

# The Study of Cognitive Rehabilitation Effectiveness

The SCORE clinical trial is a randomized controlled treatment trial evaluating the effectiveness of cognitive rehabilitation in post-deployment military service members who sustained a concussion.

*Chapter 5:  
Integrated  
Behavioral  
Health and  
Cognitive  
Rehabilitation  
Interventions for  
Persistent  
Symptoms  
Following Mild  
Traumatic Brain  
Injury (SCORE  
Arm 4)*

*Part III: Clinician  
Guide to Arm 3  
Traditional &  
Arm 4 Integrated  
Cognitive Group  
Interventions*

# Acknowledgements

The SCORE study team would like to express our sincere gratitude to the men and women in uniform who participated in this study. We are humbled by the trust you placed in us to provide the best care possible and to learn more about how to help those with traumatic brain injuries (TBIs) who follow you.

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Finally, we would like to thank the Defense & Veterans Brain Injury Center (DVBIC) who, under the leadership of Col. Jamie Grimes in 2010, identified and entrusted us to execute this congressionally mandated study, and provided us with additional staffing and research facilitation.

Congress established DVBIC in 1992 after the first Gulf War in response to the need to treat service members with TBI. DVBIC's staff serves as the Defense Department's primary TBI subject matter experts. DVBIC is part of the U.S. Military Health System and is the TBI operational component of the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury (DCoE). Learn more about DVBIC at [dvbic.dcoe.mil](http://dvbic.dcoe.mil).

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## SCORE Disclaimer

The view(s) expressed herein are those of the author(s) and do not reflect the official policy or position of Brooke Army Medical Center, the U.S. Army Medical Department, the U.S. Army Office of the Surgeon General, the Department of the Army, the Department of Defense, the Department of Veterans Affairs, or the U.S. Government.

# Chapter 5: Integrated Behavioral Health and Cognitive Rehabilitation Interventions for Persistent Symptoms Following Mild Traumatic Brain Injury (SCORE Arm 4)

## Part III: Clinician Guide to Arm 3 Traditional & Arm 4 Integrated Cognitive Group Interventions

### **Introduction**

The following materials are part of “Arm 3 Traditional Cognitive Rehabilitation and Arm 4 Integrated Group Interventions” for the Study of Cognitive Rehabilitation Effectiveness (SCORE).

Clients participated in 2 hours of group therapy plus 1 hour of group homework per week. Professionals with a variety of different backgrounds, including experienced occupational therapists and speech language pathologists, delivered the intervention.

All participants also received the standard of care, which included education (see Chapter 2) and symptom-based medical management consistent with the VA/DoD Clinical Practice Guideline for the Management of Concussion/MTBI.<sup>1</sup>

Syllabus session callouts refer to those locations in the Part IV: Client Manual for Arm 3 Traditional & Arm 4 Integrated Cognitive Group Interventions.

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<sup>1</sup> Department of Veterans Affairs, Department of Defense. The Management of Concussion/mTBI Working Group. (2009). VA/DoD Clinical Practice Guideline for the Management of Concussion/MTBI. Version 1.0. Washington, DC: The Office of Quality and Performance, VA, & Quality Management Directorate, United States Army MEDCOM.

# 1: Goal Setting

## Session 1: Goal Setting

<b>Topic: Goal Setting</b>			
<b>Session 1 Objectives: (50 minutes)</b>			
<input checked="" type="checkbox"/>	<b>Lecture topic</b>	<b>Notes</b>	<b>Time Allotted</b>
	Discuss the component/s of a successful goal.	Refer to <i>Goal Setting, Creating SMART Goals</i> and <i>SMART Goal Example</i> .	5 Min
	Review long- and short-term goals.		
	Discuss the benefits of writing goals.	Refer to <i>Benefits of Setting Goals</i> .	20 Min
	Present goal-setting case study.	Refer to <i>Case Study Specialist Smith</i> and <i>Are these good goals?</i>	20 Min
	Identify areas where goals need to be set.		
	Identify weak areas of pre-set goals.		
	<b>Homework:</b> Write two to three personal goals for self.	Refer to <i>Setting Personal Goals</i> .	5 Min

## Session 2: Analyzing Goals

<b>Topic: Goal Setting</b>			
<b>Session 2 Objectives (50 minutes)</b>			
<input checked="" type="checkbox"/>	<b>Lecture topic</b>	<b>Notes</b>	<b>Time Allotted</b>
	Discuss homework.	Refer to <i>Setting Personal Goals</i> Homework from Session 1.	15 Min
	Analyze personal goals to ensure important components are included.	Refer to <i>SMART Goal Checklist</i> .	
	Share goals, if desired.		
	Practice setting personal goals.	Refer to <i>Setting Short-Term Goals</i> .	20 Min
	Both long and short-term	Extra Clinician Reference: <i>Goal-Plan-Review</i> can be used to set steps for goals.	
	Review tips to track goals on a daily basis (key points listed below).	Refer to <i>Keep Your Eye on the Prize</i> and <i>Written Goal Formatting Examples</i> .	15 Min
	Write goals down		
	Post goals		
	Make necessary modifications regularly		
	High tech tracking		

## 2: Sustained Attention


### Session 1: What Is Attention?

<b>Topic: Staying Focused Sustained and Selective Attention</b>			
<b>Session 1 Objectives (50 minutes)</b>			
<input checked="" type="checkbox"/>	<b>Lecture topic</b>	<b>Notes</b>	<b>Time Allotted</b>
	Review types of attention with examples.	Refer to <i>What is Attention?</i>	10 Min
	Sustained		
	Selective		
	Alternating		
	Divided		
	Introduce internal and external distractors.	Refer to <i>Internal/ External Distractions Diagram.</i>	20 Min
	Identify Specialist Smith's areas of breakdown and solutions	Refer to <i>Specialist Smith Case Study, Reducing Distractions, and Optimizing Attention</i> for solution ideas.	15 Min
	<b>Homework:</b> Identify individual areas of attention breakdown and solutions		5 Min

## Session 2: Reducing Distractions

# Topic: Staying Focused Sustained and Selective Attention

### Session 2 Objectives (50 minutes)

<input checked="" type="checkbox"/>	Lecture topic	Notes		Time Allotted
				
	Review homework from Session 1.	<b>Homework:</b> Reducing Distractions		15 Min
	Compare various styles of application between group members.	Refer to <i>Optimizing Attention</i> (in Session 1) for examples.		
	<b>Activity:</b>	Refer to <i>Distractions Log</i> .		20 Min
	Instruct client to fill out attention lapse log during exercise.	Play one or more instructional videos (not included) totaling 10 to 15 minutes.		
	Review strategies that can be used to promote maintaining focus examples.	Refer to <i>Optimizing Attention</i> in Session 1 during lectures.		
	Sitting in front of class			
	Taking notes			
	<b>Metacognition:</b> Discuss client performance and distractibility.	Refer to <i>Distractions Log</i> .		15 Min

## 3: Memory and Learning

### Session 1: Memory Strategies

<b>Topic: How We Remember &amp; Why We Forget Memory and Learning</b>			
<b>Session 1 Objectives (50 minutes)</b>			
<input checked="" type="checkbox"/>	<b>Lecture topic</b>	<b>Notes</b>	<b>Time Allotted</b>
	Discuss the importance of memory and learning and how it can affect you daily.	Refer to <i>Effects of Memory and Learning Difficulties</i> .	5 Min
	Identify strategies that can improve memory and learning.	Refer to <i>Internal Memory Strategies</i> .	
	Introduce case study and identify areas in which he is experiencing difficulty with memory and attention.	Refer to <i>Specialist Smith Case Study</i> .	20 Min
	Allow patients to come up with individual strategies or strategies learned in previous sessions.	Discussion	
	Introduce specific strategy PQRST/SQ3R.	Refer to <i>PQRST/SQ3R</i> .	20 Min
	Discuss the strengths of PQRST/SQ3R.		
	Present the steps of PQRST/SQ3R.		
	<b>Homework:</b> Provide reading to apply PQRST/SQ3R.	Refer to <i>Global Warming</i> reading activity in Session 2.	5 Min



## Session 2: Global Warming and PQRST/SQ3R

<b>Topic: How We Remember &amp; Why We Forget Memory and Learning</b>				
<b>Session 2 Objectives (50 minutes)</b>				
<input checked="" type="checkbox"/>	<b>Lecture topic</b>		<b>Notes</b>	<b>Time Allotted</b>
	Review homework		Refer to <i>Global Warming Reading Activity, Quiz and Answer Key</i> .	15 Min
		Present quiz for comprehension of materials.		
		Compare various styles of application and modifications of that system between group members.		
	Discuss how this strategy may be applied in daily and future tasks.		Refer to <i>PQRST/SQ3R Project Guidelines Example</i> .  Refer to <i>Construction Guidelines Using PQRST/SQ3R</i> .	15 Min
		Reading textbooks, manuals, important articles, research, proposals, extended outlines, etc.		
	Discuss modifications and adaptations to PQRST to make it more individualized.		Refer to <i>Pros and Cons of PQRST/SQ3R Methods</i> .	20 Min
		Identify reasons it is difficult, time consuming.		
		Identify pairing other internal strategies (visualization, association).		

**Answer key: global warming quiz**

<b>Global Warming Quiz</b>	
1	What does the acronym GHG stand for? <i>Greenhouse gases</i>
2	What is the term used to describe the process of gases trapping heat? <i>Greenhouse effect</i>
3	Which gas is currently considered responsible for most of the warming? <i>Carbon dioxide (CO<sub>2</sub>)</i>
4	Name another type of gas that traps heat in the atmosphere. <i>Nitrous Oxide</i>
5	What is another term used to describe global warming? <i>Climate change</i>
6	When was the term “greenhouse effect” first labeled? <i>1824</i>
7	What does IPCC stand for? <i>International Panel on Climate Change</i>
8	Since 1910, how many glaciers has Montana’s Glacier National Park lost? <i>150-27=123</i>
9	Which animal has decreased from 32,000 breeding pairs to 11,000 in the past 30 years in Antarctica? <i>Adelie Penguins</i>
10	What does the term “bleaching” mean? <i>Die off of coral reef in response to stress</i>
11	The government has been looking at certain areas to decrease GHG emissions. What is the term for the areas they are looking at controlling? <i>Wedges</i>
12	What is carbon sequestration? <i>The process of emissions being trapped and stored underground</i>
13	List three ways that emissions can be decreased. <i>Change in vehicle fuel economy, increase wind power, increase solar power, biofuels, natural gas, carbon sequestration, increase in plants and trees for absorption, other</i>
14	In your own words, explain what the article discusses about possible future weather conditions due to global warming. <i>Increases in storms and hurricanes followed by increases in floods and droughts.</i>
15	In your own words, explain how global warming will affect the future of plants and wildlife. <i>Affects breeding and living conditions in arctic areas, causing animals to move to cooler areas, changing habitats. Increase in migration; changes in habitat may cause natural cycle to become extinct (examples: foxes, butterflies, penguins, spruce bark beetle).</i>

# 4: Planning and Organization

## Session 1: Planning and Problem Solving

<b>Topic: Mission Ready Planning &amp; Organization</b>			
<b>Session 1 Objectives (50 minutes)</b>			
<input checked="" type="checkbox"/>	<b>Lecture topic</b>	<b>Notes</b>	<b>Time Allotted</b>
	Introduction of organization, time management and planning with groups (e.g., family, office, organizations/clubs)	Refer to <i>Importance of Planning, Time Management and Organization</i> .	10 Minutes
	Discuss importance of organization and planning.		
	Identify organization and planning Strategies.		
	Discuss how organization and planning for groups might differ when compared to organization and planning for individuals.		
	<b>Activity:</b> Members of group will role play as a manager/leader of a Platoon organizing and planning for a convoy from Fort Sam Houston to Fort Hood	Refer to <i>Preparing to Haul Medical Supplies to Fort Hood</i> (client manual).  Refer to <i>Goal-Plan-Review</i> .	25 Minutes
	Review performance on activity	Discussion	10 Minutes
	Identify strengths and weaknesses of group organization and planning		
	Present homework and discuss expectations	Refer to <i>Problem Solving Homework: Using the T-Account Method</i>	5 Minutes

## Session 2: Case Studies, Planning, & Tips

<b>Topic: Mission Ready Planning and Organization</b>			
<b>Session 2 Objectives (50 minutes)</b>			
<input checked="" type="checkbox"/>	<b>Lecture topic</b>	<b>Notes</b>	<b>Time Allotted</b>
	<b>Homework:</b> Problem-solving homework		10 Min
	<b>Activity:</b> Specialist Smith case study (motor pool)	Complete <i>Case Study Exercise</i> .	30 Min
	Use Specialist Smith case study to help with group exercise.	Refer to <i>Case Study Specialist Smith, Goal-Plan-Review, and Problem Solving Homework: Using the T-Account Method</i> .	
	<b>Review:</b> Performance on group activity	Refer to <i>Tips to Help If You Have Problems with Planning, Time Management and Organization</i> .	10 Min
	Discuss uses of time management strategies and individual applications.		

## Case study exercise

**Instructions:** The client's assignment is to design a system to manage the duties for the maintenance of the motor pool vehicles. Refer to the Specialist Smith case study.

Client may use the T-Account method or Goal-Plan-Review techniques.

### 1. Factors for clinician to consider:

- Has the service member integrated all of the pertinent information into a solution?
- Has the service member employed any attention and memory compensatory strategies learned in SCORE?

### 2. Questions to ask if the group exercise is not progressing:

- Does this system need to be visible for all workers in the motor pool?
- What maintenance tasks will you need to track?
- Is there a time frame involved when tracking maintenance?
- Who will be responsible (i.e., just you)?
- Where should you place this tracking mechanism?

# 5. Prospective Memory and Assistive Technology

## Session 1: The Memory System

<b>Topic: Remembering to Remember Prospective Memory and Assistive Technology</b>			
<b>Session 1 Objectives (50 minutes)</b>			
<input checked="" type="checkbox"/>	<b>Lecture topic</b>	<b>Notes</b>	<b>Time Allotted</b>
	Defining the types of memory	Refer to <i>The Memory System</i> .	5 Min
	Sensory		
	Short-term (working memory)		
	Long-term		
	Prospective memory definition	Refer to <i>Prospective Memory Definition</i> .	
	Review memory strategies (external/compensatory strategies)	Refer to <i>External Memory Strategies, including Assistive Technology</i>	10 Min
	Notebook, calendar, checklists		
	Electronic organizer, computer		
	All other options (tape recorder, alarms, timers, watch with beeper, medication dispenser, highlighter)	Refer to <i>Prospective Memory, Environmental Modification</i>	
	No tech (environmental modification)		
	Group use Specialist Smith Case Study to identify prospective memory problems	Refer to <i>Specialist Smith Case Study</i> .	10 Min
	Group identify potential basic memory strategies that Specialist Smith Case Study can use to help with identified problems		15 Min
	<b>Homework:</b> Present homework and discuss expectations	May refer to <i>External Memory Strategies, including Assistive Technology</i>	10 Min
	<b>Homework:</b> Implement one new memory strategy (from <i>External Memory Strategies, including Assistive Technology</i> ) or initiate changing strategies currently used to be more efficient.		

## Session 2: Prospective Memory Exercise


<b>Topic: Remembering to Remember Prospective Memory and Assistive Technology</b>			
<b>Session 2 Objectives (50 minutes)</b>			
<input checked="" type="checkbox"/>	<b>Lecture topic</b>	<b>Notes</b>	<b>Time Allotted</b>
	<p>Give list of tasks/activities that must be completed prior to end of treatment session.</p> <p>There are eight tasks. Divide tasks among group members, so group members have different tasks to remember.</p> <p>Clients will be instructed to remember to complete these tasks, using external memory strategies.</p> <p>At the same time, the therapist will lead discussion on a topic (for instance, the pros &amp; cons of technology for learning).</p>	<p>Refer to <i>Prospective Memory Exercise</i> Client manual, prospective memory strategies (group).</p> <p>Play one or more power point presentations totaling 15-20 minutes.</p>	25 Min
	<b>Homework:</b> Discuss completed homework assignment		15 Min
	Clients will review their proficiency in " <i>Prospective Memory Exercise</i> " task. Discuss strategies and functional application.		10 Min

### Prospective Memory Exercise

1. When the clock strikes half past the hour, please tap your pen several times.
2. Please throw something in the room's trash can at \_\_\_ minutes past the hour.
3. Please open and close your SCORE manual, two times, at \_\_\_ minutes past the hour.
4. Please stretch your arms, in sitting, at \_\_\_ minutes past the hour.
5. Please stand up at \_\_\_ minutes past the hour.
6. Please scratch your left shoulder at \_\_\_ minutes past the hour.
7. Please readjust your chair at \_\_\_ minutes past the hour.
8. Please step outside the room for less than 1 minute at \_\_\_ minutes past the hour.


## 6. Alternating Attention

### Session 1: What Is Attention?

<b>Topic: Juggling Duties Group</b>				
<b>Alternating Attention</b>				
<b>Session 1 Objectives (50 minutes)</b>				
	Lecture topic	Notes		Time Allotted
			For this session, you will need a deck of cards (included) for each client.	
	<b>Review:</b> Types of alternating and divided attention with examples	Refer to <i>What is Attention?</i>	5 Min	
	Sustained			
	Selective			
	Alternating			
	Divided			
	<b>Activity:</b> Alternating attention task Card sorting	Refer to <i>YES/NO Trivia and Deck of Cards</i> .  Strategies: repeating, writing it down, visualizing the letter	20 Min	
	Discuss client performance and distractibility with speed challenge.			
	Discuss difference between divided and alternating attention with difficulty of task.			
	Discuss strategies that would be helpful during this activity.			
	Introduce case study; identify Specialist Smith's areas of breakdown.	Refer to <i>Specialist Smith Case Study</i>	10 Min	
	<b>Review:</b> Environmental strategies	Refer to <i>Optimizing Attention</i> .	10 Min	
	<b>Homework:</b> Client to identify individual areas of breakdown and solutions	Refer to <i>Specialist Smith Juggling Duties</i> in Session 2.	5 Min	




**Answer key: YES/NO trivia questions and a deck of cards**

	<p><b>YES/NO Trivia Answer Key</b> <b>Alternating and Divided Attention Task</b></p>		
<p>Ensure each client has a deck of cards.</p>			
<p><i>Please answer each of the following questions with a Yes or No. At the same time, I will give you instructions on how to separate this deck of cards.</i></p>			
<p><b>1. Start with cards facing down. Turn over cards one at a time.</b></p>			
<p><b>2. If the card you turn up has the letter <u>e/a/n/ I/h</u> (select one) place it face down in a separate pile. If you need to, you may stop sorting while you respond to questions.</b></p>			
<ul style="list-style-type: none"> <li>• E in the name: ace/one, three, five, seven, eight, nine, ten, and queen (32 cards)</li> <li>• A in the name: ace and jack (8)</li> <li>• N in the name: one, seven, nine, ten, queen, and king (24)</li> <li>• I in the name: five, six, eight, nine, and king (20)</li> <li>• H in the name: three and eight (8)</li> </ul>			
<p>This activity can be graded by separating into suits (spades, aces, clubs, hearts), reds vs. black, ascending/descending order, etc.</p>			
<p>Continue activity until client has completed at least 10 minutes, you may repeat the sorting order.</p>			
	<b>Questions</b>	<b>Answer</b>	<b>Response</b>
1	Is today <u>Thursday</u> (fill in day of the week)?	Y	
2	Is the year 2011?	Y	
3	Is it night time?	N	
4	Are we in Houston?	N	
5	Are there 256 days in a year? <i>365</i>	N	
6	Is this an Air Force Base?	N	
7	Did you have breakfast?	Y/N	
8	Do you like playing sports?	Y/N	
9	Are the Spurs your favorite sports team?	Y/N	
10	Have you been to the dining facility today?	Y/N	

	Questions	Answer	Response
11	Is it rainy outside?	Y/N	
12	Did you drive here today?	Y/N	
13	Is the Fourth of July Holiday coming up?	Y/N	
14	Do you enjoy MREs?	Y/N	
15	Is today your birthday?	Y/N	
16	Are there 5,280 feet a mile?	Y	
17	Are there 3 quarts in a gallon?	N	
18	Does mixing the colors yellow and blue make purple?	N	
19	Is a group of fish called a pod?	N	
20	Does $14 + 17$ equal 31?	Y	
21	Is $\pi$ (Pi) a term used in mathematics?	Y	
22	Are there 12 oz in a lb? <i>16</i>	N	
23	Was Buzz Aldrin the first man to walk on the moon?	N	
24	Do you have your ID card with you?	Y/N	
25	Are there 3 feet in a yard?	Y	
26	Including the end zone, are there 120 yards on a football field?	Y	
27	Are there 30 miles in a marathon? <i>26.2</i>	N	
28	Is a baker's dozen twelve? <i>13</i>	N	
29	Are opossums part of the marsupial family?	Y	
30	Is a group of lions called a pack? <i>pride</i>	N	
31	Does an average baby weigh 8 lbs? <i>7.5</i>	N	
32	Is Camaro made by Chrysler? <i>Chevy</i>	N	
33	Is Benjamin Franklin on the 100 dollar bill?	Y	
34	Was China recently afflicted with a tsunami?	N	

	Questions	Answer	Response
35	Is salt removed from water in the process of desalination?	Y	
36	Is a president's term in office 5 yrs? <i>4</i>	N	
37	If you can run 2 miles in 13 minutes, will it take you 36 minutes to run 4? <i>26</i>	N	
38	A brief you will be attending lasts 1 ½ hrs. Will it end at 1145 if it starts at 0930? <i>1100</i>	N	
39	Is the voting age 21? <i>18</i>	N	
40	Is New York City in the West Coast time zone?	N	
41	Is New Orleans at sea level? <i>Below sea level</i>	N	
42	Are Representatives to Congress elected to 2-year terms?	Y	
43	Are there 100 members of the U.S. Senate?	Y	
44	Do state governors control the National Guard in times of peace?	Y	
45	Does the U.S. Coast Guard operate as part of the Army during war time? <i>Navy</i>	N	
46	Does "Semper Fi" means always faithful? <i>Marines</i>	Y	
47	Was the Army the first branch of the U.S. Armed forces to be created? <i>June 14, 1775</i>	Y	
48	Are there 6 fighting branches in the US Military? <i>5</i>	N	
49	Does the Army have the motto "This We'll Defend"?	Y	
50	Are the Blue Angels part of the Air Force? <i>Navy</i>	N	

## Session 2: Juggling Duties

Topic: Juggling Duties Group Alternating Attention				
Session 2 Objectives (50 minutes)				
<input checked="" type="checkbox"/>	Lecture topic	Notes		Time Allotted
			For this session, you will need a deck of playing cards (not included) for each client.	
	<p><b>Homework:</b> Discuss completed homework assignments.</p> <p>Compare various styles of application between group members.</p>	Refer to <i>Specialist Smith Juggling Duties</i> ,		15 Min
	<p><b>Activity:</b> Card sorting, alternating attention task</p> <p>Remind client to use a strategy to remember task.</p> <p>Discuss client performance and distractibility with speed challenge.</p> <p>Discuss application of attention strategies to improve performance.</p>	Refer to <i>YES/NO Trivia and Deck Cards</i> and <i>Answer Key</i> in Session 1.		20 Min
	<p>Generalization of this activity</p> <p>Identify group members' problems with doing multiple tasks and problem solutions.</p> <p>Discuss limitations of alternating and divided attention and alternatives.</p>	Refer to strategies in <i>Optimizing Attention</i> in Session 1 and <i>Everyday Alternating Attention Tasks</i> , for examples.		15 Min

## Appendix A: Acronyms

DVBIC	Defense and Veterans Brain Injury Center
PQRST	preview, question, read, state/summary, and test
SCORE	Study of Cognitive Rehabilitation Effectiveness
SMART	Specific, Measurable, Attainable, Realistic, Timely (goals)
SQ3R	survey, question, read, recall or recite, and review
TBI	traumatic brain injury