An Introduction to RehaCom

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Agenda

- Computerized Cognitive Training
- Client and Patient Populations
- Clinician Mediation
- Development and Distinctive Features
- Screening Modules
- Training Modules
  - Attention, Memory, Executive Function, Visual Field
- Therapy Results
- Research
- Operating RehaCom
- Summary and Conclusion

Computerized Cognitive Training (CCT)
Computerized Cognitive Training (CCT)

- Four (4) key areas of training
  - Visual Field
  - Attention
  - Memory
  - Executive Function
- 20+ configurable training modules
- Continuously auto-adaptive to the training level of the patient
- Includes low training levels for those with severe cognitive deficits

Client and Patient Populations

Who is RehaCom used with?
- Patients with cognitive deficits resulting from:
  - degenerative neurological disorders
  - TBI
  - stroke
  - other clinical conditions impacting cognitive functioning
- Deficits range from mild to severe
- Restorative or compensatory training
- Clients work in clinic/hospital setting often within a rehabilitation center

Who delivers RehaCom?
- The program is clinician mediated
  - It can only be accessed through engagement with a clinician
Client and Patient Populations

Relevant Patient Populations

What's your current process?
How do you currently work with patients who have:
• deficits in attention, working memory, visual scanning, and/or
• difficulty with executive functions?

What about current patients?
Do you currently work with patients who have:
• degenerative disorders?
• TBI, stroke, etc.?
• ADHD?
• schizophrenia or other psychotic disorders?
• a combination of disorders?

The disorders mentioned here generally include deficits in attention and memory.
Some patients may also struggle with visual field and executive functions.
RehaCom is also relevant for patients with depression and anxiety.

Clinician Mediation

RehaCom is clinician mediated.
Why does this matter?

Fidelity
Relationship
Integral
Efficiency
Accessibility

Those with diagnosable disorders tend not to finish self-administered programs.
The therapeutic alliance clinicians have with patients is very important to facilitate engagement with computerized cognitive training.

RehaCom is clinician mediated.

Why does this matter?

Fidelity
Relationship
Integral
Efficiency
Accessibility

Computerized cognitive training in the context of more severe disorders is rarely seen as a stand-alone treatment. Clinical expertise and oversight is needed to manage the process.

RehaCom extends the reach of clinicians by automating some elements of treatment and thereby creating greater efficiency and efficacy.
More time and opportunity become available for the complicated and critical aspects of overall treatment management.

Disorders like TBI, stroke, ABI require a more comprehensive approach to treatment which often includes:

Clinician Mediation

RehaCom is clinician mediated.

Which clinicians mediate RehaCom?

Treatment requires a comprehensive approach therefore, a variety of clinicians may be the mediator.
Development and Distinctive Features

RehaCom is clinician-developed. Why does this matter?

- **Relevance**: Updated and revised based upon clinical use and feedback which is reflected in a range of training areas, breadth of training, and its configurability.
- **Training**: RehaCom offers a distinctively broad range of training areas including attention, memory, executive functioning, and visual scanning.
- **Breadth**:
- **Configurability**:

Why does this matter?
Training Relevance
Levels vary from lower levels of challenge, for more severely impaired patients, to rather difficult levels for those with milder problems.

Training Breadth
While some sequences of training are typical, configurability offers clinicians an opportunity to refine their treatment through prioritizing areas of treatment and shifting levels of challenge.

Development and Distinctive Features
RehaCom is clinician-developed.

Why does this matter?

Relevance

Training

Breadth

Configurability

Distinctive Features of RehaCom
Screening, Semi-Automation, and Reporting

Screening
RehaCom provides an initial baseline and reference points for training with nine screening modules or tests.

Semi-Automation
The program adjusts according to an algorithm providing semi-autonomous training including live feedback. Training can be modulated by the clinician as well.

Reporting
Performance report including graphs and numeric data can be generated. It can be exported, printed, and entered into the medical record.
Development and Distinctive Features

Distinctive Features of RehaCom
RehaCom is auto-adaptive.

- RehaCom is individualized to the patient
- Auto-adaptation makes training more effective and easier to tolerate for the patient
- Clinician decides where to start training
- Flexible platform gives clinicians a range of options
- Helps clinicians do their jobs more effectively and efficiently

Distinctive Features of RehaCom
RehaCom meets the patient at their level.

- Low levels of training allow those with severe deficits to train in a comfort zone
- The highest levels of training are very challenging
- This gives patients a broad range of rehabilitation
- Try the top levels yourself!

Distinctive Features of RehaCom
RehaCom keyboard is uniquely designed.

- This keyboard makes the program accessible for a broader range of patients
- The large buttons allow the patient to select or steer, and two large "OK" buttons are used to confirm the patient's decisions

USB port on the underside
Development and Distinctive Features

Distinctive Features of RehaCom Screening and Training

- Screening is a good place to start
  - Identify deficits
  - Guide treatment
- Training is flexible
  - Start with almost any module
  - Patients may need foundation training
  - Allows clinicians to approach training as they see fit

Development and Distinctive Features

Distinctive Features of RehaCom Screening and Training

- 20+ Training Modules
  - Same principles and structure applied to all modules
  - Makes training faster and more intuitive

Screening Modules
Screening Modules

9 Screening Modules

- Screening modules identify deficits compared to age and gender based norms.
- Attention and Concentration is often a good place to start due to the pervasiveness of attention deficits across disorders.

<table>
<thead>
<tr>
<th>Area</th>
<th>Screening Module</th>
<th>Training Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alertness</td>
<td>Tonic and phasic alertness</td>
<td></td>
</tr>
<tr>
<td>Selective Attention</td>
<td>Reacting appropriately under time pressure &amp; simultaneously controlling impulsivity.</td>
<td></td>
</tr>
<tr>
<td>Divided Attention</td>
<td>Divided visual &amp; auditory attention with simultaneously presented stimuli.</td>
<td></td>
</tr>
<tr>
<td>Spatial Number Search</td>
<td>Basal cognitive performance, selective attention &amp; visual scanning. Can test visual neglect.</td>
<td></td>
</tr>
<tr>
<td>Memory for Words</td>
<td>Verbal learning ability according to the paradigm of the recurring figures. Read and store real words which are difficult to visualize.</td>
<td></td>
</tr>
<tr>
<td>Working Memory</td>
<td>Verbal spatial memory span. Also tests implicit visual-memory learning and working memory.</td>
<td></td>
</tr>
<tr>
<td>Logical Reasoning</td>
<td>Ability to identify regularities, to continue a series, and draw logical conclusions (examines the ability to complete logical sequences).</td>
<td></td>
</tr>
<tr>
<td>Visual Field</td>
<td>Measures visual field, fixation accuracy &amp; sustained attention.</td>
<td></td>
</tr>
<tr>
<td>Visual Scanning</td>
<td>Measures performance in exploring visual field. Two parameters are measured: parallel search (at a glance) and serial search (in a structured way).</td>
<td></td>
</tr>
</tbody>
</table>

Screening Modules

Screening Results

Graphical Representation: Statistics T-scores norms, Z-scores norms, and percentile ranks are shown across the top.

Discussion Section: Results summarized to the left of the graph.

Gray Bars: Patient's Results. Longer bars denote larger deviations from norms.

50/0/50: Average performance of a sample group of healthy people.

Background Colors (Green, Yellow, Red): Indicate extent of deficit. Red = more than 3 standard deviations below norm.
Training Modules

Attention
Memory
Executive Functions

Ten (10) training modules are dedicated to Attention, a pervasive deficit in stroke, TBI, and other disorders.

Training Modules

Attention

Ten (10) Attention and Concentration Modules

<table>
<thead>
<tr>
<th>Modules</th>
<th>Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alertness</td>
<td>16</td>
</tr>
<tr>
<td>Reaction Behavior</td>
<td>16</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>20</td>
</tr>
<tr>
<td>Vigilance</td>
<td>15</td>
</tr>
<tr>
<td>Selective Attention</td>
<td>Vigilance</td>
</tr>
<tr>
<td>Attention &amp; Concentration</td>
<td>24</td>
</tr>
<tr>
<td>VSD Operations</td>
<td>24</td>
</tr>
<tr>
<td>3D Operations</td>
<td>24</td>
</tr>
<tr>
<td>Visual-Spatial Attention (Spatial Perceptive)</td>
<td>42</td>
</tr>
<tr>
<td>Divided Attention</td>
<td>Divided Attention 14</td>
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<tr>
<td>Divided Attention 2</td>
<td>22</td>
</tr>
</tbody>
</table>

Start your training at the Easier Modules. If it's too hard or too easy, adjust to the more challenging Modules.

Attention and Concentration
Training Modules
Start with Attention and Concentration Training

Level Indicator
Press ESC to change level of difficulty.

Tasks too hard? Go to Alertness Therapy
Tasks too easy? Go to Spatial Attention or Divided Attention

Start here

The next most common deficit is Memory.
Training Modules
Six (6) Memory Modules

<table>
<thead>
<tr>
<th>Modules</th>
<th>Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Memory</td>
<td>70</td>
</tr>
<tr>
<td>Topological Memory</td>
<td>20</td>
</tr>
<tr>
<td>Physiognomic Memory</td>
<td>21</td>
</tr>
<tr>
<td>Memory for Words</td>
<td>30</td>
</tr>
<tr>
<td>Figural Memory</td>
<td>9</td>
</tr>
<tr>
<td>Verbal Memory</td>
<td>10</td>
</tr>
</tbody>
</table>

Training Modules
Memory Training

- **Working Memory**: Short-term and selective memory, mental manipulation.
- **Topological Memory**: Picture cards are turned over, memorize positions and content.
- **Physiognomic Memory**: Memorize up to 10 words in 3 degrees of complexity.
- **Memory for Words**: Short stories are presented, multiple choice questions.
- **Figural Memory**: Figural content, picture-word association, captions, aphasia.
- **Verbal Memory**: Memorize faces, names, occupations, and phone numbers. Can be personalized.

Training Modules
Executive Functions

Executive Functions, such as planning and logical reasoning, are important for the patient’s return to daily life.
Three (3) Executive Functions Modules

<table>
<thead>
<tr>
<th>Modules</th>
<th>Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logical Reasoning</td>
<td>18</td>
</tr>
<tr>
<td>Plan a Vacation</td>
<td>55</td>
</tr>
<tr>
<td>Shopping</td>
<td>23</td>
</tr>
</tbody>
</table>

The Executive Functions modules provide activities that are more ecologically meaningful such as planning a shopping trip, planning a vacation, etc.

We expect people will better understand why they would need to train on these activities because they make a difference in their daily lives.

Patients want to resume self-reliance. These training activities are more obviously relevant to accomplish this.
Approximately 1 in 5 stroke and TBI patients experience visual field deficits.

Three (3) Visual Field Modules

<table>
<thead>
<tr>
<th>Modules</th>
<th>Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saccadic Training</td>
<td>34</td>
</tr>
<tr>
<td>Restoration</td>
<td>1</td>
</tr>
<tr>
<td>Overview &amp; Reading</td>
<td>52</td>
</tr>
</tbody>
</table>

Saccadic Training

Eye movement training, hemianopia, neglect. Click the correct arrow button depending upon which side of the screen an object appears.

Restoration

Stimulates the re-organization of damaged, but not destroyed, neuronal structure through intense stimulation. Use of fusion patterns to re-acquire control of damaged visual fields in the “blind” area of your visual field. Keep your focus upon fixation point.

Overview & Reading

Parallel and sequential search on the homonymous visual fields. Searching for one letter among groups of letters.
Therapy Results

On the Dashboard, on the left side under "Parameters", click "Results" to access this screen.

- Navigate to the "Results" tab to view progress and session data in graphical format.
- All training modules for this patient are listed.
- Progression through levels of training over several sessions.
- More detailed information is accessible in this area.
- Data can be printed or exported to PDF or Excel.
- Configuration allows adding information to reports such as clinic name.
Research

Research Studies with TBI, CVA & MS

Traumatic Brain Injury

• Attention remediation following traumatic brain injury in childhood and adolescence by (Galbiati et al., 2009).
• Clinical Impact of RehaCom Software for Cognitive Rehabilitation of Patients with Acquired Brain Injury, (Fernandez et al., 2012)
• Effectiveness of Cognitive Rehabilitation Following Acquired Brain Injury: A Meta-Analytic Re-Examination of Cicerone et al.'s (2000, 2005) (Rohling et al., 2009)

Stroke

• Effect of computerized cognitive rehabilitation program on cognitive function and activities of living in stroke patients (Yoo et al., 2015)
• Clinical Efficacy of Acupuncture Treatment in Combination With RehaCom Cognitive Training for Improving Cognitive Function in Stroke: A 2 x 2 Factorial Design Randomized Controlled Trial (Jiang et al., 2016)

Multiple Sclerosis

• Computer-Assisted Cognitive Rehabilitation of Attention Deficits for Multiple Sclerosis: A Randomized Trial With fMRI Correlates. (Cerasa et al. 2013)
• Cognitive Rehabilitation in Multiple Sclerosis, (Barbosa et al., 2013)
• Efficacy and specificity of intensive cognitive rehabilitation of attention and executive functions in multiple sclerosis, (Flavia et al., 2011)
Operating RehaCom

Computer-assisted RehaCom Setting

- Quiet
- Minimal Distractions
- Comfortable
- Soft Lighting
- Multiple Work Stations?
- Headphones?
- Laptop
- Networked?

Operating RehaCom

Technical Requirements

To run RehaCom you will need:
- Windows Laptop or Desktop Computer
- 19" - 21" Monitor
- 2 GB RAM
- Direct3D Graphics Card (Nvidia, ATI)
- USB drive
- 100 GB Hard Drive
- Printer

To install RehaCom:
- You must be logged into your computer with Administrator access.
- RehaCom software is installed from a USB drive.
- Licenses are managed via the RehaCom panel or optional dongle which must be connected to run RehaCom.
Summary and Conclusion

RehaCom Summary

Training Domains
Computerized Cognitive Training (CCT) in 4 Major Cognitive Domains:
- Attention
- Memory
- Executive Function
- Visual Field

Features and Benefits
- 9 screening modules to identify deficits
- 20+ configurable training modules
- RehaCom keyboard to accommodate motor deficits
- Progress monitoring and/or outcome reports of patient therapy can be viewed, printed, and exported
- System is auto-adaptive to meet each patient at their current level of need

Environments
- NeuroRehab
- Skilled Nursing
- Private Practice

Patients/ Clients
Patients suffering from cognitive deficits resulting from
- degenerative neurological disorders,
- TBI,
- stroke,
- or other clinical conditions impacting cognitive functioning.
Summary and Conclusion
RehaCom Summary

Training
• Can be restorative or compensatory training
• All modules are configurable based on clinical need and client variables
• Clients work in clinic/hospital or rehabilitation setting
• High ceilings for training provides a comprehensive range of training levels

Efficacy Research
Approximately 20 peer-reviewed studies showing some positive effects across TBI, Stroke, Dementia, ADHD, MS. RehaCom is one aspect of the total rehabilitation program for patients.

Pricing
Unlimited use per station with volume discounts.

Reimbursement Opportunities

<table>
<thead>
<tr>
<th>License Terms and Inclusions</th>
<th>Regular Price</th>
<th>Renewal Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Licenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Year with Panel</td>
<td>$1,495</td>
<td>$1,250</td>
</tr>
<tr>
<td>2 Year with Panel</td>
<td>$2,495</td>
<td>$2,000</td>
</tr>
<tr>
<td>3 Year with Panel</td>
<td>$3,495</td>
<td>$3,000</td>
</tr>
<tr>
<td>Quarterly Licenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Includes Dongle</td>
<td>$395</td>
<td>$395</td>
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<tr>
<td>Includes Panel</td>
<td>$745</td>
<td>$395</td>
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<tr>
<td>RehaCom Equipment</td>
<td></td>
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</tr>
<tr>
<td>Panel</td>
<td>$585</td>
<td></td>
</tr>
<tr>
<td>Chin rest</td>
<td>$200</td>
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</tbody>
</table>

Multi-station Discounts

<table>
<thead>
<tr>
<th>Size</th>
<th>5-9</th>
<th>10-24</th>
<th>25-50</th>
<th>&gt;51</th>
</tr>
</thead>
<tbody>
<tr>
<td>5%</td>
<td>10%</td>
<td>15%</td>
<td>20%</td>
<td></td>
</tr>
</tbody>
</table>
Summary and Conclusion

RehaCom Contacts

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