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

- The program is clinician mediated
  - It can only be accessed through engagement with a clinician

Who delivers RehaCom?

- The program is clinician mediated
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.

* Fidelity
* Relationship
* Integral
* Efficiency
* Accessibility

Why does this matter?

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?

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.

Clinician Mediation

RehaCom is clinician mediated. Why does this matter?

Fidelity

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.

Why does this matter?

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

- Physical Therapy
- Occupational Therapy
- Speech Therapy
- Psychiatric Treatment

Treatment requires a comprehensive approach therefore, a variety of clinicians may be the mediator.

Which clinicians mediate RehaCom?

- Occupational Therapist
- Speech-Language Therapist
- Psychologist
- Neuro-psychologist
- Psychiatrist
- Physical Therapist
- Physician
- Other clinical staff
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**

**Breadth**
RehaCom offers a distinctively broad range of training areas including attention, memory, executive functioning, and visual scanning.

**Configurability**
Development and Distinctive Features

RehaCom is clinician-developed.

Why does this matter?

- **Relevance**: Levels vary from lower levels of challenge, for more severely impaired patients, to rather difficult levels for those with milder problems.

- **Training**: 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.

- **Breadth**: Configurability

Development and Distinctive Features

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- **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

Patient-adapted Keyboard

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

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

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>Attention</td>
<td>Alertness</td>
<td>Alertness, Reaction Behavior, Responsiveness</td>
</tr>
<tr>
<td></td>
<td>Selective Attention</td>
<td>Attention and Concentration</td>
</tr>
<tr>
<td></td>
<td>Divided Attention</td>
<td>Divided Attention</td>
</tr>
<tr>
<td>Spatial Number Search</td>
<td>Visual Scanning, Selective Attention</td>
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</tr>
<tr>
<td>Memory for Words</td>
<td>Memory for Words</td>
<td>Working Memory</td>
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<tr>
<td>Working Memory</td>
<td>Working Memory</td>
<td>Working Memory</td>
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<tr>
<td>Logical Reasoning</td>
<td>Logical Reasoning</td>
<td>Logical Reasoning</td>
</tr>
<tr>
<td>Visual Scanning</td>
<td>Saccadic Training</td>
<td>Visual Field</td>
</tr>
<tr>
<td>Visual Field</td>
<td>Overview and Reading</td>
<td></td>
</tr>
</tbody>
</table>

Screening Modules

Screening Results

Discussion Section

Results summarized to the left of the graph.

Graphical Representation

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

Training Module Recommendation

is in quotes/bold.

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.

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>
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<tr>
<td>Responsiveness</td>
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<tr>
<td>Vigilance</td>
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<td>Selective Attention</td>
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<td>Attention &amp; Concentration</td>
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<td>Visual Spatial Attention</td>
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<tr>
<td>2D Operations</td>
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<tr>
<td>3D Operations</td>
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<tr>
<td>Visual-Spatial Attention (Spatial Perceptive)</td>
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<tr>
<td>Divided Attention</td>
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<tr>
<td>Divided Attention</td>
<td>14</td>
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<tr>
<td>Divided Attention 2</td>
<td>22</td>
</tr>
</tbody>
</table>
The next most common deficit is **Memory**.
Training Modules
Six (6) Memory Modules

<table>
<thead>
<tr>
<th>Modules</th>
<th>Levels</th>
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</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 faces, names, occupations, and phone numbers. Can be personalized.
- **Figural Memory**: Figural content, picture-word association, captions, aphasia.
- **Memory for Words**: Memorize up to 10 words in 3 degrees of complexity.
- **Verbal Memory**: Short stories are presented, multiple choice questions.

Training Modules
Executive Functions

Executive Functions, such as planning and logical reasoning, are important for the patient's return to daily life.
Training Modules
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>

Executive Functions Training

• 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.

**Training Modules**

**Visual Field**

### Visual Field Training

**Saccadic Training**
- Eye movement training, hemianopia, neglect.
- Out 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 functional paretic receptive changes of central visual and frontal emerging to the 'blind' side of your visual field. Keep eyes focused on fixation point.

**Overview & Reading**
- Parallel and sequential search on the homonymous visual fields.
- Searching for one letter among groups of letters.
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 (Galbati 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)

Research
RehaCom Research

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 × 2 Factorial Design Randomized Controlled Trial (Jiang et al., 2016)

Research
RehaCom Research

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

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

RehaCom Pricing
Prices are valid through December 31, 2017 and are subject to change without notice.

<table>
<thead>
<tr>
<th>License Terms and Inclusions</th>
<th>Regular Price</th>
<th>Renewal Price</th>
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</thead>
<tbody>
<tr>
<td>Annual Licenses</td>
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</tr>
<tr>
<td>1 Year with Panel</td>
<td>$1,495</td>
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<tr>
<td>2 Year with Panel</td>
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<tr>
<td>3 Year with Panel</td>
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<tr>
<td>Quarterly Licenses</td>
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<tr>
<td>Includes Dongle</td>
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<td>$395</td>
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<tr>
<td>Includes Panel</td>
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<td>$395</td>
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<tr>
<td>RehaCom Equipment</td>
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<tr>
<td>Panel</td>
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<td>$265</td>
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Multi-station Discounts

<table>
<thead>
<tr>
<th>Multi-station Discounts</th>
<th>5%</th>
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<th>15%</th>
<th>20%</th>
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<tbody>
<tr>
<td>5-9</td>
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<td>10-24</td>
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Summary and Conclusion

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ALWAYS LEARNING