

Goal-Oriented Attentional Self-Regulation (GOALS) Treatment for Cognitive Rehabilitation of Veterans with TBI

Alissa Murphy, MEd

Faculty Advisor: Ethan Kristek, PhD, CCC-SLP

Department of Communication Disorders and Deaf Education

Abstract

GOALS is an evidenced-based treatment method for cognitive rehabilitation that targets executive functioning by focusing on two main components: regulation of distractibility and the application of learned skills to self-made goals. GOALS treatment approach has been implemented to assist veterans with traumatic brain injury (TBI) and their resulting cognitive-communication disorders.[4,7,8,9,10]

Overview of Veterans with TBI

- Traumatic brain injury (TBI) is a “structural injury and/or physiological disruption of brain function” from an external force. Resulting symptoms of TBI may be characterized as somatic, cognitive dysfunction, or changes in emotion and behavior.[3]
- Blast-related TBI is the most prevalent mechanism of injury for post-9/11 deployed veterans.[6]
- More service members are surviving injuries due to improvements in protective gear, battlefield medicine, and acute trauma care.[11]
- Around 80% of military-related TBIs are mild, which have a better prognosis.[11]
- PTSD, depression, anxiety, auditory dysfunction, insomnia, neck and back pain, other pain, headache, and substance use disorder are common comorbidities among veterans with TBI [6], which may complicate recovery.[2,5,11]

Cognitive-Communication Deficits After TBI

- | | | |
|-----------------|-------------------|------------------------|
| • Attention | • Problem-Solving | • Social Communication |
| • Concentration | • Judgement | • Gesturing |
| • Memory | • Decision-Making | • Word-finding |
| • Organization | • Listening | • Reading |
| • Planning | • Speaking | • Writing |

[1,2]

- Cognitive-communication disorders are significantly associated with TBI severity, comorbidities, and co-occurrence of two or more comorbidities.[6]
- Attention is the foundation of other cognitive processes, so problems in attention are likely to compound other processes, like executive functions and memory.[2]

GOALS Training

Key Components:

1. Mindfulness-based attention-regulation training
 - Regulation of distractibility
 - STOP-RELAX-REFOCUS (SRR) metacognitive strategy
2. Goal management
 - a. Identify realistic and functional goal (e.g. following a schedule, planning a meal or a trip)
 - b. Divide information into relevant and nonrelevant
 - c. Work to selectively maintain relevant information while letting go of non-relevant information

TABLE 2 Goal-oriented attentional self-regulation training session outline

Session 1	Applied attention regulation Applied problem solving	Introduction and overview
Session 2		Absentmindedness and mindfulness
Session 3		Progressive information maintenance: Mindfulness exercises
Session 4		Goal selection: Options for group and individual projects
Session 5		Breaking down projects into subtasks, creating timeline. Apply to group and individual projects
Session 6		Execution and dealing with procrastination
Session 7		Staying on tasks, error correction, and adjustments
Session 8		Project progress review and adjustments
Session 9		Individual project presentation
Session 10		Group project presentation and graduation celebration

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Program Outline:

- Ten 2-hour sessions of group-based training (2-5 patients and 2 instructors per group)
- 3 individual 1-hour training sessions
- Approximately 20 hours of home practice over 5 weeks- during anxiety-provoking real-life situations, participants log successes and failures in applying SRR
- Training progresses to more challenging situations, maintaining increasing amounts of information, and maintaining information during distractions.[4,7,8,9,10]

Results of GOALS Training

1. **Success for veterans with chronic mild-severe TBI more than 6 months post-injury:**
 - Significant improvement from baseline on: overall attention/executive function; maintenance and sequencing/switching of attention; working memory; learning and memory; mental flexibility; inhibition; delayed recall; planning; and self-monitoring
 - Self-reported improvement in daily lives including mood and emotional regulation [8]
2. **Maintenance of improvements for veterans 6 months or more after GOALS training:**
 - Maintenance of most post-GOALS improvements
 - Continued improvement in community participation
 - Self-reported improvements in daily functioning, including knowledge of strengths/weaknesses and managing daily tasks at work/home/school
 - Self-reported continued use of strategies to regulate attention [9]
3. **Success for Veterans with comorbid PTSD and mild TBI:**
 - Significant improvement from baseline on: overall complex attention/executive function; sustained attention; sequencing/switching of attention; working memory; learning and memory; inhibition; delayed recall; planning; execution; self-monitoring
 - Significant improvement of emotional self-regulation
 - Self-reported improvements in daily lives, including decrease in PTSD symptoms [4,10]

Conclusion and Clinical Implications

GOALS training may improve cognitive functioning, functional performance, and emotional distress and regulation.[4,7,8,9,10] Improvements may be meaningful and long-lasting.[9]

Improvements of cognitive-communication deficits can positively impact independence, socialization, employment and academic opportunities. [1,6,8] Speech-language therapy is an integral part of a holistic and multidisciplinary rehabilitation to improve quality of life for veterans who have suffered TBI.[1,2]

References

