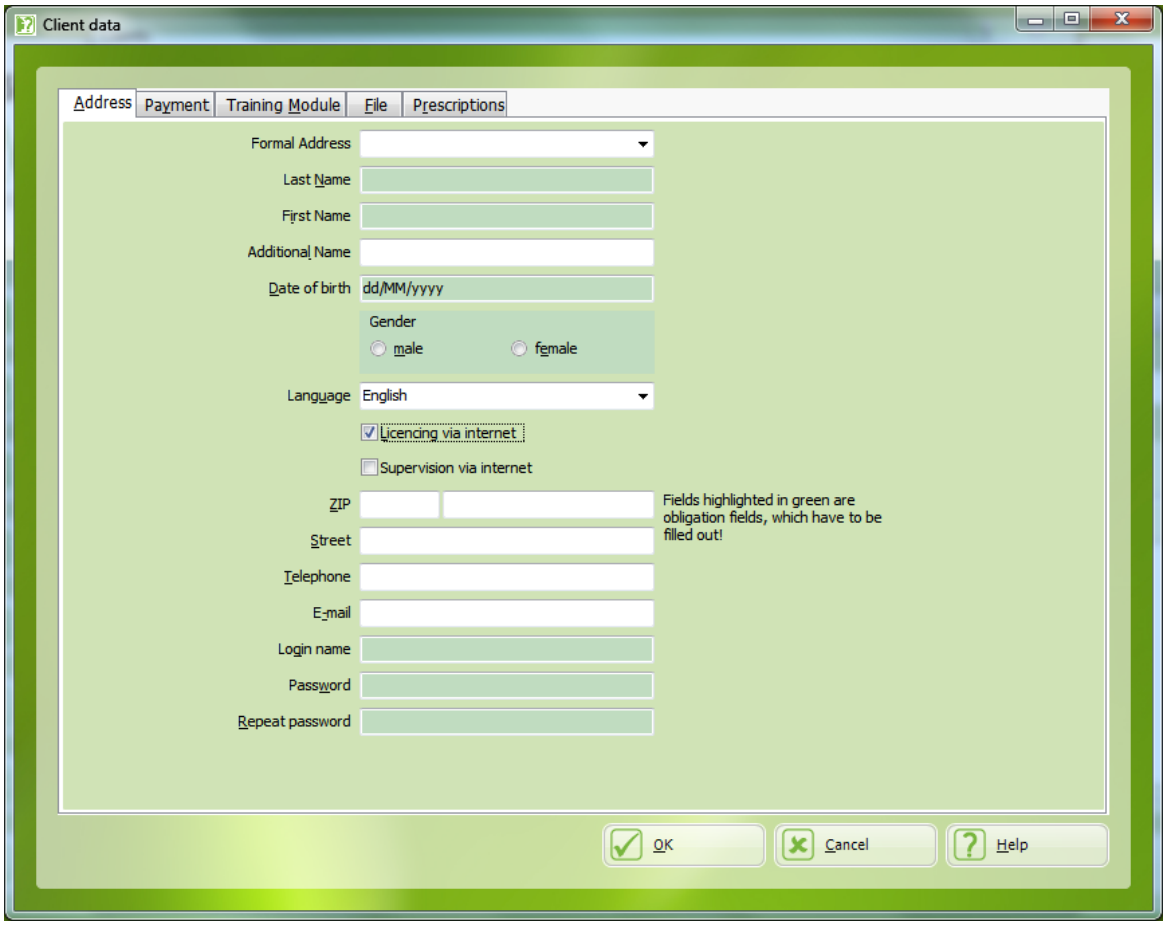
4.2 New / Edit client

Every client's details have to be inserted once before the first session, and saved in the RehaCom data base. They are entered in the window **Client data** and also operated from there. To reach the window Client data, go to

- menu list **Client**/ **New** or **Client**/ **Edit** or
- the window Clients (button **Clients** in the main window) and press **New** or **Edit**.

The window **client data** contains 3 files: (Fehler Ver. 6)

- Address
- Payment
- Procedures.



File Address.

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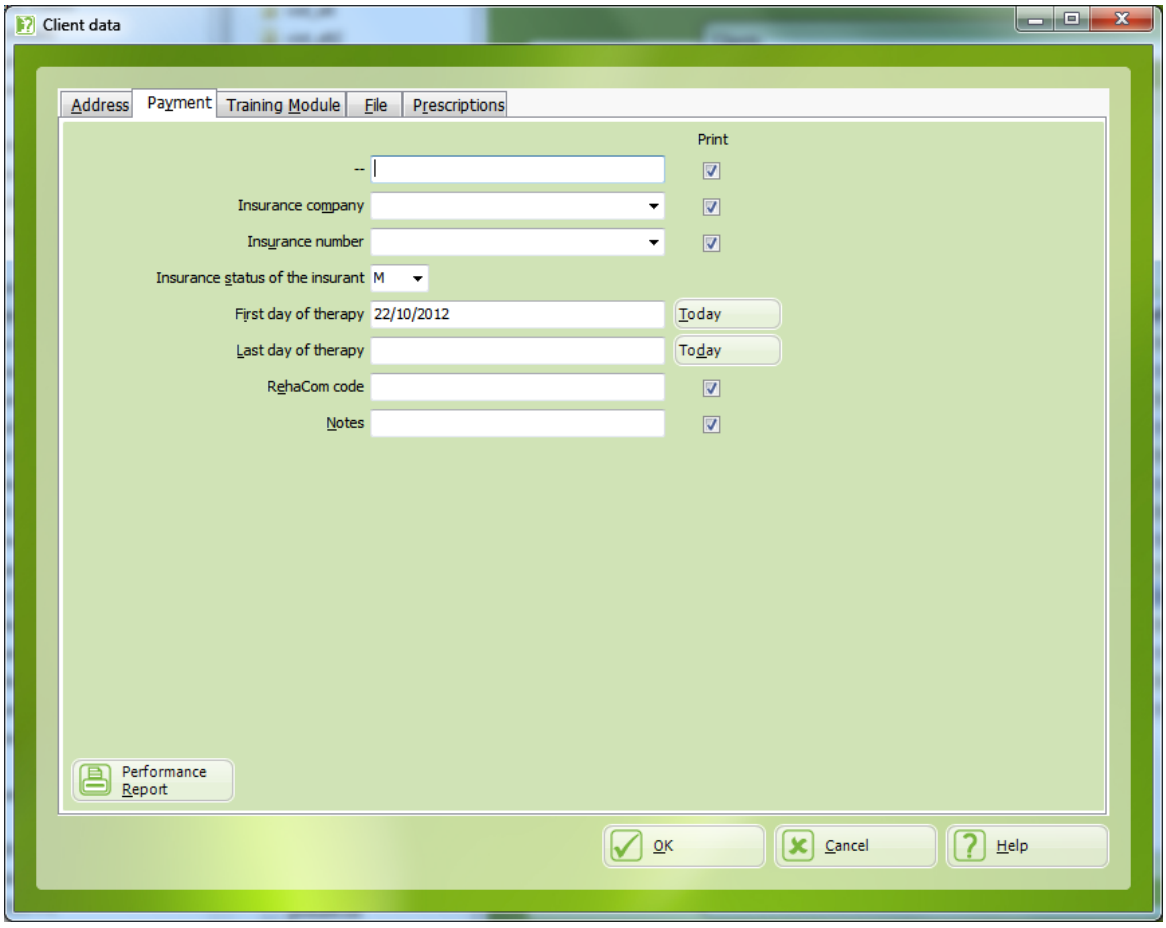
In the file **Address** the client's details are documented. **Name**, **First name**, **Date of Birth** and **Gender** ***must*** be entered obligatory. Further details are optional. The field **Language** is important for the training since the chosen language will be used to guide the client through the sessions, give instructions and feedback and make use of training material specific to a certain country.
When entering the date of birth consider the correct ***format of the date***. To avoid mistakes caused by the turn of the millennium, go to Windows Start -> Settings -> Control panel -> Regional settings -> Date. Enter a short date with the year entered as YYYY.



File Payment.

The file **Payment** can be used optionally. The details about Insurance company and Insurance number will be displayed in a Benefit Report which can serve as a proof of treatment for the Insurance company. The **First day of therapy** is set automatically as soon as the client's data are inserted. The **Last day of therapy** can be freely entered or by using the button **Today**. Once this last day of therapy has gone by, the client no longer appears in the window **Clients**, but can be reactivated in case of a renewed treatment (see chapter Select Client). This deactivating is preferable to deleting the client data. The **RehaCom code** may serve as selection criteria in scientific studies after exporting the data.

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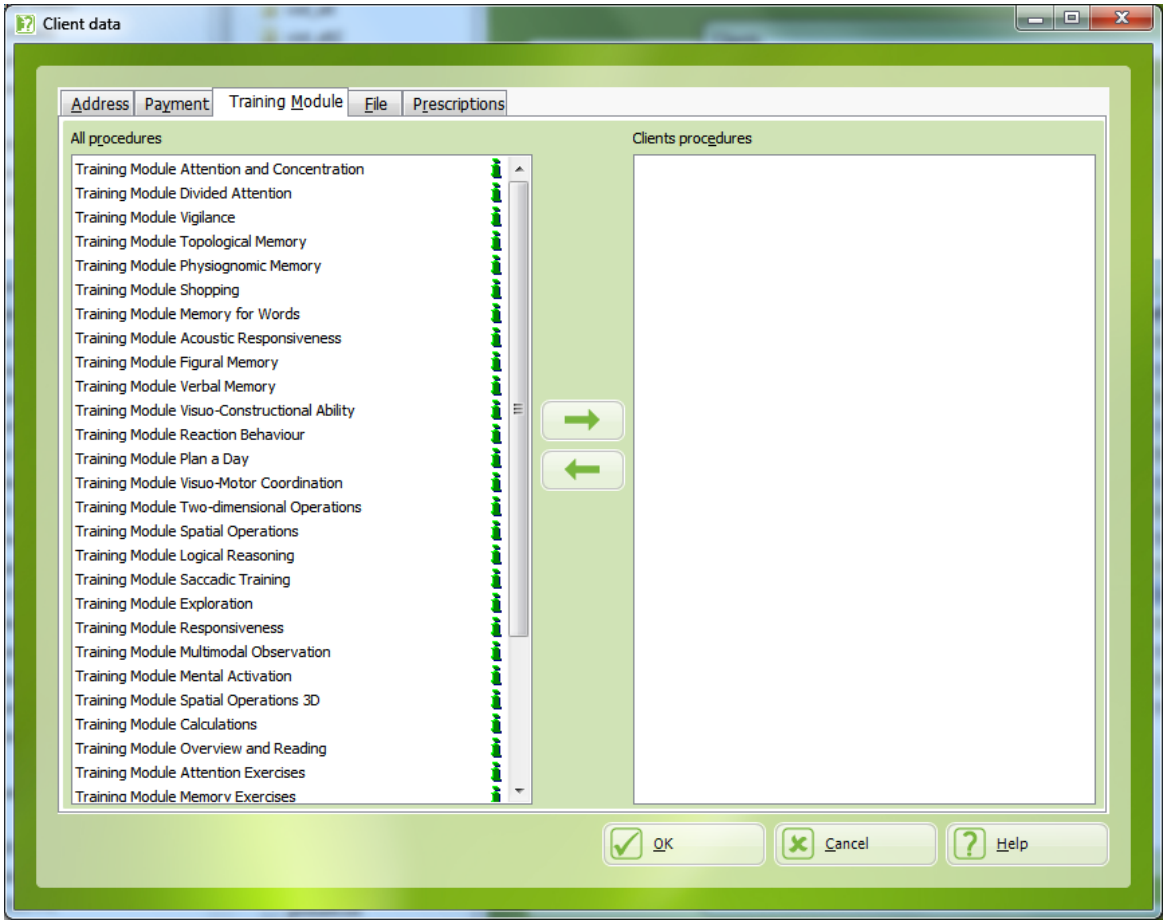
Through ticking the boxes below **Print** it can be decided which data will appear in the **Report**.



File Module

The file Module associates a client with a (or a number of) module(s) (see also chapter Enter training units). The list shows all standard modules as well as training units defined by the therapist. The right hand side list contains all modules the client is going to train with. Entering or deleting of procedures is carried out either through a mouse double-click, through marking the module (e.g. with the mouse) and pressing the small arrows in the middle or through "drag and drop".

Prescriptions / Internet:

At tabsheet **Address** are button **Read card** and **Write card** (if a **smart card** reader is connected to the computer).
If you own a compatible smart card reader/writer you can:
- by button **Read card:** read a (German only?) insurance card of client,
- by button **Write card:** write special RehaCom smart cards, in order to give the client a more easy access to patients mode.

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RehaCom smart card with reader

From version 5.3 you will find additional edit fields.
You have to input data at **Login-name** and **Password** if you want to use RehaCom at patients mode.
If you want to transfer data to RehaCom webserver, all green marked fields have to be filled in (see Prescriptions / Internet).

Additional to tabsheets **Address**, **Payment** and **Modules,** you will find a sheet **File**.
Here you can save additional information about the clients state.

The sheet **Prescriptions** is used to define **therapy prescriptions** for the client.
Detailed information on prescriptions you will find at accordingly chapter.

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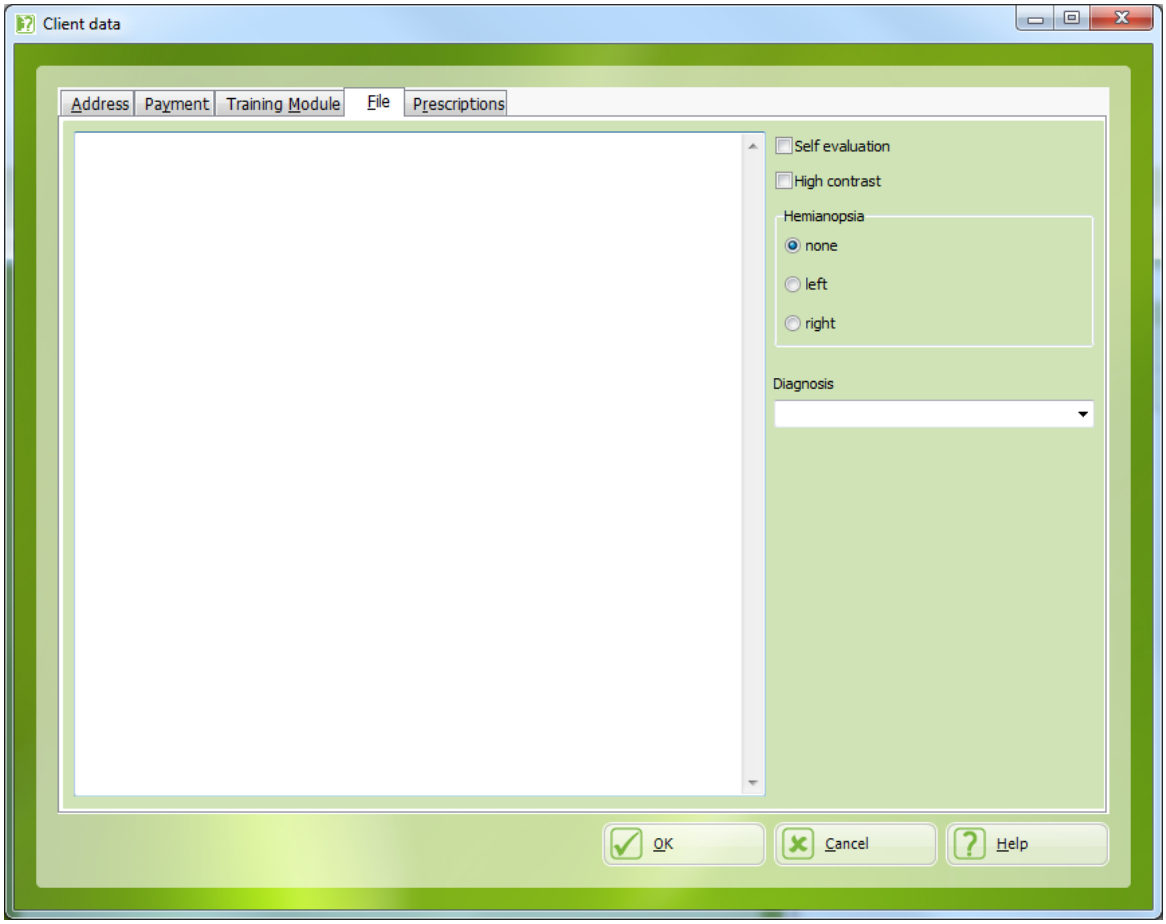

File File

Self-evaluation

By means of this option, it is possible to ask the patient before and after every training on his condition. The patient estimates his current emotional state and performance.
During evaluation can then be assessed how the subjective feeling developed. Thus, both short term and long term changes in the patient's condition are documented.

High contrast

This option is advisable for patients with visual disturbances, visual field disturbances and neglects. In many RehaCom therapy modules tasks are shown clearly visible.

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4.3 Report

The report briefly documents the client's treatment data. It can serve as a proof of treatment for the company or so taking over the treatment costs.

At the top of the report the insurance company and the client's details appear, following the checkboxes marked for printing in the window **Client data** (see chapter New/ Editing client)

Then a table follows containing the columns

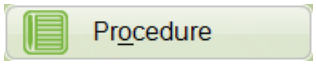
- RehaCom procedure with which the client was treated
- date of the first session
- date of the last session
- number of sessions
- Length of sessions and
- the last level of difficulty achieved in relation to the highest level possible.

5 Management procedures

5.1 Select a procedure

Once a client's data are entered, a procedure or battery for him is selected.

With the button



or the menu list **Procedures**/ **Select**, the window **Procedures** opens up.

With a double-click on a procedure in the list, or marking and pressing **Select**, a procedure for the next training is picked out.
The chosen procedure is immediately added to an internal list containing all the procedures planned for a particular client. To check or select from this internal list, go to the main window and press the small arrow at the field **Current procedure** (see chapter Crash Course RehaCom). Now you can pick out the next training unit for a client.

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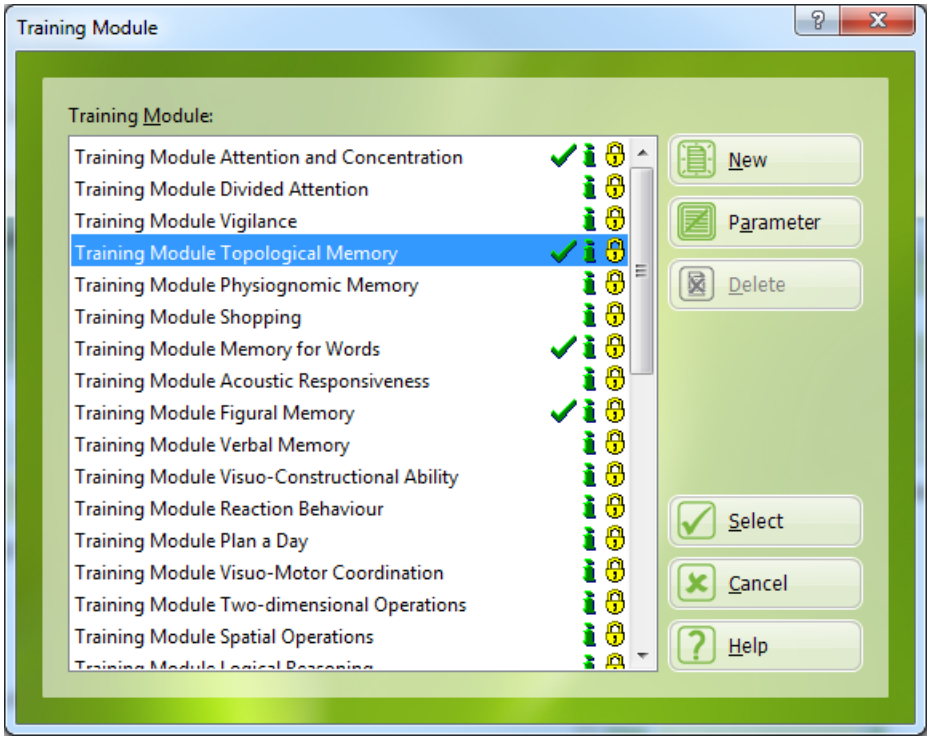

Window Procedures.

The internal list can also be checked or modified via the window **Client data** in the **file Procedures** (see chapter New/ Edit client).

With the buttons **New**, **Edit** and **Delete** you can newly define or modify a battery specifically to a client's requirements or to a disturbance (see chapter Enter training units). The button **Parameter** in the window procedures changes its name towards Edit if a new battery was defined via **New**.

In the list certain procedures are marked with 🔒. These are the RehaCom Standard procedures. They cannot be modified or deleted. Only their training parameters can be adjusted to the client with the button **Parameters** in the main window.

Additionally some procedures are marked with a ☑. This tick means that you have a license for this procedure. The procedures without a tick can only be carried out by using global licenses or in the demo version.

Prescriptions / Internet:

If you want to care at patient by **Internet** or if you want to work at **patients mode**, you can define prescriptions at window client data.
Additional information you can find at chapter Prescriptions / Internet.

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5.2 Enter training unit

After installing RehaCom your PC, all standard procedures - given you have a license for them - are available for training. The training parameters are pre-generated, so after selecting a procedure a client can instantly start practising.

Furthermore RehaCom offers the therapist to define new ***training units*** for a particular disturbance (e.g. in memory skills) or a certain group of clients. A training unit can consist of one or a range of module(s) and include special training parameters, ***created by the therapist***. Training units can be named freely. It is recommended, however, to use the term ***Procedure*** for training units consisting of ***one*** standard module only, and the term ***Battery*** for units consisting of ***more than one*** standard module. Both terms should precede the unit's name. There might e.g. be a training unit called "***Procedure*** long term attention" consisting of the standard module Vigilance with the Parameters especially adapted, or a "***Battery*** Memory 1" combining three standard memory modules.

How to create a new training unit is explained now by way of an example "Battery for clients with disturbances in memory" called "Battery Memory 1". Clients of this module shall train the standard modules Memory for words, Verbal memory and Figural memory, one after the other and 15 minutes each.

First open up the window Modules - the big button **Modules** in the main window. Press **New**, and the window **training battery** appears. Alternatively **Modules**/ **New** in the menu list can be pressed.

Now enter a name in the field **Name of battery**. Only one unit may be called by that name. If you made a mistake you will be told so.

The left hand side list contains **all modules** available in RehaCom by default. By means of the arrow buttons in the middle, double-click or "drag and drop" the modules Memory for words, Verbal memory and Figural memory are moved to the right hand side list. This list **Module of training battery** now shows the modules the new training unit consists of. The order of the modules in the training unit can be changed via "drag and drop".

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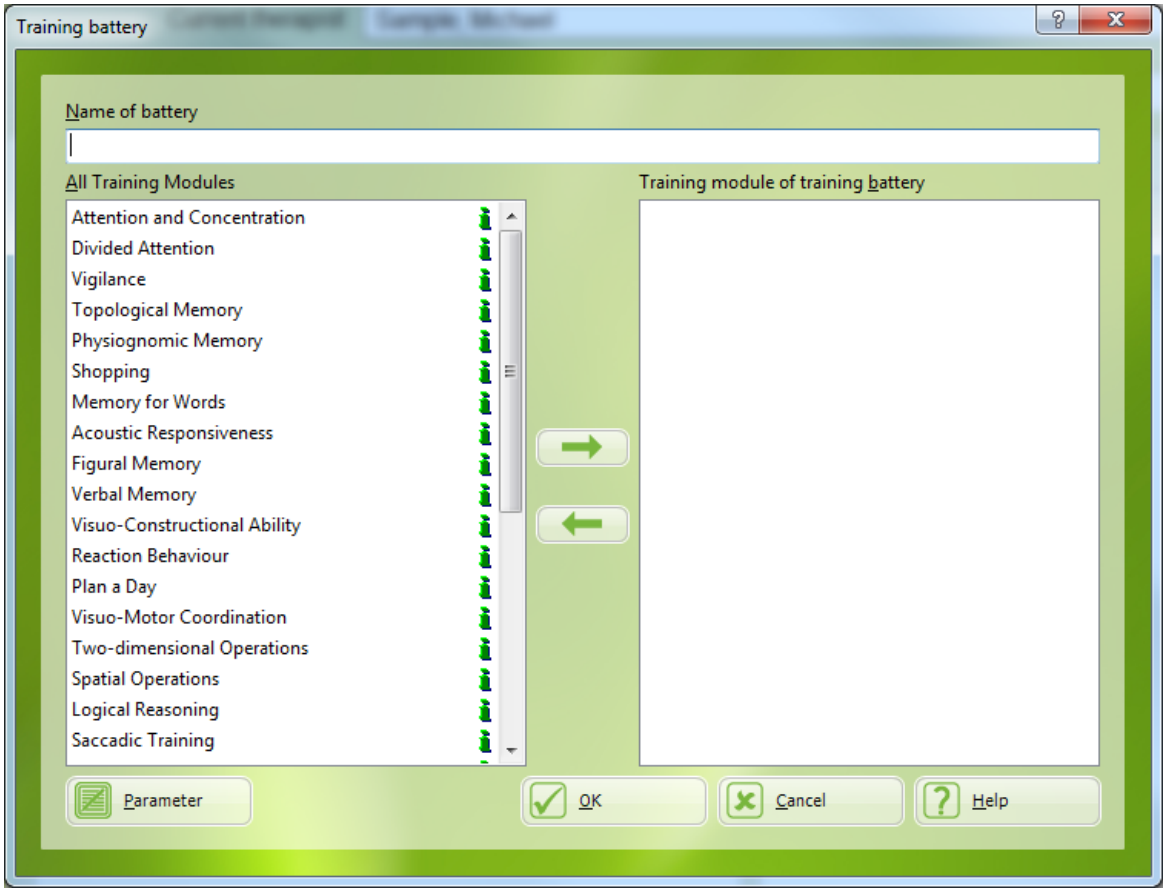
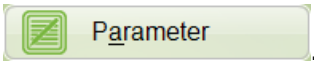


Window Training battery.

In order to adjust training parameters, press the button 

. Each module's parameter windows now opens up. The training parameters are now adapted to the special requirements of the "Battery Memory 1", e.g. the length of session is generated as 15 min for all modules.

In order to ***modify an existing battery***, go to the window Modules, mark the desired battery via mouseclick or with the cursor and push **Edit**. Go on as described above. Only newly created training units can be modified, whereas the RehaCom standard modules, marked 🔒, cannot be modified.

With the button **Delete** in the window Modules a training unit can be removed. RehaCom standard procedures cannot be removed.

6 Training parameters

6.1 Parameters

RehaCom procedures generally work adaptively, i.e. the difficulty of the training automatically adapts to the client's performance. Over- or undertaxation is avoided and the client is optimally motivated for the training with RehaCom.

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From 1990 on RehaCom has been used in rehabilitation clinics and institutes. Since, many experiences were collected and a range of studies carried out. Resulting from these investigations, parameter ***standard settings*** for each single procedure were worked out which can be used for the "general" client. Still it might be necessary to adjust RehaCom even further to a client or a group of clients.

For further adaptation the **Training parameters** windows serve. Every module has specific training parameters as described in the help files of each procedure. There you are also told about the therapy consequences of changing the parameters.

There are 3 ways to modify training parameters:

- for a training unit: window **Training unit** (see chapter Enter training unit)
- for a client: in the main window, press the big button **Parameter** ***before the training start*** and
- for a client in the therapist menu ***during the training*** (see chapter Crash Course RehaCom).

When using and adapting the training parameters, some things should be remembered.

If a client trains with a ***standard module***, marked with , or a training unit using a standard procedure, automatically the ***standard settings*** of the parameters are generated.

If the parameters of a training unit are modified, these modifications will count as ***standard*** for the training unit. If a client uses the training unit, the unit's standard will be generated, not the standard of the original module!

If a standard module or a training unit is associated with a client, the parameters can be adapted specifically to the *client* without consequences for the original module or training units. However, if a module's parameters are modified and it is ***later*** associated with a client, the training parameters of the client will stay untouched. That way the training parameters of a client are not coupled with possible basic changes.

Prescriptions / Internet:

If you want to care at patient by **Internet** or if you want to work at **patients mode**, you can define prescriptions at window client data.
Additional information you can find at chapter Prescriptions / Internet.

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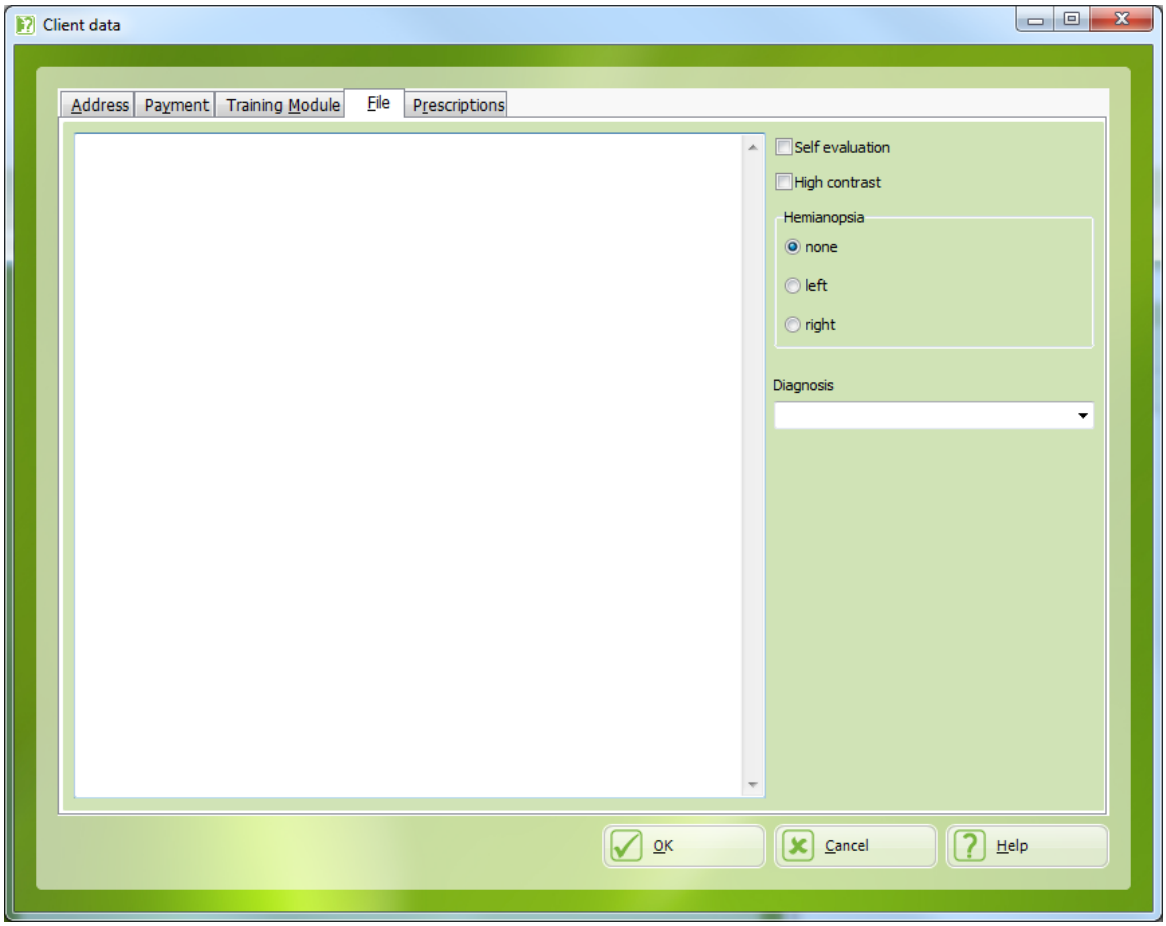
7 Training

7.1 Self-evaluation

By means of RehaCom, the patient can evaluate his own performance before and after training.

The adjustment for each patient is made in client data.



The questions themselves are in the file Global.txt under

@SelfEvaluationQuestion1, @SelfEvaluationQuestion2, @SelfEvaluationQuestionAfterTraining1 and @SelfEvaluationQuestionAfterTraining2.

Before the training starts, the following form is indicated.

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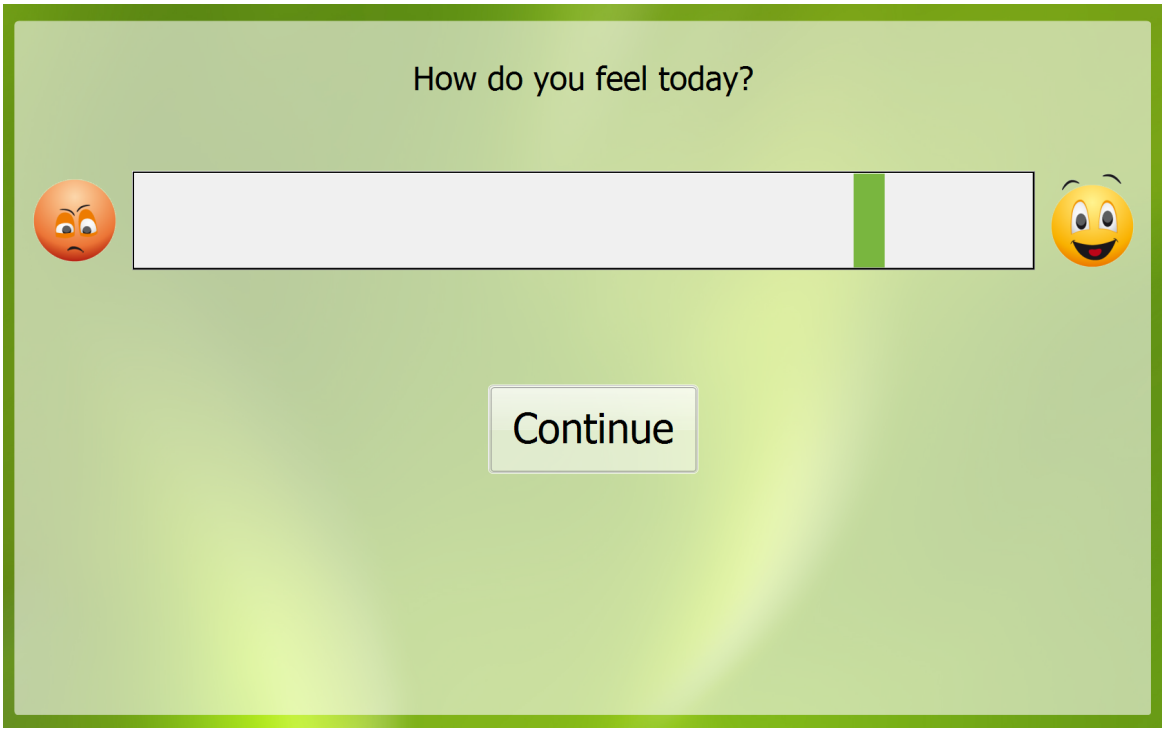

The patient clicks on a particular point on the white bar and thus evaluates himself.

The form is indicated for each of the two questions (@SelfEvaluationQuestion1, @SelfEvaluationQuestion2).

After training, the second questions (SelfEvaluationQuestionAfterTraining1, SelfEvaluationQuestionAfterTraining2) are queried.

The evaluation is made in the index card self-evaluation.

Two graphics are indicated, one for question 1 and one for question2.

The value of self-evaluation is between 1 and 10.

Values before training are shown in red, values after training are shown in blue.

7.2 Workplace RehaCom

When setting up a workplace for RehaCom remember the following points:

The RehaCom panel is positioned in front of the monitor. Monitors are recommended to be of a size of at least 17". Make sure there is enough space for putting down the arms in front of the panel. The computer panel, generally used by

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the therapist, is to be set up at the side in a way that the therapist can easily see the monitor. The distance between the client's face and the monitor should be 60-70 cm. A table 70 cm high, and an upholstered chair adjustable in height with arm and back-rest are recommended.

The workplace should be illuminated adequately. Direct blending as well as reflexions on the screen are to be avoided. Try to avoid any disturbances as much as possible. When training with procedures using speech or acoustic feedback, headphones are recommended in case there are several clients in one room in order to avoid interferences.

The graphic card's frequency of change of pictures should be at least 60 Hz (better is 70 Hz) at a resolution of 640x 480 pixels in order to prevent early fatigue in the client. How to generate this frequency in your computer is written on your graphic card.

from version 5.00:
If your operating system and graphics card supports automatic change of flickerfrequency (from Win98), the frequency automatic changed to a value near 75 Hz, to avoid flicker. Please ask your local PC-dealer or system administrator to install the correct driver for graphics card and monitor.

Prescriptions / Internet:

If you want to license RehaCom procedures by **Internet**, or if you want to setup a therapeutic **observed training** by Internet (chapter Prescriptions / Internet), your PC needs an Internet connection.
The Internet connection can be made by **modem, ISDN, DSL** or **local area network** .

The **data transfer** is optimized, so that the amount of data to transfer is low. So an observed training is possible too at low **bandwidth** (normal modem connection).
If data have to be transferred, RehaCom opens the standard Internet connection setup at Windows system. After one minute without data transfer the connection is closed by RehaCom automatically.
All data transfer is done by **HTTP**-Port, so a **firewall** should not obstruct the connection.

7.3 Modules non-stop

In the chapter Crash course RehaCom you find all steps necessary before the training and the course of a training itself.

A training is started with the big button

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in the main window. Above the big button **Start** you see the smaller one **Modules Non-Stop** with which you can modify the course of a training.

If this button is switched off ☐, the therapist menu opens up after pressing **Start**. Now the training parameters can be modified, and the training commences via **Continue** or **Start with** or **without instruction**.
When training with several procedures (a battery), after every procedure the training is interrupted and the client's graph of performance is displayed followed by the therapist menu. The next procedure is restarted by the therapist. So if the button **Modules Non-Stop** is switched off, the therapist can check and interfere constantly as it might be necessary during the first sessions.

If the button is switched on (☑), the training commences immediately. After finishing one training, the graph of performance is NOT displayed. In a training unit consisting of several modules, the training continues with the next module. The client "works through". Once all the modules of the training unit are finished, the graphs of performance are called up singly by the therapist and discussed together. This option is recommended if a client can work with RehaCom individually.

7.4 Therapist menu

In order to interrupt the training, there are 2 possibilities:

- The client presses the red **"-"- button** on the panel. He can have a break then, continue training or call up further instructions about the training task.
- The therapist presses **Esc (Escape)** on the PC keyboard. ***Doing that, all the process data of the started task are lost***. The therapist menu will open up.

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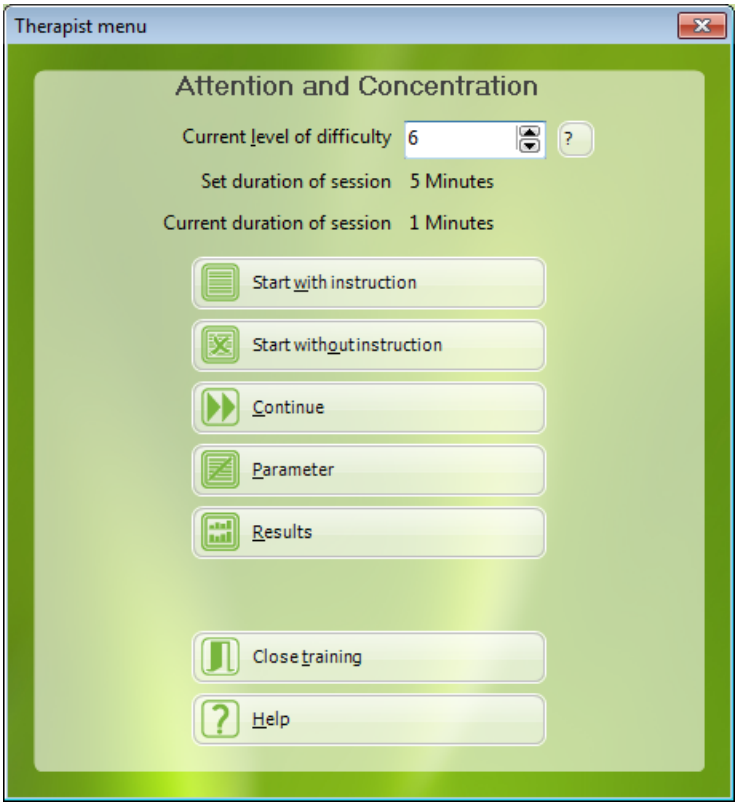

Therapist menu.

In the upper part of the therapist menu you find the **Set** and the **Current length of session**. The **Current level of difficulty** can be checked and modified.

The button **Start without instruction** starts the current module anew. Process data acquired so far will be lost. With **Start with instruction** the instruction is given once more, the process data acquired so far will be lost, too. With **Continue** the training is continued with the next task.

Pressing **Parameter**, parameters of the current module can be modified (see chapter Parameters). Thus the training can be adjusted to a client's requirements even further than the system's abilities to adapt reach. Each procedures manual will tell you more about that.

With the button **Results** the therapist can have a look at and analyse the process data. The therapist can realize and react towards the client's performance deficits and capacities during the training already (see chapter Analysis of process data).

Finally the **Close**- button breaks off the training. If you train with a training unit consisting of several modules, a single module can be broken off with the button **Close module** visible under these circumstances only.

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7.5 Modules

The following training modules are available in RehaCom:

Attention and concentration
Divided attention
Vigilance
Topological memory
Physiognomic memory
Shopping
Memory for words
Acoustic reactivity
Figural memory
Verbal memory
Reaction behaviour
Visuo- constructive abilities
Plan a day
Visuo- motor coordination
Two-dimensional operations
Spatial operations
Logical reasoning
Saccadic training
Exploration

from version 5.00:
Reactivity
Multimodal observation (only available in German language)

Prescriptions / Internet:
Mental activation (only available in German language)
Spatial operations 3D

from version 5.4:
Calculating (only available in German language)
Overview and reading (only available in German language)

from version 5.5:
Occupational training - Exercises attention (only available in German language)
Occupational training - Exercises memory (only available in German language)
Occupational training - Exercises executive functions (only available in German language)
Divided attention 2
Visual restitution training InVista

from version 6.0:
Visual attention (only available in German language)

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Working memory

from version 6.2:

Alertness
Response Control
Divided Attention
Working Memory
Visual Exploration

7.6 Prescriptions

Therapy prescriptions

RehaCom offers the possibility to adjust at **observed training** for a client. This option is important for clients which are at the end of there stay at clinic or ambulance, but need a continued cognitive training at practice or at home.

Therapy prescriptions can be setup at a single PC (without network connection, Internet connection is not necessary!).
Additionally you have the possibility to setup therapy prescriptions at RehaCom workstations at **local area network** or with **Internet** connection.

The caring for therapist defined when, how long, which therapy module, with which parameters is to be accomplished.

The client works at patients mode at PC, has no access to the RehaCom system. He can only run this therapy procedures, which are defined by the therapist.

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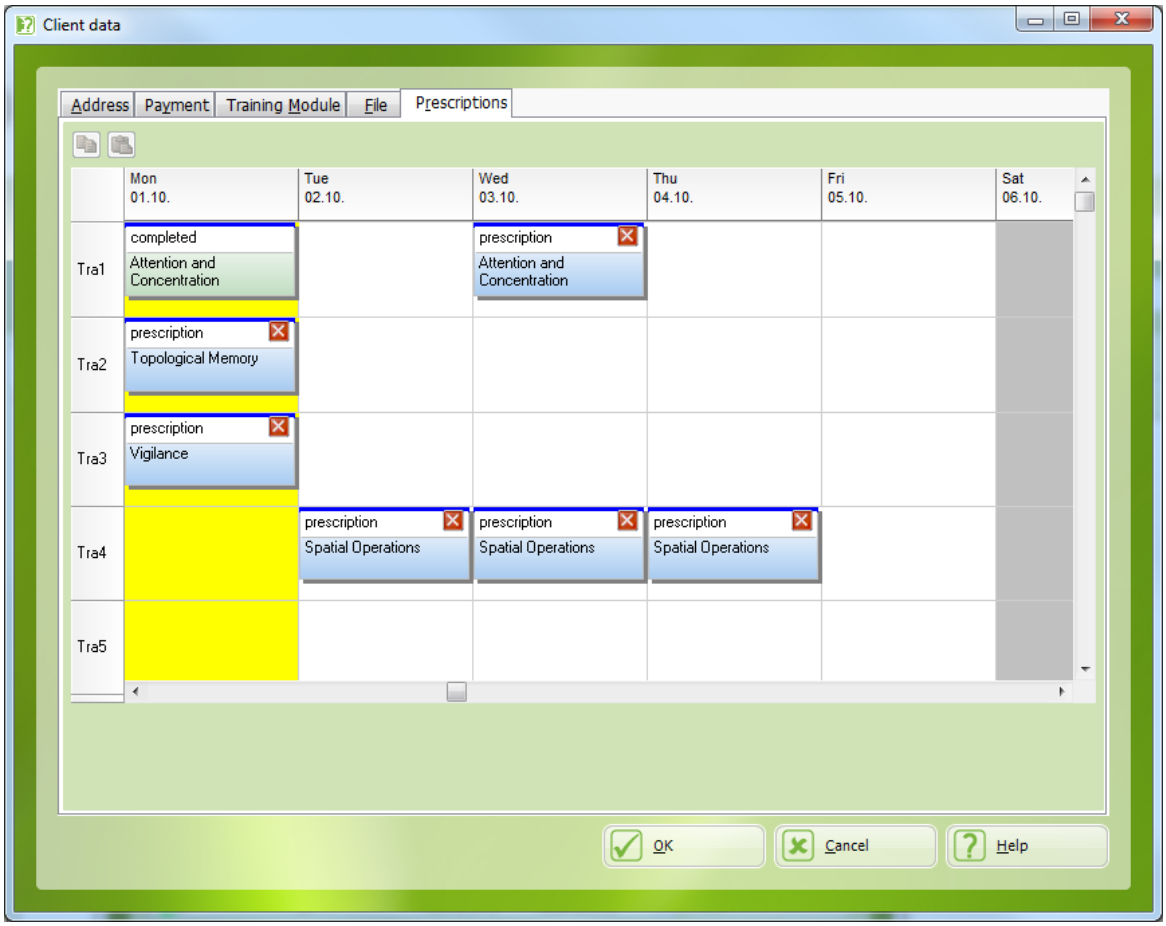
Defining therapy prescriptions

Therapy prescriptions are defined at window Client data, at tabsheet **Prescriptions**.



Window "Client data", tabsheet "Prescriptions"

The area shows a **timetable**. For every day can be defined, which therapy procedure the client should do.
The actual date is marked yellow.

At the shown example are 3 prescriptions defined for monday. Two prescriptions are completed, the 3. prescription has not been done.(Error Ver. 6)
If a completed prescription is chosen (double-click), the therapist can see the results.
After the end of the training the patient can leave a message for the therapist (see patients mode). These messages are shown at the bottom left field.

Create and edit prescriptions

If you click on an empty range of **timetable** a new prescription is created. The

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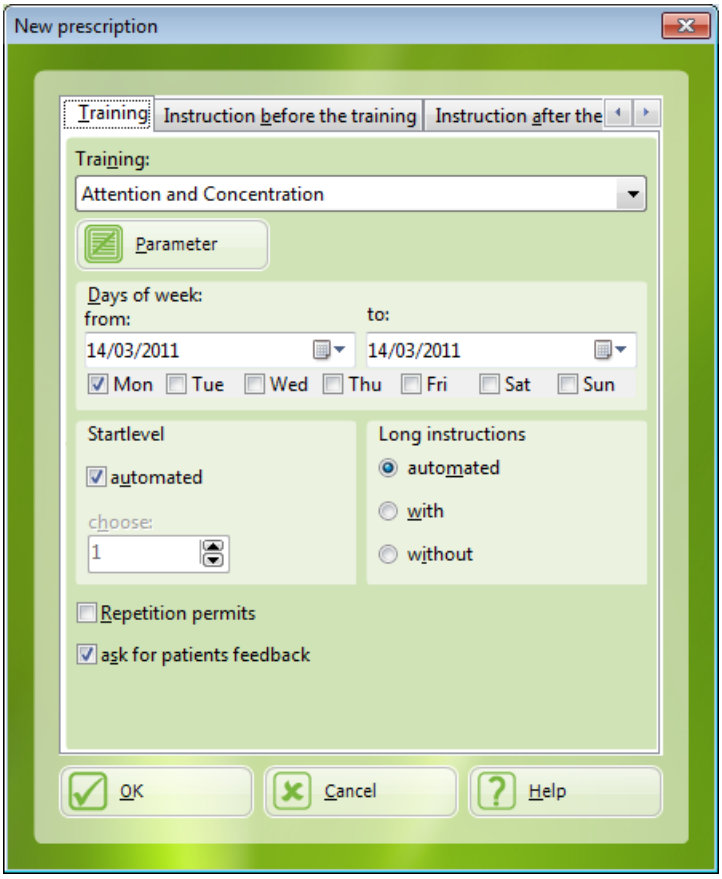
window "new prescription" appears.
If you click on an existing prescription, the edit window appears.



Window "edit prescriptions"

At this window prescriptions are adjusted.

Training

Which training should be done.

Parameter

Adjusting therapy procedure in detail (see training parameters).
If you don't use the button, the patient keeps last adjustments.

Days of week

You can define the same prescription for a time range.

Startlevel

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automated: This value supports adaptive Training. The client starts training at the same level where he stops last time.
choose: The therapist defines, at which level of difficulty the training starts.

Long instructions

The long instruction is shown before the training in order to instruct the patient what to do. You can switch it on or off.
Automated means: at first 2 sessions the patient will get instruction, from 3. session no instruction is show. From now on the patient can get instructions by the red minus button if needed.

Repetitions permits

If this checkbox is marked, the patient can perfom training as often as he wants. If this option is switched off, the training can be done only one times.

Ask for patients feedback

After patients training is done, the patient is asked for a message for the therapist in default.
You can switch off this message input by unchecking the checkbox.
***Licensing* cost**

1. If at menu License-Mode "Licensing by Internet" is chosen,
2. if at menu User-Mode "with Internet-support" is chosen
3. if a therapist is selected,

you define, who should pay for the training.
First possibility is, the client byes licenses (button licenses at window "choose client"). The second possibility is, licenses are bought "central" by therapist or clinic (button licenses at window "therapist list").

Instruction before the training

At this tabsheet you can give special instructions. These Instructions are shown if the client starts the training.

Instruction after the training

At this tabsheet you can give special instructions. These Instructions are shown if the client ends the training.
Internet

If the patient is registered at Internet. All prescriptions are automatically transferred to the webserver if the window is closed.

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Work with prescriptions

The patient will work with prescriptions at "patients mode".

7.7 Patient mode

The "patient mode" will be switched on by use of menu "System"->"Patient-mode". If RehaCom is at patient mode, the patient has only a **limited access** to RehaCom functionality.

The patient mode is made in order to give the patient an easy way to work with **prescriptions**. He don't have to learn the complex handling of RehaCom.
In addition the patients mode serves the data security, since in this mode therapy data of other clients are not observable.

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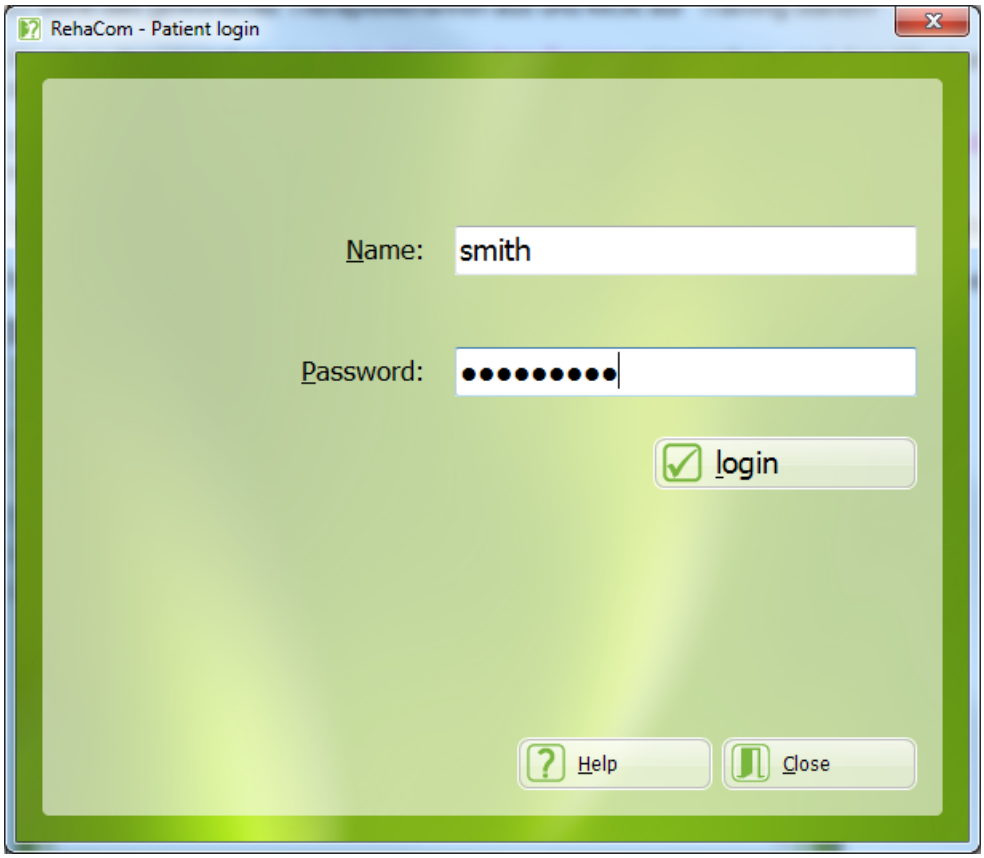
As long as RehaCom is in the patients mode, RehaCom starts with the following starting screen:



Start screen patient mode

If you want to use RehaCom as therapist, you must press the combination of keys "Ctrl-t" at start screen in order to return to the normal RehaCom mode.

Additional options for patients mode you can adjust at window "System -> Network / directory".
Like that it is possible, to block all Windows functions in the patients mode (the client is fully partitioned of the operating system) and to load RehaCom automated with the start of the Windows operating system.

Login of client

The client has two possebilities to login to the RehaCom system.

1. If a **smart card** reader is present and if the client possesses a smart card, the client inserts the smart card into the reader. After reading the card the client is logged in. (both, (German?) health insurance company smart cards and a special RehaCom smart cards can be used for the registration.)

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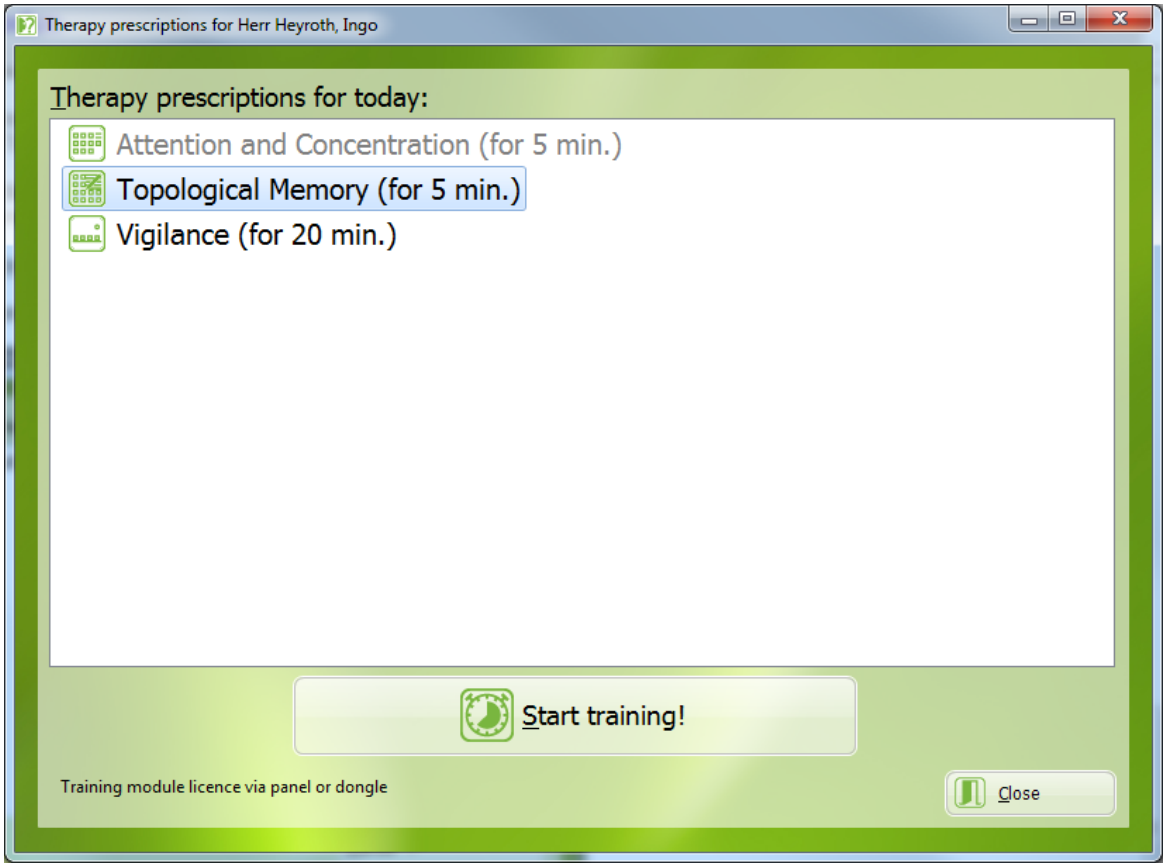
2. The client announces itself with name and password at the system. (name and password for the client are specified in the window "edit client".)

Is a supervised training configured at the system (menu "User mode"), the computer automatically loads actual prescriptions:

- if Internet data transfer is adjusted, the data are loaded from RehaCom webserver,
- if data transfer by **file export** is adjusted, the data are loaded from data drive (e.g. **USB-stick**).

After login appears the window "Therapy prescriptions". (Fehler Ver. 6)



Window "Therapy prescriptions". The client Igor Zara has finished two prescriptions (gray). One prescription (black) is still to be done.

Do the training

At window "Therapy prescriptions" is shown which procedures the patient has to do today. He can choose freely, which procedure he want to do.
After choosing a procedure he clicks "Start training!".

If **instructions** before the training are defined, these instructions are shown.

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The client works with the training. If the duration of training (adjusted at parameter menu) is over, the client gets a message and the training will be ended.

If **instructions** are defined after the training, these instructions are shown.

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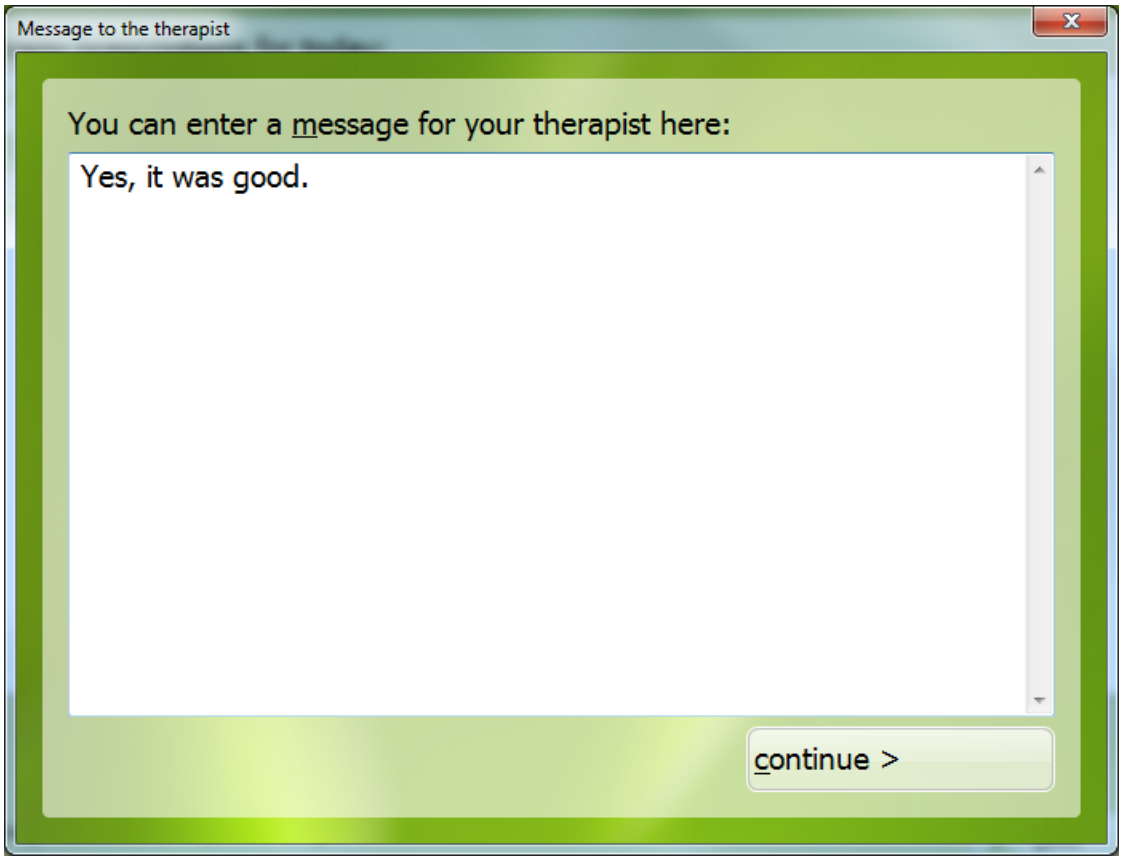
After end of the training the patient will have the possibility to send a **message** to the therapist.



Message for therapist

After that the client returns to the window "Therapy prescriptions". The done training is marked gray.
Now the client can choose the next procedure.

If all prescriptions are done, he receives an appropriate message. Now the patient can log off by use of the button "Close". The system returns to start (login) screen. Is supervision configured for the client, the stored training results and messages are exported for the therapist.

- At Internet supervision the system makes an automated upload to the RehaCom webserver,
- At supervision by **file export** all data are stored to the data drive (e.g. **USB-Stick**) automatically.

By returning to the start screen, the next client (at therapy departments in clinics and health care centres) can register for training.

from version 6:

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To return from patient mode to the RehaCom main window, the key combination Ctrl-T is used. A password can be set which additionally secures the return from patient mode. This password is set in the window System -> Network/Directories.

8 Analysis of process data

8.1 Process data

The analysis of process data is an important instrument for the therapist for finding the best possible training strategies.

There are several possibilities for a performance data analysis:

- during the training: via the therapist menu (see chapter Crash course RehaCom) after interrupting the training which should only be done in exceptional cases.
- at the end of the training when the client's graph of performance shows up automatically. The final talk of therapist and client is based on it.
- any time later: with the big button **Results** in the main window, given the client is selected (see Select a client).

If you use the big button **Results**, the window **Select training results** appears, provided that there are results of several training modules.

Window Select training results
(Fehler Ver.6)

Chose a module with a double-click, or mark it and press **Select**.

An analysis graphic opens up consisting of 2 files:

- **Graph of performance** for the client and
- **Results** for the therapist.

The file **Graph of performance** for the client in the shape of a bar chart shows the training progress over all the sessions - the higher the bar, the better the performance (see also chapter Crash course RehaCom). With the button **Print Graph**, the bar chart can be printed and handed over to the client. The motivation in the client is improved when he can show the progress of "his work" to his relatives. In children up to 14 years instead of the bars "smileys" are used - the more smileys, the better the performance.

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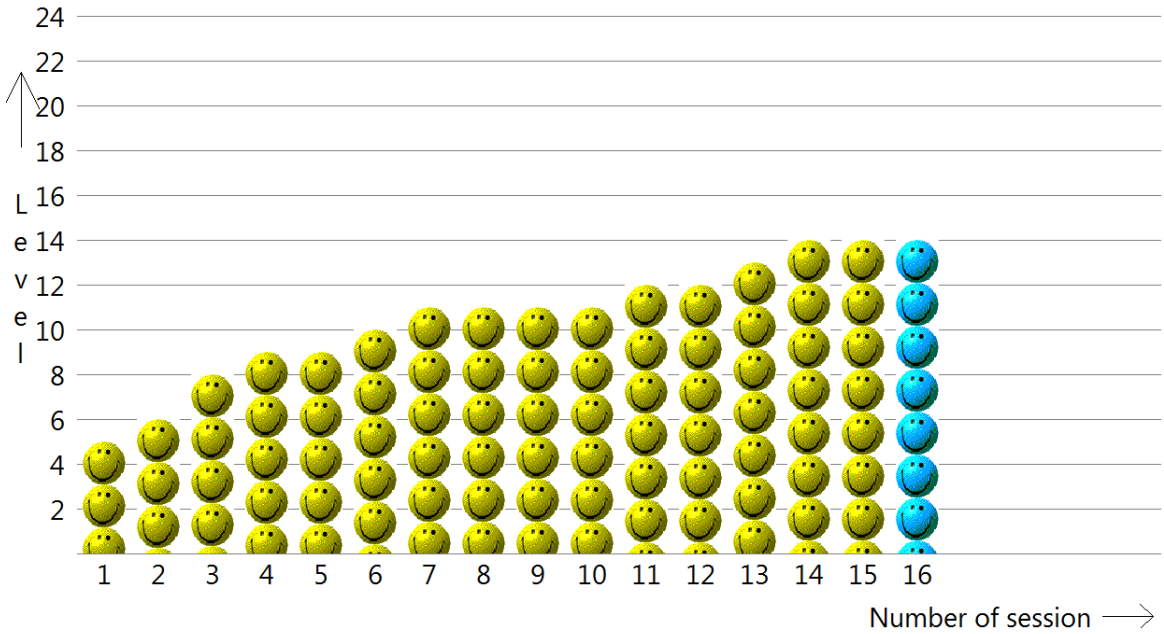

Part of the graph of performance for children.

The file **Results** provides the therapist with detailed information about the training progress, performance deficits and capacities.

File Results.

The upper graphic **Course of training** shows the level of difficulty reached at the end of each session. The table next to it provides details ***about the session***

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selected and marked with the red bar:

- Name and first name of the client,
- date and time at the start of the session,
- the length of session: the overall time between start and the appearing of the graph of performance,
- the total (effective) time is ***the time when the client actually trained*** (overall length of session minus time for instructions, breaks etc.) and
- the cumulative time is the sum of the total (effective) times of all sessions so far.

To select a session, click at the bar with the mouse.

The lower graphic **Course of session** provides details about the course of ***every single task of a session***. The table next to it gives details ***about the task selected and marked with the red bar***. A task is selected by clicking at the bar. The table tells you

- the level of difficulty of this task,
- the effective time taken to solve the task,
- the number of "breaks": interruptions by the patient through pressing the red minus-button on the RehaCom panel.

The **effective time** includes the overall length of a task (instruction+ acquisition + start+ solving the task+ feedback+ possibly loading of sounds etc.) but not the breaks set up by the patient (minus-button).

Procedure specific process data explained in the procedure's manual are displayed then.

Between the tables a small field is situated with a little arrow on the right which you know from the main window. When clicking at this arrow a list opens up containing all process data available in this training procedure. When selecting a certain feature, the graphic Course of session changes accordingly. Processes can be analysed through this visualisation, e.g. reaction in the procedure Reaction behaviour.

The buttons **Print graph**, **Print 1 session** and **Print all sessions** create lists for a performance documentation. The lists are previewed, and the printing is started with **Print**. With **Setup** the printer can be generated. The **Preview size** can be varied as you desire.

The list **Print all** is the same in all RehaCom procedures and provides details about

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- the consultation number as a serial numbering of sessions,
- date and begin of the session,
- level at the begin and the end of the session and the highest level achieved in the session,
- the length of session, the effective training time, the cumulative training time and the number of interruptions as described above.

The content of both lists **Print one session** and **Print all sessions** is procedure specific and is explained in the corresponding manuals.

The button **Parameter** informs about which parameter adjustments used in the particular task. The parameters can be looked at, but not changed (the OK-button is switched off).

ab Ver. 6.2:
Zur Einschätzung der kognitiven Leistungen des Trainierenden und zur Verbesserung der Kontrolle des Therapieerfolges, wurden eine Option zum Screening kognitiver Leistungen integriert.
Die in RehaCom integrierten Screening-Module finden Sie in Hauptfenster auf der Karteikarte "Screening".

Nähere Informationen erhalten Sie im Kapitel "Screening und Diagnostik".

8.2 Results screening

new from ver. 6.2:
The results of the screening tests can be viewed with the button "Results" -> file card "Screening"

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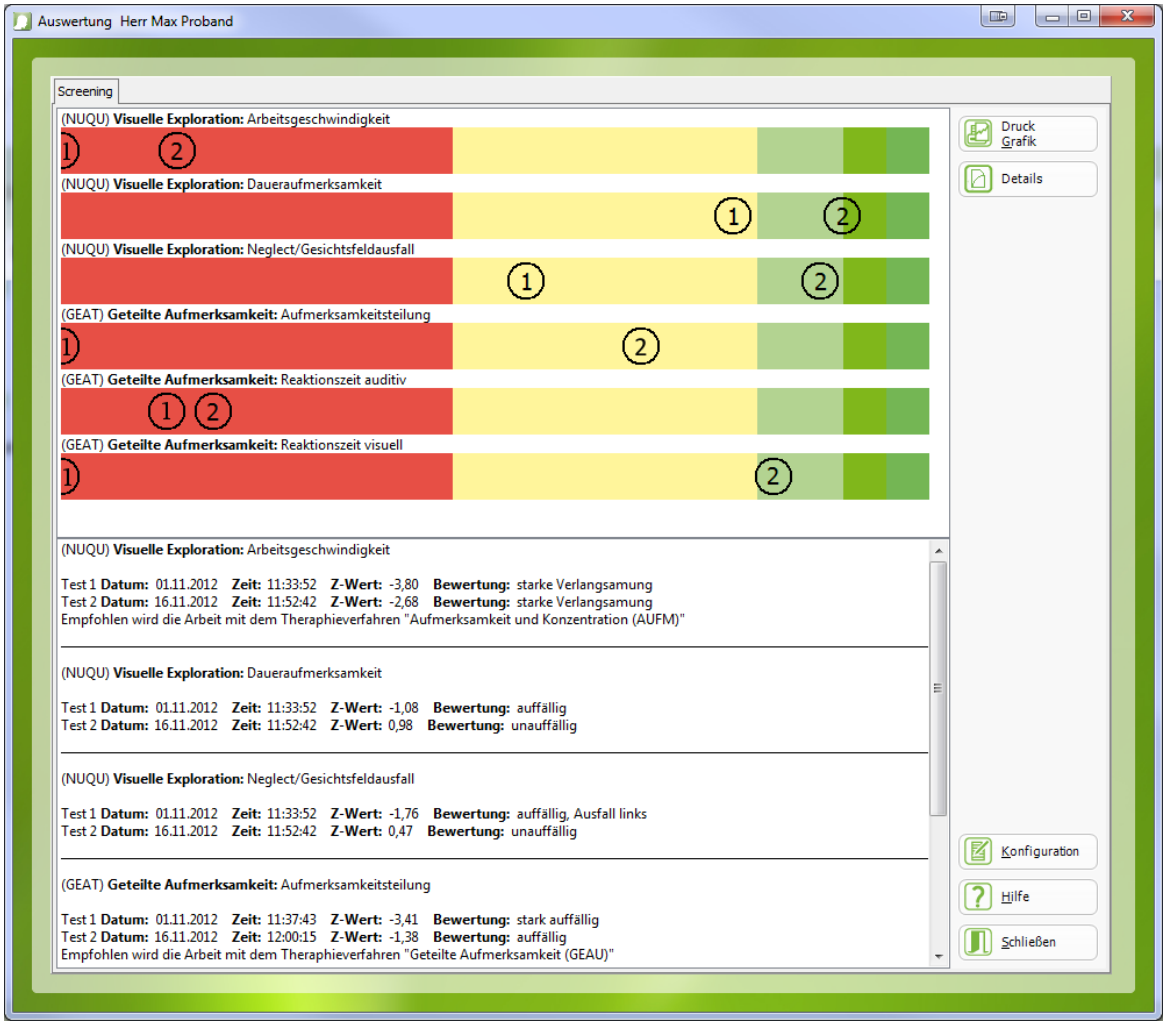

Picture: Representation of the screening results

The screen is split into two ranges.
In the upper region is a graphical representation of the screening results. In the lower section the results are evaluated verbally.

Graphical representation

Each screening test has at least one, often more results (example: test "Visual Exploration" has 3 results = 3 bars below each other).
Further information on the results of each test can be found in the respective test manuals.

Every result is evaluated separately, that is how you see a colored bar for each result.

In the bars you can see circles with digits (e.g. ①②). Each digit represents one test time, in which "1" is the first test time.

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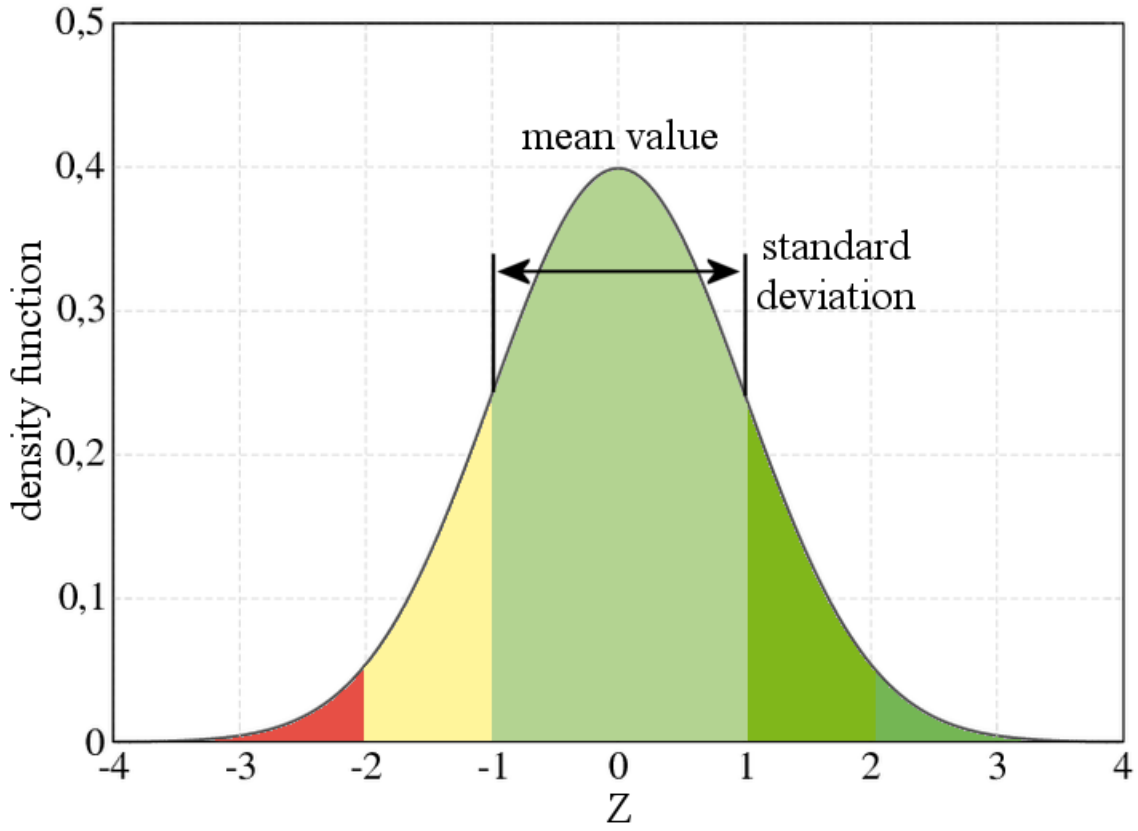
The further the digit is on the left, the worse the performance of the patient at this time.

Each color of the bar represents the amount of deviation from the average of the norm.

Very conspicuous deviation from the norm
(Distance from the average greater than 2 standard deviations)

Result is conspicuous (but not pathological)
(Distance from the average greater than 1 standard deviation)

Result in the normal range
(Distance from the average smaller than 1 standard deviation or better)



Picture: normal distribution (Gaussian curve)

All tests were standardized with (at least 200) healthy test persons of all age groups. While determining the norm range, the age and the gender of the patient are taken into account.

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Verbal assessment

Below the graphic is a verbal assessment of the screening results. Besides specifications of the test time you find the Z value (see Graphic Gaussian curve) and a verbal assessment (e.g. "conspicuous"). Is the result of the test not "inconspicuous" a recommendation will show in the last line. It is noted which RehaCom therapy module can be used for the training of the impaired function.

Details
Besides the rough assessments of the test results with the Z values, there is for almost every test a detailed analysis available.
This can be reached via "Details".
Contents of the detailed analysis are described in the manuals of each test.

9 Screening and diagnostics

new from ver. 6.2:

Screening and diagnostics

The term **diagnosis** is derived from the Greek word "diagnosis", translated as: "decisions", but it is also used in the sense of "distinction".
Both terms have a relatively wide and similar meaning. Sometimes they are used synonymous.

With diagnostics a more comprehensive process is connected, than with "screening". In Germany neuropsychological diagnostics is reserved for clinical neuropsychologists. The neuropsychological test method recommended by the guidelines of the German society of neuropsychologists is for example the "Test for Attentional Performance (TAP)" of Fimm & Zimmermann to obtain from company PSYTEST, psychological test systems, Kaiserstr. 100, D - 52134 Herzogenrath.

In the medical sense, the diagnosis is primarily used to recognize and name diseases. In addition it serves decisions for the preventive or rehabilitative action to take.

While screening the comprehensive assessment and evaluation of the person or situation (actual analysis) is more important, than the definition of the disease.

The screening is used as a rough estimate. If the results are striking, a diagnostic examination by the neuropsychologist/psychologist is absolutely necessary .

The screening is characterized by a lower depth of analysis:

- Screenings provide a rough overview

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- Screening-process/-methods are often only slightly sensitive or only in one direction

Status diagnostics and Process Control/ Screening

The main concern of the **status diagnostics** is to make statements about an actual-state.

In contrast, the **process control/screening** aims at the determining of changes. The decisions are not made on the basis of a selective diagnostic result. At various times during the course of rehabilitation, the changes can be measured and documented.

Quality criteria

In general it is possible to differentiate between main quality criteria and associated quality criteria of a test module. The main quality criteria are subdivided into the **objectivity**, the **reliability** and the **validity.**

The **objectivity** denotes the extend, in which a test result in implementation, analysis and interpretation can not be influenced by the investigator. The test result is independent from investigator and evaluator.

The **reliability** indicates the degree of reliability or the accuracy of a measurement method. A test is described as reliable , if the same results get out after a repetition of the measurement on the same conditions and the same objects.

The **validity** indicates the degree of accuracy, with which the test methods measures what is purport to measure.

Application in RehaCom

Before a patient completes its first training, you can estimate with the screening modules, which deficits the patient may has. After performing the tests the performance of the patient can be compared with the results of "normal" volunteers (button "Results" -> file card "Screening").

Is the performance below the average, the system recommends a therapy module the patient can work with.

After a certain number of therapy sessions, the screening can be repeated. In the analysis is then indicated, weather the performance of the patient has improved or not.

It is recommended to repeat the screening-modules after 10 therapy sessions earliest. At too low test intervals is no therapeutic success measurable. Besides, often testing leads to learning effects and falsifies the test results.

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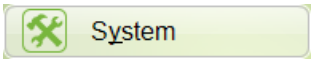
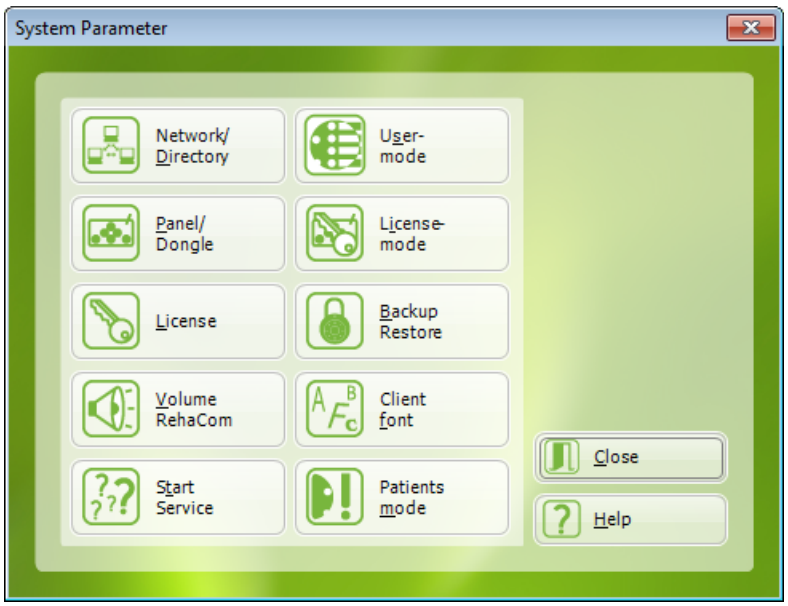
10 System adjustments

10.1 System parameter

The button



opens up a menu for adjusting RehaCom to your specific requirements. Please remember that before the first training a few but important system adjustments are necessary.



Window System parameter.

- Network/Directory: adjust RehaCom to a computer network,
- User-mode (from version 5.4): setup, if RehaCom is used by a therapist or patient
- Panel/Dongle: check and adjust the RehaCom panel or the dongle,
- Licensing-mode (from version 5.00): makes the change between demo mode and licensed operation possible
- License: enter license codes (releasing procedures),
- Backup Restore: for data security,
- Volume RehaCom: check the volume for a sound version.
- Client font: selecting a font for all client texts,
- Start Service: start a service routine in arrangement with the RehaCom service,
- Patients mode: RehaCom is switched to patients mode

All changes entered are saved.

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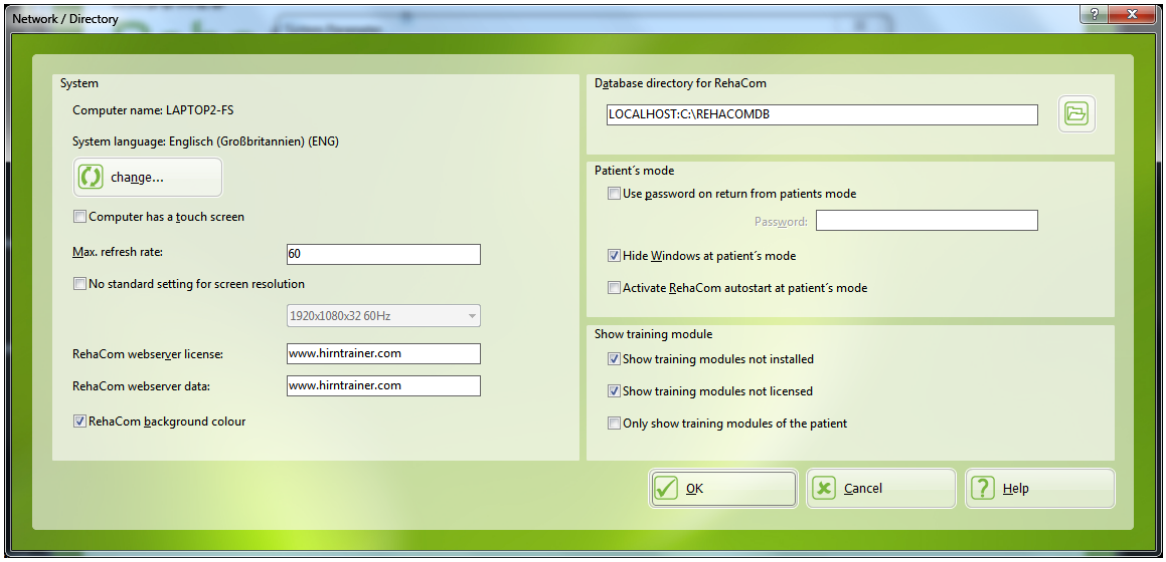
An additional system parameter should be entered via Windows - the frequency of the change of pictures which can not be configured in RehaCom. If the frequency is too low, the client will get tired soon or complain about the flickering of the screen. This effect is especially liable in extensive screens.
The frequency depends on your PC, so there is no general description of how to generate it. Please consult the manual of your graphic card, your computer partner or our technical support.
The optimal frequency is 70-80 Hz. These frequencies are to be generated for DirectDraw-modes 640x 480 pixels, 256 colours and 640x 480 pixel, High Colour (16-bit).
from version 5.00:
RehaCom tries to adjust an optimal flicker frequency around 75 Hz. This is however only possible, if graphics card and operating system support this option.

10.2 Network / Directory

Pressing **Network/Directory** in the window System parameter or with the menu list **System/Network/Directory** the window Network/Directory opens up.



Window Network/Directory.

The upper line says RehaCom's current **system language**. This is the **language** in which the system "speaks" to the therapist. It is used in all windows for entering clients, defining procedures, modifying parameters and analysing. The language for the actual training can be adjusted separately in the window client data.

In the chapter Backup/ Restore you were told that all RehaCom data are saved in a database. This database consists of ***many files saved in a directory DB.***
When carrying out the installation, this directory is set up automatically (recommended: C:\Programs\REHACOM\DB) and "filled" with an empty database. In the standard version RehaCom is ready to work immediately.

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However there are two situations when you better move the data base:

- working in a net on one server and
- working with a "client disk".

If there is ***only one work place***, the data base on the local hard disk of the RehaCom PC should be used.
All client data are operated in a database on the RehaCom PC.

If there are several workplaces and a computer network, the database should be set up on the network server (see also Network installation)- The data of all clients working at the different work places are saved in this database. As **database directory** the directory DB with the RehaCom database must be set.
For that use the explorer button .

The RehaCom windows usually have a background fading from yellow to green. In some graphic cards, though, it turns to "unsightly" patterns. In this case the **RehaCom background** colour can be switched off (grey window background).

from version 5.00:
From version 5.00 you don't have the possibility to save data on **floppy disk** anymore. There are too much data to store it on a disk.

Use the button **copy database** to import data from an older RehaCom-version or to move a local database into a network database. Please read chapter database and network installation.

The checkbox **show all procedures** is be used to configure the mainwindow.
If the box is checked, are all procedures are listed at the mainwindow, range current procedure.
If the box isn't checked, are only procedures are listed, which are used by the current client. This setup is useable, if the client works independent but a large list of procedures is confusing.

Prescriptions / Internet:

second database

This option can be used, if RehaCom is used at a **clinic network**, but one RehaCom **workstation** is disconnected from network from time to time.
While disconnection from main database you can only choose patients at client administration.
More info you will get at chapter "network installation".

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Computer has touchscreen

The options makes the adjustment of standard parameters more easy.
If the computer is equipped with touchscreen and the therapy procedure permits an operation over Touchscreen, this option is used as standard parameter.

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hide Windows at patients mode

In patients mode, the client is to train independently at the computer. Usually he should not to have the possibility of using any other function of the computer.
In order to prevent, that the client uses other Windows functions (Windows Hotkeys, starting menu, installed programs) one can fade out the Windows system. However, this option is no hacker protection! Experienced users have always the possibility to use the Windows system.

activate RehaCom autostart at patient mode

In patient mode, the client has to train independently at the computer. Untrained clients are not often not able to start a program under Windows. For this reason, you can use this option here, which starts RehaCom immediately after the start of Windows operations system.
With this option, the client has the possibility of working with RehaCom after switching on of the computer, even if he does not have any **Windows** experience.

RehaCom Web server

If you work with internet support, RehaCom data from clients and therapists are stored at a **web server**.
Here you can edit the web servers name.
The standard is "**www.hirntrainer.com**" and should only be altered after instruction of RehaCom-Support.
Additional information you will find at chapter "network installation".

Dongle at network

For licensing RehaCom modules a dongle (similar to an USB-Stick) can be used (see chapter Licenses).
The Dongle can be connected to the workstation of the user, as well as to a server at network.

Before a dongle at a server can be used, a "driver" (Sentinel Protection Server) has to be installed at the server.
Please use the program "Sentinel Protection Installer 7.4.0.exe" from directory "Sentinel" at RehaCom install CD.

After that you can connect the dongle to the server and configure the usage of the dongle at workstations:

use Dongle-server

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Is the box checked, a dongle at network will be used for licensing. A valid server name has to be entered.

Dongle-server name

Name of Dongle-server. By clicking the network will be searched of a Dongle-server. If one is found, the valid server name will be inserted.

from version 6:

In recent years, the number of RehaCom training modules has considerably increased. At the same time, opportunities in licensing have enlarged.
Therefore, you have the possibility to improve the clearness of your RehaCom system by hiding ***non installed modules*** and ***non licensed modules*** (remove benchmark in the corresponding checkbox).

During training according to therapy prescriptions, the patient mode is used. What is new is that the return from patient mode (key combination Ctrl-T) can now be protected by a password.
Thus can be prevented that patients have access to data of other patients during unsupervised training (data protection).
For this purpose, click on the field "***Use ... password***" and enter the desired ***password***.
Before returning from patient mode, the set password must be entered in the window "Register patient", field "Password" before pressing Ctrl-T.

10.2.1 Network installation

The chapter Network/Directory tells about using RehaCom in a network. The network installation of RehaCom should be carried out by a competent skilled worker.

from version 5.00:
Up to version 4.xx of RehaCom you had the possibility to copy database-files to a network drive. This procedure was usual for **Paradox**-databases.
The from version 5.00 used Firebird-database **don't supports this procedure anymore**.
Firebird is a client-server-database which needs a database-server program. This server-program has to be installed at the computer, where the RehaCom data should be stored.

You have to install the server-program from RehaCom-CD at the central computer. Start the program **RSetup.exe** from CD (only needed if you have deactivated autostart), than use the button **Database**.
RehaCom **don't** have to be installed at the central database-server! (But if you

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want, if the computer has a good performance, you can use one PC as RehaCom-workstation and central database-server.)

All other users at network have to be connected to the server by **TCP/IP** network protocol. If you have installed a **firewall**, you have to open **port 3050** to enable firebird-database to communicate.

At the window network/directory on all clients you have to setup the name and directory of database-server. Please use the format:

Servername:directory

Servername and directory are divided by "colon".
Servername is the name of the database-server as UNC-name or as IP-address. If you work with a local database you can leave out servername (and colon).
Directory is the name of **local** directory at the server (directoryname from the point of view of the server), where the database files are stored. This directory don't have to be visible or be released for the user (clients).

To test, if the Firebird-server is running or if you've given the correct directory you can check by the button (database check) at window network/directory.

Prescriptions / Internet:

second database

At window "network / directory" a **second database** can by adjusted.
This option can be used, if RehaCom is used at a **clinic network**, but one RehaCom **workstation** is disconnected from network from time to time.
In most time the RehaCom work station is connected with the hospital network.
The RehaCom database lies central on a server of the hospital.

Example **database directory** (first database):

ClinicServer:C:\RehaComDB

Sometimes it is necessary to separate the RehaCom workstation from the net.
This is e.g. necessary, if a mobile workstation is to be transported directly to the bed of the patient and at this place no network entrance is present.

In this case it is meaningful to put on a second database.
To do this, activate the option "**second database**" and edit the directory name of second database.
The **second database** has to be located at a local data drive at the computer.

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Example **database directory** (second database):

C:\RehaComDB

On end of RehaCom now the **second database** is synchronized to the data of first database automatically.
At start RehaCom searches for first database. If first database is found, RehaCom uses this (network) database.
If **network database** is not accessible, the second (local) database is used.

If, after work with second database, first database is found again, all new local data updated to network.

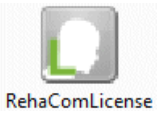
Note: The work with two databases takes some time in particular when starting up and when terminating RehaCom. The client administration is limited to the selection of the clients during the separation from the main database.
They should select this option only if the workstation is really separated from the network.

RehaCom webserver

Using the option "**Internet** licensing" and "**Internet** support", data will be transferred from/to RehaCom webserver.
Transportations is scrambled and uses a secure connection (HTTPS).
If a **firewall** is installed in the network, all HTTP packets have to be passed.

from version 6.0:

RehaCom can be licensed by an in-house server.
For this purpose, a service must be installed on the server. The setup file to be used is located on the RehaCom-CD in the directory "LicenseServer".
After the installation, you will find the service "RehaComLicensingService6" in your service directory.
The service is managed via system control, module "RehaComLicense".



When starting this module, the following window appears:

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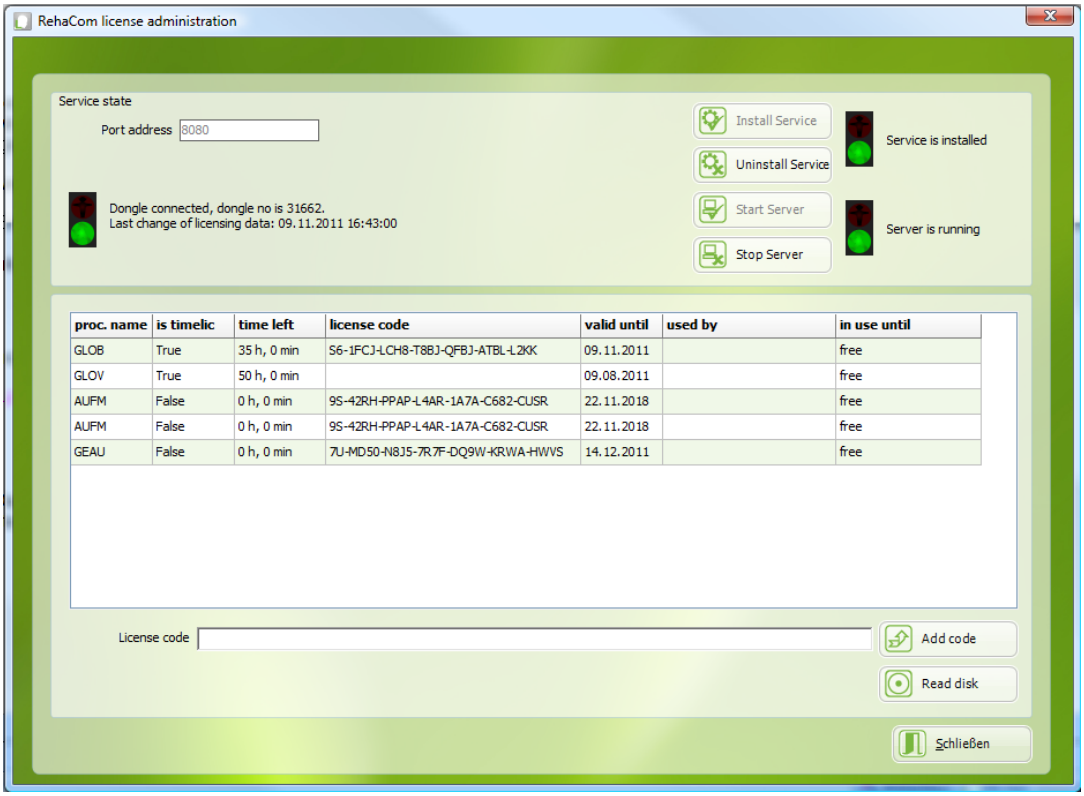

Port address

It is set from which port RehaCom clients communicate with the server (SOAP via http). The setting can be changed after having stopped the server (button "Stop Server", requires registration as administrator).
The used port must be set to all clients (see Network/Directories) and must be opened in the firewall configurations.

Firewall

Not in all cases port 8080 is opened for http in the Windows firewall. If there is no communication between server and client, please take the following settings:
Windows Start button -> System control
Click on Windows firewall -> Advanced settings (requires administrator rights)
Click on "Incoming rules" on the left
"New rule..." on the right
Rule type: select "Port" -> Next ->
Report and ports: select "TCP", enter "Specific local ports: **8080**" -> Next ->
Action: "allow connection" -> Next ->
Profile: set all checkmarks -> Next ->
Name: "RehaCom license server" -> Finish

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(This example applies to the Windows firewall in Windows7. If you use another firewall, please read in the corresponding manual.)

Licenses

Licenses are stored on the dongle that must be connected to the server.
Before connecting the dongle, an appropriate driver must be installed (RehaCom-DVD, directory "Sentinel").
When the dongle is connected, the existing licenses are indicated in the list.
Before first use, licenses must be installed once on the server. Installation of licenses happens via license code, license file or license DVD.
License code: input in the field "License code", click on "Add code"
License file: when clicking "Read disc", a window appears in which you can select the license file
License CD: insert license CD and click on "Read disc"

After the installation is finished, all available licenses are shown in the list.
RehaCom must be installed on all PC's on which licenses should be used. In the menu System -> License mode, the mode "Licensing via license server" is to be set.
If one license is used in the institution, the current user and the useful life is indicated in the table. If one license is used, this license is blocked for other clients during the duration of use.

10.2.2 Database check

from version 5.00:

From version 5.00 RehaCom uses a **client-server-database** named **Firebird**.
The change from Paradox to Firebird had several reasons:
Firebird supports higher security and encoding of your data
Firebird has a higher operation speed
Firebird has a better network-support than Paradox
Paradox is an old technology and will not be further supported by future Windows versions

You can find a detailed documentation of Firebird at internet link http://www.firebirdsql.org.

On an update from an old RehaCom-version to version 5.00 the old Paradox-database is automated updated to a Firebird-database, all data will remain. In order to perform conversation the program **CopyDB.exe** will start automatically at the first RehaCom startup.
More information on database copy you can find at corresponding chapter.

At the window **Firebird database test** you can check, if Firebird works correct

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and if RehaCom-database exists. In case of doubt you can create a new (empty) RehaCom-database.

local database

This area is checked, if you use RehaCom as a single user system (single place, without a network). The database is located at the same PC where RehaCom runs.
You can check the database by pressing the button **Test!**, at the window **Messages** all results of the check are listed. If the database works proper, the last line displays the message "Database OK!".

database at network

This range is checked, if the database is located at an central database-server.

Servername

The name of the server, how it is displayed at Windows network-neighbourhood or IP-address of the server.

Database directory at server

Directory at the server where the database is located. You have to enter the local directory name (from the servers point of view). This directory has to be created by the system administrator. It don't have to be released to other users. Access is organized by the installed Firebird-server-program (client-server-principle).
You can check the database by pressing the button **Test!**, at the window **Messages** all results of the check are listed. If the database works proper, the last line displays the message "Database OK!".
There are a lot error sources at network. If you get error-messages all possible errors have a detailed description. Because the error messages are very specific, please ask a computer specialist in case of problems.

create new database

By pressing the button "Create", a new, empty database is created. A new database can only be created at a location, where no existing database is found. If you want to overwrite an existing database, the old database files has to be deleted by hand (all files with extension ***.gdb** at database directory).

10.2.3 Database copy

from version 5.00:

A RehaCom-database can be copied by use of the program **CopyDB.exe**. This program you can run direct from the RehaCom directory.
It will be started automatically at the first start of RehaCom, if RehaCom detects that an existing database has to be converted.
You can run the program too by pressing the button **copy database** at menu System -> Network/directory.

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At the window you have 2 possibilities:

1. to convert a RehaCom-Paradox-database (RehaCom-version up to 4.15) into a RehaCom-Firebird-database (RehaCom-version from 5.00).

2. to copy a Firebird-database from one location to an other.

1. copy/convert Paradox-database

Switch the database-type to RehaCom 4 (area database source).

2. copy Firebird-database

Switch the database-type to RehaCom 5 (area database source).

Enter the source-directory or use the button to choose a database-source.

Enter the destination-directory or use the button to choose a database-destination.
Is the destination-directory at an server (network), the directory has to be created the from administrator (by hand).
Information about notation for the directory you can find at chapter network installation.

Copy a Paradox-database (RehaCom 4) from network into a Firebird-database (RehaCom 5)

If you have already used a network database with RehaCom version 4, the database can't converted fully automated. Please follow the listed procedure below to convert you database successful. Ask a computer specialist if necessary.

RehaCom4: To save data at a server, only a directory has to be released.
RehaCom5: Firebird is a client-server-database. That is the reason that **Firebird has to be installed** at the server as first step (install from RehaCom-CD). After that a directory has to be created at the server, where the future database will be stored (e.g. c:\data\RehaComDB). This directory don't has to be released to other users.

RehaCom detects at first startup, that the database has to be converted. From that reason the program CopyDB.exe will be started.
In our example we will assume, that the database was stored at directory **R:\RehaComDB** till now (R:\ is a network drive).
At the window **RehaCom-database-copy** we will find both at edit-field source-directory and edit-field destination-directory the same text **R:\RehaComDB**.

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The entry at destination-directory isn't correct, this entry you has to change by hand or by pressing the button . Here the entry must be changed to the format **Servername:directory** (see also Network installation). "Servername" is the name of the Firebird-server. "Directory" is the local directory name at the server (in our example C:\data\RehaComDB, thought is "drive C:" of the server!).
At the edit-field you should enter **ClinicServer:C:\data\RehaComDB** (example).

Now press the button **Start copy!**, the conversion starts. At success is in the area Messages: "Copy of database completed!" reported.
On errors (e.g. defect source-database) all errors are listed in this area.
Faults don't have to lead to a copy of database, which isn't working . In this case it has to be calculated that the copied data are incomplete.

After a successful database-copy the release **R:\RehaComDB** is no longer necessary, the release can deleted from the server.

The copy of database has to be performed at only one computer (client). All other RehaCom-workstations only have to adjust the correct destination-directory by pressing the button , the button **Start copy!** don't has to be pressed.

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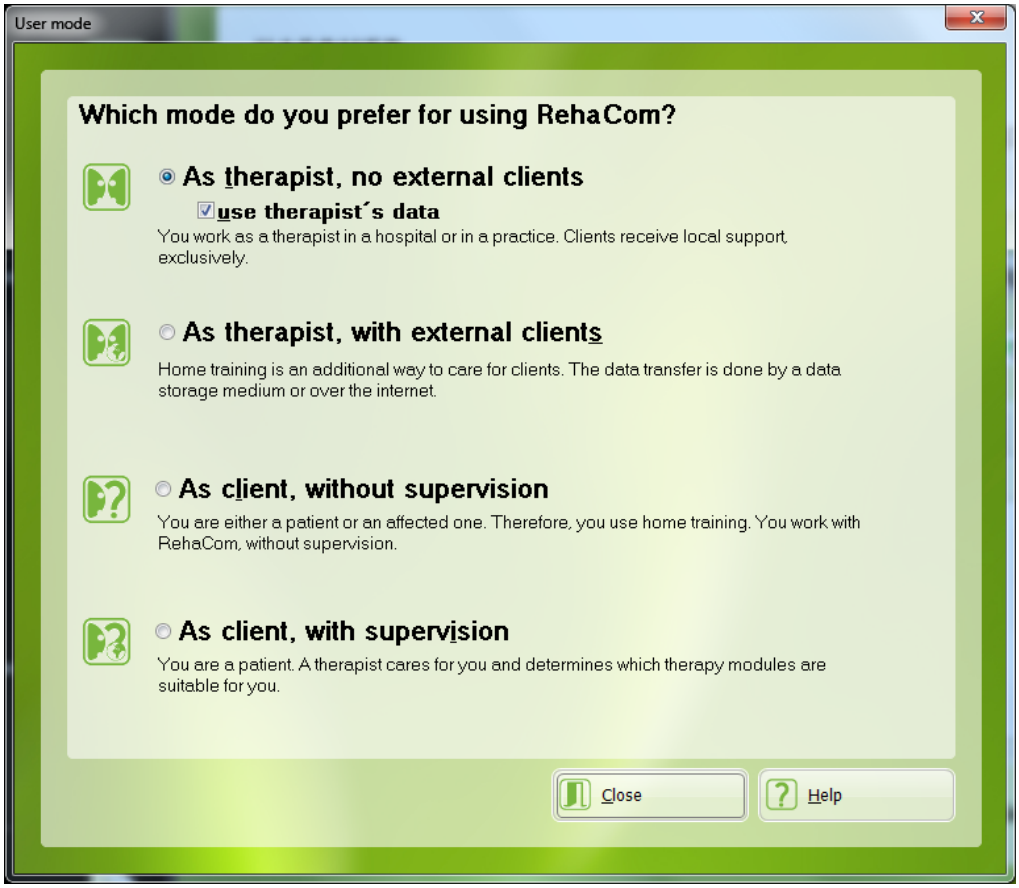
10.3 User mode

from version 5.4:
You reach the window "User-mode" by menu "System".



Window "User-mode"

as therapist

In this mode works the therapist. He can edit all **therapy data**.
The therapist has the possibility to edit prescriptions and analyzes after training results.

no external clients
This is typical for therapists in clinic or practice.
If RehaCom training is accomplished locally only by one therapist, the check before "use therapist data" to be removed. In this case all therapist related buttons and menus in the main window disappears.

with external clients
The therapist can handle (additional) patients at **Hometraining**, prescriptions end results are transferred from therapist to patient an back.
The transfer ist possible:

- By data drive: at the window Select a client the data are exported to an e.g.

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USB-stick which the patients takes home.

- By Internet: at the window Edit client the option **Supervision by Internet** must be activated.

as client

At this mode works a client. RehaCom functionality is limited.

without supervision

The patient/client works alone at home. You can't edit **prescriptions** or switch to the **patients mode**.

with supervision

The client is cared for training by a therapist. He can see, but not change any data.

Clients should work in the "patients mode".

The data transfer between patient an therapist can be made by data drive (e.g. USB-stick) or Internet.

Supervision by data drive: The therapist makes prescriptions. Is the therapy plan of the patient finished, the patients data are exported to a data drive (e.g. USB-stick) at the windows Select a client. The patient takes the USB-stick home and connect it to the PC at home before starting RehaCom. After login with name and password at patients mode, the prescriptions are read from the USB-stick. The patient works on the training. After training all results are automatically stored back to the USB-stick. The patients brings the data drive back to the therapist, he can import the data and see what the patient has done at home.

Supervision by Internet: The therapist makes prescriptions. Is the therapy plan of the patient finished, the patients data are automatically transferred to the Internet server. After login with name and password at patients mode, the prescriptions are loaded from Internet server. The patient works on the training. After training all results are automatically stored back to Internet. If the therapist opens the window Edit client, all results are read from the Internet, the therapist can see what the patient has done at home.

10.4 Panel / Dongle

Before the first training RehaCom needs to be informed whether

- a RehaCom panel or
- a dongle (matchbox sized box)

is used(see chapter Before the first training). If either is recognized, these devices provide information about licenses - e.g. the **panel number** and the **license counter**. If neither is detected, the procedures' demo versions only can be started.

The button **Panel/Dongle** in the window System parameterstarts a check and

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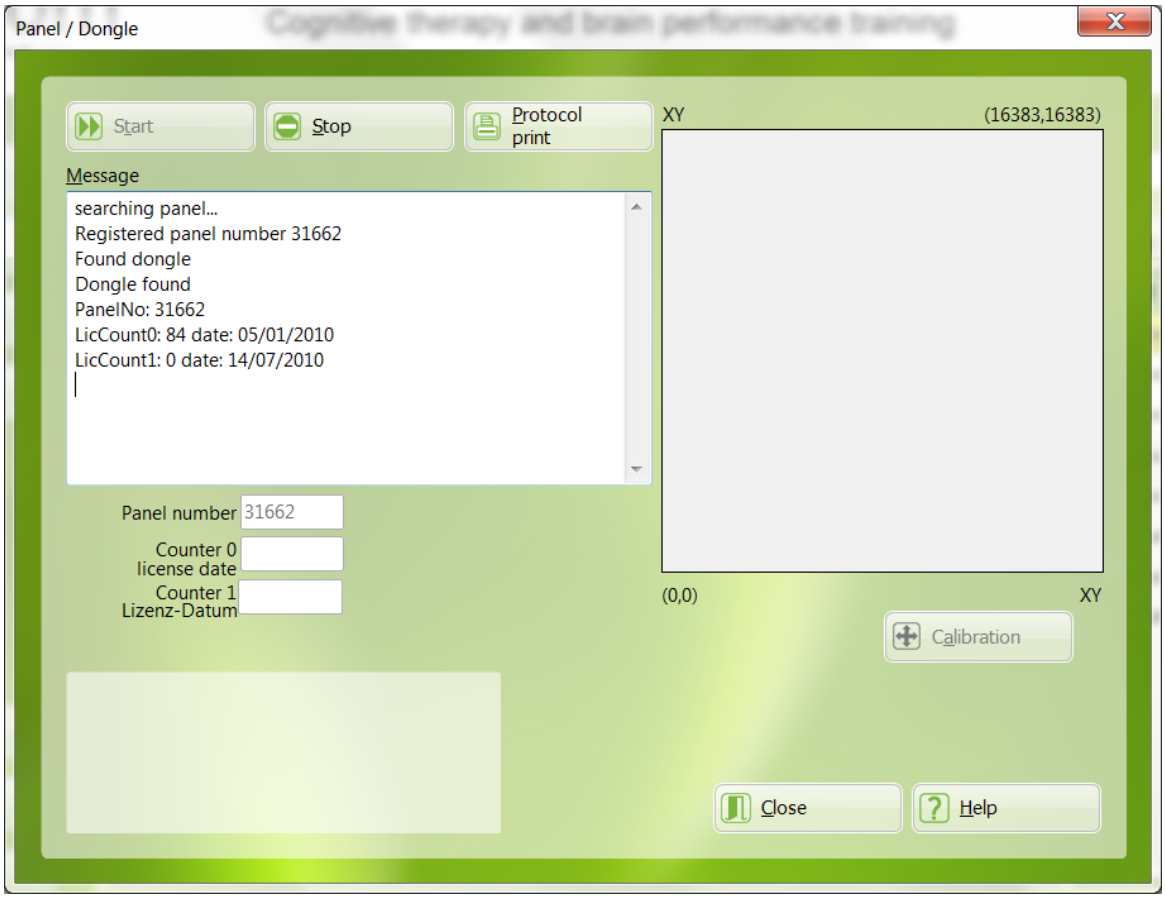
"looks for" panel or dongle. The results are displayed in the window **Message**.



Window Panel/Dongle.

Now the correct functioning of the panel can be checked. Pressing the panel buttons can be seen in the smaller window left. The corresponding buttons change colour and a counter is incremented. To check the joystick, move it and follow the movements of the little circle in the big grey square. You should be able to reach the field's edges with the joystick.
The joystick is working correctly if the X and Y values in the left-top and the right-bottom-corner are between 0 and 1. If you suspect an error in the joystick calibration (e.g. a client cannot reach the outer edges on the screen),press the button **Calibration**. A window will open up displaying the joystick as a big black dot. Now move the joystick slowly to all 4 corners, the dot on the screen will follow. If you moved into the 4 corners, press any key, and the new calibration will be saved.

With the button **Protocol print** all results of the panel test are printed out. The RehaCom service is going to ask you for it in case of an error.

RehaCom panels and dongles are classified as maintenance-free. A maintenance interval is not fixed.

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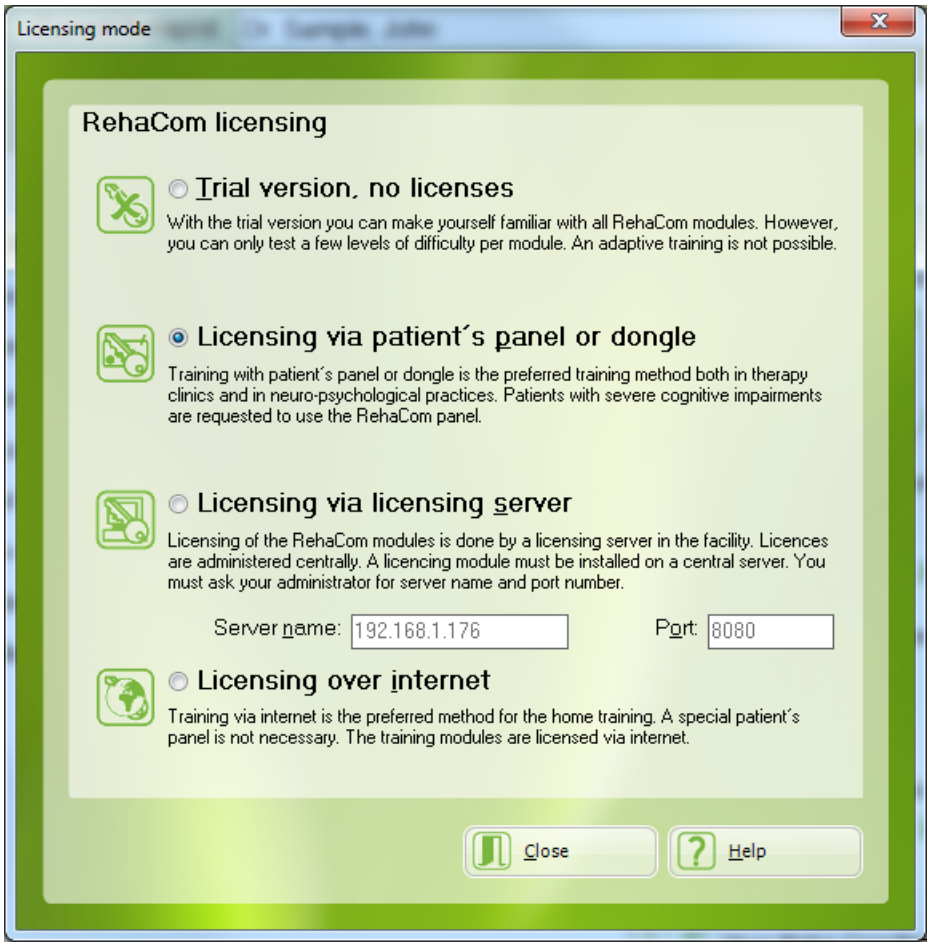
10.5 License mode

At this window you can setup, how to license RehaCom procedures.



Trial version

You can also use all RehaCom functionality at demo version (patients administration, selection and adjusting of therapy procedures, run the training, locking at results).
The only restriction: The adaptivety of the therapy procedures (important to training) is switched off. Most training procedures run only in the lowest and in the highest degree of difficulty.

with a patients panel or dongle

The licensing is done by connected devices (RehaCom panel or dongle).
You can license single therapy procedures (procedure licenses). In addition, you

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can order time licenses.

Prescriptions / Internet:

Licensing by internet

For licensing by internet you don't need a connected device.
Clients and / or therapists have the possibility to order licenses by internet.
If one starts the training a short internet connection is made, to get the license from the clients or therapists account (see also prescriptions).

from version 6:

Licensing via license server

In hospitals and huge institutions, RehaCom can be licensed via license server. A server within the institution distributes the available licenses so that RehaCom can practically be used on every PC (with network connection).
On the server, a separate program for license management must be installed (instructions in chapter network installation). Your administrator will inform you about the name of the server and the port.
If necessary, the used port must be unlocked in your firewall. For this purpose, you also find information in chapter network installation.

10.6 Licenses

Licenses for RehaCom are provided in 2 versions:

- licenses for ***single procedures*** for an unlimited number of sessions over 7 years.
- licenses for a defined number of sessions (1 session lasts no longer than 60 min) as a ***global license***. All RehaCom procedures can be used. After every training the internal global license counter counts down until no licenses are left. However, RehaCom will warn the therapist before it runs out of licenses.

from version 5.00:

- With one global license RehaCom training can be used for one hour. The invoice of the licenses is carried out in **10 minutes clock**. From technical reasons are opened 10 minutes counted as full 10 minutes. The clock starts if you press the "Start"-button at main-window and stops if the programs returns to the main-window (on close of the theapists-menu). To get an overview of used licenses you can press the button **Consumption**.
- The "start" knob in the RehaCom main window (start of the training) gets end's technical reasons as counted whole 10 minutes respectively opened 10 minutes . push the time measurement carried out of this up to the left . for the therapist menus end (for the training battery) gets an overview of the licenses used up the user about the button "consumption".

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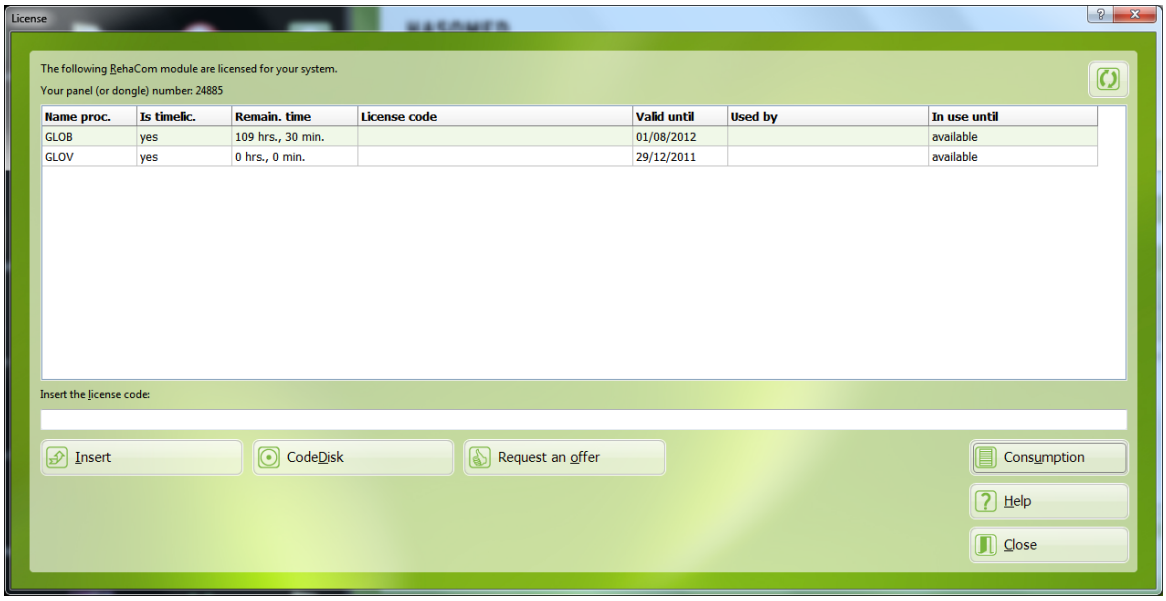
Both strategies can be combined - if an "unlimited" procedure is used, the global counter will not change. It will only count the "limited" procedures.

When pressing **License** in the window System parameter or in the menu list **System**/ **License**, the window License opens up.



Window License.

The list says how many global licenses there are or which procedures have licenses.

New licenses are entered in the lower field and confirmed with **Insert**. If the license code is incorrect you will be told so. If it is correct, there will be a note in the upper field.

Alternatively to manually entering the license codes, you can order a **CodeDisk** containing one or several license code(s). Put the disk in drive A: and click at the button **CodeDisk**. All license codes saved on the disk are entered automatically.

Dongle at network

For licensing of RehaCom procedures a Dongle (similar to an USB-Stick) at network can be used (see chapter Network/Directory).
If you use a Dongle at network, only a usage as a ***global license*** is possible.
If you want to use licenses for ***single procedures***, you have to connect the Dongle at the workstation of the user.

Licenses you can order at

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http://www.rehacom.com

Information on further **RehaCom resellers** you will get at **Internet** www.rehacom.com .

Prescriptions / Internet:

If license mode "**Internet**" is activated, you can order **global licenses** (**time licenses**) direct at internet. In this case the button "**Order**" appears.

Button "Order"

By clicking the button "Order", an internet connection is made to buy licenses online.

At **license mode** "Internet" RehaCom connects the webserver before every training an gets the license from server. RehaCom counts with 10-minutes-**clock**.

Licenses can be booked from account of therapist or from account of therapist/ clinic/practice.

Booking from client account

RehaCom is booking from client account, if at window "User-mode" the option "as patient, without internet-support" is chosen, or when at window "edit prescriptions" licensing by "the patient" if adjusted.

Booking from therapist account

If you want to book licenses from therapist account (or account of clinic / ambulance / practice), you have to:
1. choose "as therapist, with internet-support" at window "User-mode",
2. setup a therapist, which is registered at internet,
3. buy licenses for this therapist.

At training by prescriptions you can choose for ever one prescription, from which

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account the license is to be booked.

from version 6:

Request an offer

You will see a form with which you can contact RehaCom sales. Complete the form and send it by fax or e-mail.

Server licenses

In the window License mode can be adjusted that the RehaCom licenses are no longer managed locally on your PC, but on your in-house server.
Thus, a license pool for an entire institution can be acquired and the licensing for each single computer workstation is omitted. A more flexible use of RehaCom licenses is possible.

For each RehaCom module, various licenses can be acquired. If you bought e.g. two licenses "Attention and Concentration", the module "Attention and Concentration" can be used simultaneously on two PC's in your institution. If the module should be started on a third PC in the institution, the user can decide whether he wants to wait for the end of training of another user or whether time licenses are to be used.
In the window licenses is indicated who is using the module you want to train with and when the license is available again.

10.7 Backup/ Restore

All client data, parameters and process data are saved in a data base. This data base consists of many files situated in the directory DB in standard installation (see Network/directory).

In regular intervals - at least once a week - a security copy of this data base, a ***Backup***, is to be made. If the data base is damaged (disk error, power failure in the moment of writing etc.) a ***Restore*** by means of the security copy is possible. Please remember that you can easily re-install RehaCom from the CD in case of an error, but not so your client and training data. They are lost without a backup!

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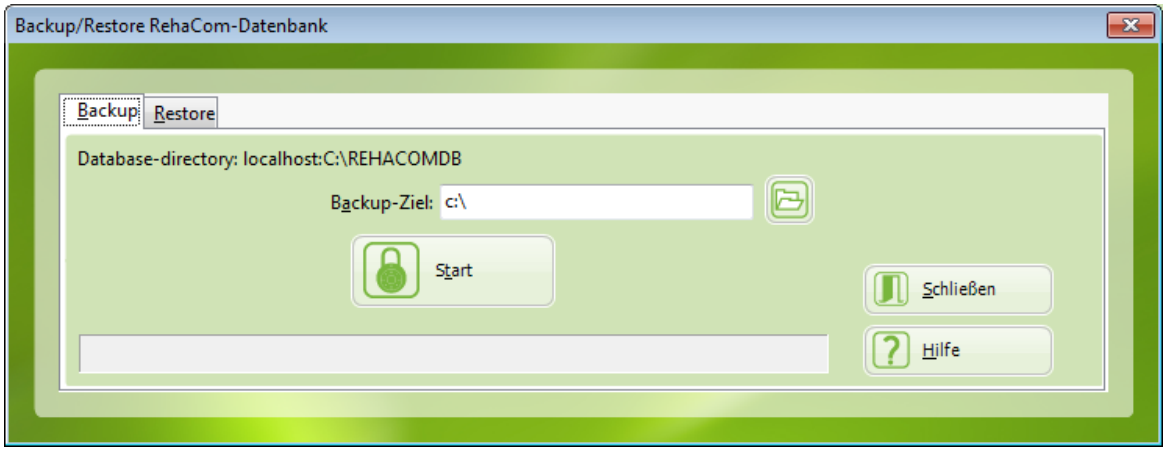

Window Backup/ Restore RehaCom database.

In the window Backup/ Restore RehaCom database there are 2 files:

- Backup for saving the data base and
- Restore for a possible restoring of a defect data base.

The Backup "copy" can be carried out onto a disk, e.g., or a second hard disk. Please do not use the hard disk on which the RehaCom data base is situated. In case of a disk error a backup will be lost as well.

With the little explorer button you select a disk or so where you want to save the backup. The backup commences with **Start.**

For Restore the same way applies.

10.8 Volume RehaCom

All RehaCom procedures use an effective feedback, sometimes with spoken instructions or typical sounds or signals. For that the soundblaster module of the PC is used. The volume for the connected client headphones or loudspeakers can be adjusted with the Windows function **Volume**. For that click at the little loudspeaker in the task list at the bottom of the screen. A shift regulator appears with which the volume can be adapted. In order to check the volume, press the button **Volume RehaCom**. The word "RehaCom" is to be heard. This way you can adjust the volume individually.

10.9 Client font

For the texts displayed to the client during the training (instructions, feedback etc.), very carefully a font with best possible detectability was selected. The font ***Arial, Standard*** was chosen. This option should not be changed, even though it is possible.

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10.10 Start Service

RehaCom was tested in a representative number of computers using different graphic and sound cards.
Still it cannot be excluded that in certain modules, allegedly ***compatible***, problems might occur.

A detailed error analysis by the RehaCom Service can help. The service needs to pick out exactly the place where an error occurs. For that a small program is started listing certain actions.
This listing is started in the window System parameter with the button **Start service**. The window **RehaCom trace** appears, and in this window the protocol is written down. Leave the window open and go to the place in the program where the error occurred. Try to do the "same mistake" again. The trace window, still open in the background, receives and writes down everything. After the error has occurred again, print the protocol in arrangement with the service (**File**/ **Print message list**) or save it on a disk (**File**/ **Save message list**). This message is later given to the service for analysis.

To close the window RehaCom trace, go to **File**/ **End**.

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