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Cognitive Rehabilitation: Current Evidence-Based Practices

Introduction

In the realm of evidence-based cognitive interventions, there is a lot of information that is revolutionizing cognitive rehabilitation for a range of professionals. Occupational therapists in particular have a vast amount of knowledge to draw from. Evolving technology, continued advances in the fields of rehabilitation and neuroscience, and changing intervention practices all allow OTs to effectively treat patients with cognitive disorders.

In some settings, therapists may feel there are blurred lines between their role in cognitive rehabilitation and the scope of practice of other professionals related to cognition. It's important for therapists to remember that all cognitive rehabilitation should be connected back to functional performance and skill development. This is not only how OTs can differentiate their services from those of other professionals, but this is also the main way OTs operate across various practice areas. Cognitive rehabilitation from a trained occupational therapist can support patient safety, independence, recovery from injury, and improve quality of life for individuals with neurocognitive disorders.

Section 1: Introduction to Cognitive Rehabilitation

References: 1, 2, 3, 4

Cognitive rehabilitation therapy (CRT) is defined as a functionally-oriented treatment provided to individuals with cognitive deficits. Cognitive rehabilitation can be used to assist patients with conditions such as traumatic brain injury (TBI), stroke, and multiple sclerosis (MS). Since cognition impacts a breadth of functional abilities, CRT may focus on nearly any skills. Most commonly, cognitive rehabilitation therapy addresses executive functions such as organization, problem-solving, memory, task initiation, time management, prioritization, attention, self-perception, flexible thinking, and insight. However, CRT may also

encompass visual perception, personal safety, independence in ADLs and IADLs, social interaction, and overall quality-of-life.

CRT is closely related to treatments such as Cognitive Behavioral Therapy (CBT) and cognitive remediation, but there are slight variations between each. Individuals who receive cognitive rehabilitation therapy address impairments in their cognitive abilities, such as difficulty with short-term recall. People who participate in cognitive remediation focus on similar skills, though their deficits are due to psychiatric conditions such as bipolar disorder, depression, and schizophrenia. CBT, on the other hand, focuses more on the behavioral component of cognition by modifying negative emotions, thought patterns, and actions. It's not uncommon for individuals to receive more than one of the aforementioned treatments depending on the nature of their condition.

In order to understand what cognitive rehabilitation looks like now, occupational therapists should be aware of how it was first developed and the transformation it has undergone over the years. Cognitive rehabilitation first came about as a way to treat World War I soldiers who returned from combat with traumatic brain injuries. The first cognitive rehabilitation programs in the early 1900s were quite rudimentary and did not even address foundational skills such as attention and memory. Literature discussed the program's evaluation process, which analyzed the patient's neurocognitive function, adaptive skills, and intact cognitive abilities that could help with treatment. Models set forth during that time focused on strengthening a patient's existing skills while teaching them ways to compensate for deficits.

While present-day cognitive rehabilitation has some similarities to the modalities offered in the early 1900s - mostly related to functional skill-building and skill carryover - this type of treatment has evolved quite a bit since then. Once professionals began using CRT to help populations other than veterans, these programs mostly took the form of computer training focused on rote memorization. As a result, CRT was mainly offered in clinics and hospitals that had

the technology to support such treatment. Since then, cognitive rehabilitation therapy became more holistic with a greater emphasis on real-world skills and community-based programming. Presently, cognitive rehabilitation therapy is most effective when it's provided along the full continuum of care – from acute settings where individuals are first seen after an injury or chronic illness is diagnosed to outpatient clinics where patients resume treatment in the community to home settings if individuals' conditions cause them to be homebound. Since many individuals can benefit from cognitive rehabilitation therapy, this intervention is provided in nearly every setting where OTs are found. However, cognitive rehabilitation therapy has advantages and disadvantages when provided in various settings.

There are some location-specific distinctions within CRT programs that therapists should be aware of. Any CRT programs provided in hospitals, skilled nursing facilities, and other institutional settings are typically artificial in nature. This is because many of these healthcare facilities do not have the resources to allow patients into the community as part of CRT intervention. As a result, such programs are typically computer-based and take place within the clinic, which is considered only partially effective. Even so, these environments are often highly controlled, so CRT can be implemented exactly as the therapist intends. These two factors may balance themselves out and lead to satisfactory outcomes. Community-based CRT programs, on the other hand, are provided in real-world contexts that allow therapists to directly address and modify skill carryover. As a rule, they are considered more effective than clinic-based, computer-based programs due to their emphasis on functional application. Although, being in a public setting means therapists have many more variables to consider before CRT even starts and patients must deal well with the unpredictable nature of such locations. These unknown aspects of treatment (in addition to the therapist's ability to use this to encourage patient growth) do have an impact on the effectiveness of such care. This is why therapists must take location into consideration when providing CRT. Some patients may do better with

unpredictability than others (e.g. those with impulsive behaviors or those who are still working on social skills), so it is up to the therapist's judgment to determine who is better served by each environment.

Cognitive Rehabilitation Therapy Approaches

There are two types of cognitive rehabilitation therapy: restorative CRT and compensatory CRT. As you might imagine, restorative CRT is intended for individuals who have the capacity to regain or improve cognitive functions that were impacted due to an injury or chronic condition. Individuals who participate in restorative cognitive therapy will often receive treatments such as memory exercises, attention training, and other interventions focused on executive functioning and other cognitive skills. The aim of restorative CRT is to encourage neuroplasticity so that the brain becomes better able to perform and organize cognitive tasks.

The other type of CRT is compensatory CRT, which is intended for individuals who suffered an injury or are living with a condition that is not expected to improve. As part of compensatory CRT, individuals are trained in a range of tools that bridge the gap between their cognitive deficits and the tasks they must complete on a regular basis. Compensatory CRT tools may include assistive devices such calendars, speech recognition software, phone alarms, digital reminders, memory aids, and more. Compensatory CRT may also consist of strategies such as keeping an organized environment to better help with time management and the repetition of information to improve recall. In some cases, compensatory CRT takes the form of long-term training for individuals who want to function despite lasting cognitive deficits. However, compensatory tools and strategies can also serve as temporary solutions for individuals who are working to build cognitive skills through restorative CRT.

Components of Cognitive Rehabilitation Therapy

Regardless of what diagnosis the patient receiving cognitive rehabilitation therapy has and what approach the therapist utilizes, there are four major aspects of treatment. Cognitive rehabilitation therapy consists largely of education, process training, strategy development, and functional application.

Education mostly comes in the form of instruction and coaching for patients, caregivers, and anyone else involved in their care. The aim of this education is to increase a patient's insight by telling them how the brain works, what part(s) of their brain may have been damaged, and the functional impact this has on their life. Insight is essential for a few reasons. Firstly, it is a cognitive skill that is often addressed in CRT. In addition, insight helps improve patient engagement and increases an individual's accountability for what takes place during the therapy process. Therefore, patient education is not only a therapist's duty, but it also helps improve outcomes and allows patients to adjust more easily to their condition.

Process training is another aspect of CRT, which focuses on skill restoration or the implementation of compensatory strategies. Therapists do this by targeting specific cognitive skills and repetitively practicing them. Over the course of continual practice - first in the clinic and shortly after in real-life contexts - a person's brain cells communicate with one another more and more. This ongoing communication helps the cells form pathways that make cognitive processes more automatic. With automaticity comes familiarity, which allows someone to complete tasks seamlessly and efficiently. This saves a significant amount of mental energy, so skill restoration is the ideal outcome for process training.

Strategy training, on the other hand, involves training patients how to compensate for their deficits. As mentioned above, it's not uncommon for CRT to take a combined approach with both compensatory and restorative aims. For this reason, process training and strategy training both have an equal place in CRT programs. Therapists most often utilize external devices for strategy training

because, again, this frees up mental energy to focus on skills the person is able to complete.

Lastly is **functional application** or functional activities training. This aspect of CRT combines all the previous information to help someone demonstrate real-life improvements. Once someone progresses enough in terms of their insight, skill development, and use of external resources, they can practice activities as they normally would. Therapists must remember that it's less about the task and more about the skills needed to successfully complete the task. This is how patients move from making progress in the clinic to making progress in the places they spend the most time.

These aspects of treatment are most important for an occupational therapist providing CRT. This type of intervention is similar to other OT interventions in that it also involves standardized assessments, goal-setting, patient support, and an emphasis on transferring skills across contexts. Therapists should also carefully address termination with patients participating in CRT. Ending the therapy plan of care can be difficult for individuals who have built a strong connection with their therapist over a prolonged period of time.

However, other rehabilitation professionals may approach CRT slightly differently. This is why cognitive rehabilitation therapy is considered most effective when provided from a multidisciplinary lens. Traditional occupational therapy plans of care should be collaborative processes, but goals for cognitive rehabilitation therapy should ultimately be finalized by the OT. This is especially important for patients with cognitive deficits. It may be difficult for individuals (especially those who lack insight and future planning) to have the same perspective as their therapist.

Multidisciplinary treatment is also important due to the focus that each profession has within the scope of cognitive rehabilitation therapy. For example, OTs emphasize functional performance and skill development, while other cognitive rehabilitation professionals may look to standardized assessment scores as the

primary means of improvement. Current research makes it difficult to discern the exact efficacy of multidisciplinary CRT programs. As a result, experts recommend all therapists offer detailed documentation regarding targets, interventions, and materials used. Since there is such variation in the resources at clinics' disposal, clear program descriptions can guide other clinicians hoping to create similar programming.

Section 1 Personal Reflection

How might cognitive rehabilitation provided by an OT differ from cognitive rehabilitation offered by a speech-language pathologist?

Section 1 Key Words

Process training - An aspect of CRT that focuses on continual practice of restorative or compensatory techniques to aid in cognitive deficits

Strategy training - An aspect of CRT that involves therapists training patients in the use of compensatory strategies to make up for short-term or long-term cognitive deficits

Section 2: Occupational Therapy Scope & Evaluation for Cognition

References: 5, 6, 7, 8, 9, 10, 11, 12, 13, 14

Before performing any cognitive rehabilitation, therapists should be aware of the American Occupational Therapy Association's stance on cognition and cognitive rehabilitation. There is a range of OT evidence that supports the value of cognitive skills to functional participation. One of the main ways OTs support cognitive health and function in patients is by using preferred occupations to improve

cognitive function and occupational performance. In this sense, OTs can view occupation as both a means and an end to cognitive skills.

An evaluation is the first part of the occupational therapy process for cognitive rehabilitation. Therapists can use an occupational profile, standardized assessments, and functional observation to assist in a cognitive evaluation. To emphasize OT's distinct value in the realm of cognitive rehabilitation, therapists should assess a patient's roles, regular occupations, and most-frequented contexts to grasp how cognition impacts their life. While OTs know this as a natural part of their scope of practice, third party payors and governing bodies have not always seen it that way.

Over the years, OTs experienced some difficulty providing justification (along with insurance coverage) for cognitive services. To receive such reimbursement, therapists must offer measurable data that demonstrates patients' improvements not only in rote cognitive tasks, but functional cognition. In 2014, the Centers for Medicare & Medicaid Services began including cognitive status within the Improving Post-Acute Care Transformation Act (IMPACT Act). This important step paved the way for OTs working in skilled nursing facilities and hospitals since clinicians in those settings frequently address cognition in their patients. There is a strong connection between cognitive impairments and length of stay in residential settings, Medicare service utilization, and long-term health outcomes. For this reason, Medicare and other payers now consider OTs as critical members of the care team for cognitive disorders and deficits.

Cognitive Assessments

Occupational therapists can utilize various standardized assessments to determine a patient's cognitive baseline in preparation for therapy. Some of these assessments were designed with certain populations or practice settings in mind so their characteristics are in line with those areas. For example, some of the below cognitive assessments are brief, making them ideal for acute rehab and

hospital settings where time is often limited. Other cognitive assessments are specifically for certain neurocognitive conditions such as traumatic brain injuries and dementia. When this is the case, it is often reflected in the assessment's name. However, most of these tools can be used to assess cognition in any patients. Some widely accepted and frequently used outcome measures for cognition include:

- Affective Test of Prosody (ATP)
    - This test measures emotional expression through speech and language. This skill can often be impacted by cognitive impairments.
- Allen Cognitive Levels (ACL)
- Assessment of Communication and Interaction Skills (ACIS)
- Assessment of Living Skills
- Assessment of Motor and Process Skills (AMPS)
- Boston Naming Test
    - This helps therapists assess cognition as it pertains to speech and language skills.
- Chessington OT Neurological Assessment Battery (COTNAB)
- Client-Oriented Role Evaluation
- Cognitive Adaptive Skills Evaluation
- Cognitive Assessment of the Elderly
- Cognitive Assessment of Minnesota (CAM)
- Cognitive Assessment Screening Test (CAST)
- Cognitive Competency Test (CCT)

- Cognitive Performance Test (CPT)
- Conceptual Level Analogy Test (CLAT)
    - The CLAT helps therapists understand a patient's abstract reasoning.
- Confusion Assessment Method for the ICU (CAM-ICU)
- Conners Continuous Performance Test
    - Therapists use this test to determine a patient's capacity for attention and concentration.
- Controlled Oral Word Association
- D2 Test of Attention
    - This test was initially developed to test visual attention related to a person's driving skills. However, it is now used to assess visual attention in a more general sense.
- Frontal Assessment Battery (FAB)
    - The FAB is used to help therapists differentiate between patients who have frontotemporal dementia and Alzheimer or another type of dementia.
- Glasgow Coma Scale (GCS)
- Gorham's Proverbs Test
    - This test is intended to offer information on a patient's abstract reasoning.
- Kitchen Task Assessment (KTA)
- Loewenstein OT Cognitive Assessment (LOTCA)
- Middlesex Elderly Assessment of Mental Status (MEAMS)

- Mini-Cog
    - The Mini-Cog is a screening test to help therapists identify early warning signs of dementia.
- Mini Mental Status Examination (MMSE)
    - This measure is commonly used in hospitals due to its brief nature and its lack of equipment requirements.
- Model of Human Occupation Screening Test (MOHOST)
    - This is traditionally a mental health assessment. However, since MOHOST gives therapists an idea of a patient's global functioning, it's also a great way to discern a patient's cognitive function across many occupational areas.
- Montreal Cognitive Assessment (MoCA)
    - This measure is commonly used in hospitals due to its brief nature and its lack of equipment requirements.
- Motor-free Visual Perceptual Test (MVPT)
    - Therapists use the MVPT to determine a patient's visuo-spatial skills. This particular assessment isolates visual perception and closely related skills from a patient's ocular motor abilities, so the MVPT offers a more accurate picture of visuo-spatial skills than some other vision tests.
- Neurobehavioral Rating Scale
- Occupational Self Assessment (OSA)
    - This assessment can be used for many reasons, but the OSA mainly offers a look into the patient's self-awareness and their insight, which is a foundational cognitive skill.

- Perceive Recall Plan Perform (PRPP)
    - The PRPP takes a look at the cognitive strategies a patient is currently using during their daily activities. This gives therapists a basis from which to determine their adaptive function and praxis before starting cognitive rehabilitation.
- Performance Assessment of Self-Care Skills (PASS)
- Rancho Los Amigos (RLA) Levels of Cognitive Functioning Scale
- Rey-Osterrieth Complex Figure (ROCF) Copy Test
    - The ROCF tests visuo-spatial skills, specifically in the realm of the ability to construct figures and patterns. In addition, this measure takes a look at a patient's visual memory over short and long periods of time.
- Rivermead Behavioral Memory Test (RMBT)
- Routine Task Inventory (RTI)
    - In addition to measuring a patient's behavioral function during chosen tasks, the RTI helps therapists understand the severity of an individual's cognitive deficits.
- Rowland Universal Dementia Assessment Scale (RUDAS)
- Safety Assessment of Function and the Environment for Rehabilitation (SAFER)
- Safety and Functional ADL Evaluation (SAFE)
- Severe Impairment Battery (SIB)

    - The SIB is intended for individuals with significant neurocognitive conditions such as late-stage dementia, and it takes major speech impairments into consideration.

- Scales of Cognitive Ability for Traumatic Brain Injury (SCATBI)
- Shipley-2 Abstract Test
    - This helps therapists determine a patient's ability for abstract reasoning.
- Stroke Unit Mental Status Exam (SUMSE)
- Test of Everyday Attention (TEA)
- The Abbreviated Mental Test Score (AMTS)
    - This measure is commonly used in hospitals due to its brief nature and its lack of equipment requirements.
- The Bay Area Functional Performance Evaluation-Task-Oriented Assessment (BaFPE-TOA)
- The Clock Drawing Test (CDT)
    - This measure is commonly used in hospitals due to its brief nature and its lack of equipment requirements. The Clock Drawing Test is also mainly intended to check for early warning signs of dementia.
- The Kettle Test
    - This performance-based test was designed for stroke patients and involves making two cups of tea in a kitchen setting. By having slight variations in the instructions for each task, therapists can understand where a patient's cognitive deficits lie.
- The Menu Task

    - The Menu Task is a brief, performance-based screening for functional cognition as it pertains to IADL engagement. This screening involves patients making three meal selections while following a written list of rules pertaining to the task and their behavior (e.g. they must not speak during the test).
    - This test has been determined as reliable and valid after comparison to the Trail Making Test, IADL scale, MoCA, and the Brief Interview of Mental Status.
- The Saint Louis University Mental Status Examination (SLUMS)
- The Short-Blessed Test
    - The Short-Blessed Test serves as a screening tool for individuals suspected to have dementia.
- Trail Making Test (TMT)
    - The Trail Making Test can be used on a range of diagnoses and gives therapists information about processing speed, cognitive flexibility, tracking, scanning, and more.
- Verbal Concept Attainment Test
    - As another test that assesses abstract reasoning, the VCAT verbally relays a large group of words to a patient, who must group similar words together.
- Wisconsin Card Sorting Test (WCST)
- Woodcock Johnson Test of Cognitive Ability

Manee et al. (2020) surveyed occupational therapists specializing in neurocognitive conditions around the world to determine their views regarding cognitive assessments. This study also took a look at how often OTs use

standardized assessments to measure cognitive function. Results showed that most therapists chose standardized assessments that focused on function rather than cognition alone. The most frequently chosen standardized measures among therapists were the Canadian Occupational Performance Measure (COPM), the MMSE, and the MoCA, used by 56.7%, 54.2%, and 45.5% of the sample respectively. In terms of non-standardized assessments, this study found that OTs tended mostly toward clinical observation (38.4%) and basic ADL assessments (34.1%). While there seemed to be prevailing themes regarding the specific outcome measures therapists used, providers reported a range of rationales for choosing them. There were some commonalities found between geographic areas in close proximity, yet this study showed major differences across the globe. This study and several others demonstrate a lack of standardization and universal best practices in the realm of cognitive rehabilitation. While the development of standardized assessments helps with these efforts, this is less relevant if therapists are not using them consistently.

Additional OT Assessments

Some other assessments may be used to glean other information about a patient's cognitive function. Tests pertaining to instrumental activities of daily living (IADLs) can offer a lot of information about someone's safety awareness, ability to handle emergencies, skills related to household management, and more. Some IADL assessments include the Kohlman Evaluation of Living Skills (KELS), Independent Living Skills Assessment, Assessment of Functional Living Skills (AFLS), and Life Skills Inventory. Although originally developed for use within inpatient psychiatric settings, the KELS has been confirmed as a valid and reliable measure with a range of populations who have both cognitive and psychiatric deficits (Rashidian et al., 2021).

A systematic review performed by Romero-Ayuso et al. (2021) found most of the IADL tests that pertain directly to cognition were related to meal preparation and

shopping. In addition, many of the outcome measures in this category were targeted toward individuals with dementia and acquired brain injuries (stroke, encephalopathy, and other non-congenital brain illnesses) rather than those with neuropsychological or behavioral health conditions. Performance-based assessments were the most efficacious due to the practical information they provided. Along with virtual reality-based tests, performance-based assessments were lauded for their ability to identify early warning signs of cognitive dysfunction. Many of the standard IADL assessments were found to be valid from an ecological standpoint.

It's also important to note most of the IADL tests included in this review were based on a paradigm associated with the Multiple Errands Test (MET). The MET is an assessment used to globally measure a patient's executive function. The Multiple Errands Test was initially developed for experimental use, but quickly became a clinical assessment tool with several variations (one for hospital use, a simplified version, a contextualized version, an upgraded version in a larger store, and a virtual option). The original MET was intended to be used in one of the patient's natural contexts within the community. Assessment tasks involve shopping with various degrees of difficulty – 6 are considered simple, 1 task is time-dependent, and 1 task is composed of 4 subtasks. The MET has been determined valid for individuals with dementia, Parkinson's disease, schizophrenia, acquired brain injuries including but not limited to stroke, and other neurological disorders (Shirley Ryan Ability Lab, 2023). As you can see, this format mimics many functional cognition tests therapists may use during the assessment process.

When used in combination with other outcome measures, ADL assessments are another type of measure that can help determine the functional impact of a person's cognitive deficits. Some examples include the Functional Independence Measure (FIM) scale and Klein-Bell ADL test. The FIM contains motor (FIMm) and cognitive (FIMc) subtests. All aspects of the FIM have been proven reliable and valid for use in the treatment of neurological disorders and other cognitive

conditions. The Klein-Bell extends beyond ADLs and includes other important aspects (such as emergency communication, elimination, and mobility). The Klein-Bell is considered limiting since it takes between one and three hours to administer, but it has been determined valid for use with cognitive deficits.

It can be difficult settling on the most appropriate cognitive assessment tools for patients. This is partly due to the wide breadth of assessment tools available to therapists. The selection process can be further complicated by the fact that cognition is such a formative, ever-changing skill that extends across the lifespan. However, OTs should keep in mind that, oftentimes, several standardized assessments are the key to getting a full picture of their patient's presenting concerns. Some may be more comprehensive in nature, while others may dive deeper into specific performance skills. For this reason, therapists should keep in mind that a well-rounded OT evaluation for someone with suspected cognitive impairments will cover all occupational areas in some way.

Section 2 Personal Reflection

We mentioned that comprehensive evaluations offer a look into a patient's function across all occupational areas. However, if a patient is referred to OT after being diagnosed with early-stage dementia, what evaluation aspects should their therapist prioritize?

Section 2 Key Words

Abstract reasoning **-** A cognitive skill made up of problem-solving, logical thinking, and pattern identification; abstract reasoning is also known as inductive and logical reasoning or non-verbal reasoning since this skill involves using specific scenarios to form generalized conclusions that are reasonably expected to be accurate

Section 3: Cognitive Rehabilitation Interventions

References: 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47

Cognitive rehabilitation can cover any of the following areas: virtual reality simulation to assist with task completion, environmental modifications, skill-building, functional practice, and the use of assistive technology to aid in compensatory strategies and remediation. As a whole, these treatment aspects are supported for the sake of cognitive rehabilitation. However, some evidence points toward specific modalities as being helpful for certain populations, cognitive factors, and other demographics.

For this reason, therapists should be able to appraise the evidence before using any interventions in this arena. Some research focuses on specific considerations for cognitive rehabilitation with various types of neurocognitive conditions. As long as they are reliable, these guidelines should be used to inform practice. In addition, research studies offer information as to the validity and reliability of cognitive rehabilitation modalities. Therapists should be able to review those studies, determine their real-world implications, and act accordingly when providing occupational therapy treatment for cognitive concerns.

A pertinent study to start off with is a level I review by Vas et al. (2023), which determined the efficacy of cognitive rehabilitation for those with mild traumatic brain injury as well as this type of programs' relevance to the occupational therapy practice framework. Literature dating back to 2008 was analyzed as part of the review and researchers found that cognitive rehabilitation had a globally positive impact on client factors, occupational performance, contexts, and occupation itself. Primarily, this systematic review demonstrates that occupational therapy clinicians have an important place in the realm of cognitive rehabilitation. This research also emphasizes how beneficial the foundational practice framework can be to the assessment process, treatment planning, and while monitoring long-

term functional progress. While therapists are advised to look to the framework for guidance when treating all patients, evidence specifically notes its importance here.

This research is directly in alignment with a statement piece from The American Journal of Occupational Therapy, which further supports the use of cognitive rehabilitation to enhance a patient's cognition in preparation for functional engagement. Literature from occupational therapy's professional organizations is an important guiding light for the practice, yet there are a range of other studies that lend more specific treatment information for certain diagnoses.

Specific Considerations and Best Practices

Traumatic brain injury (TBI) is one of the most common conditions that can benefit from cognitive rehabilitation. Experts state that some of the central aspects of cognitive rehabilitation for individuals with TBI include:

- Errorless learning training to assist with memory deficits
- Pragmatic language skills training
- Guidance as to appropriate social behavior for those with communication-related cognitive concerns
- Attention process training to assist with sustained focus
- Meta-cognitive strategies
- Problem-solving strategies for those with executive dysfunction

Because cognitive impairments are known to last longer for individuals with TBI than they do with the general population, multidisciplinary cognitive rehabilitation is considered the most effective. These aspects of treatment are often combined with pharmacotherapy to produce optimal outcomes.

Other researchers have aimed to determine best practices for TBI. Nowell et al. (2019) conducted an international survey of healthcare providers who work with patients recovering from traumatic brain injuries. Nowell et al. states that best practice for TBI patients is still largely unknown despite many governing bodies creating clinical practice guidelines for cognitive rehabilitation. OTs made up a large portion of the providers in this research. Results showed that functional compensatory strategies and cognitive remediation were both common aspects of cognitive rehabilitation for this population. This study found that providers primarily addressed executive function and attention deficits using remediation strategies while targeting memory impairments with compensatory strategies. All of the clinicians surveyed were mindful of various resources and clinical guidelines for cognitive rehabilitation. Providers took advantage of their patients' social networks, utilized a multidisciplinary approach, and monitored patient engagement along with motivation across the plan of care. Goal setting and implementation were found to be highly influential in terms of how successful cognitive rehabilitation was. The results of this study are reassuring, firstly since it included many disciplines and also because OTs typically incorporate many of these aspects into treatment already.

The American Occupational Therapy Association (AOTA) has also developed practice guidelines for those with TBI on the basis of existing systematic reviews. After delving into more than 60 research studies, AOTA found there is strong to moderate evidence in support of the following modalities:

- Unimodal auditory stimulation
- Multimodal sensory stimulation
- Virtual reality-based intervention
- Individual and group training and education
- Vision therapy

- Caregiver support to enhance carryover
- Physical activity

AOTA concurs with these systematic reviews in saying all interventions should remain goal-focused during the entire therapy plan of care. This will not only maximize participation and recovery, but this stance will most effectively promote occupational participation. Some emerging themes were also identified during the analysis, including the use of prevention approaches, incorporating occupation-based performance assessments, and consideration for the complexity of the patient's injury. While each of these is generally considered best practice in the field, such aspects have proven particularly cogent for those with complex needs related to cognitive impairments. Information from AOTA is considered highly reliable, so this can serve as an overarching guide for therapists looking for a high-level appraisal of various modalities.

Additional research looks at how other disciplines view various cognitive interventions. For example, Alashram et al. (2022) conducted a systematic review on the variations of cognitive interventions that are most effective for those recovering from stroke. A total of 18 randomized controlled trials were included in the review, which found that virtual reality, cognitive rehabilitation using computerized methods, and non-aerobic exercises were the most effective ways to address mild cognitive deficits in this population. This review included samples that were nearly 60% male, so there may have been some gender-related differences. However, these findings offer important insight into mild cognitive deficits for stroke patients, as non-aerobic exercises are not often noted in the literature for this purpose.

Parkinson's disease is another common focus of cognitive rehabilitation programs, since this condition often impacts cognitive function. Sanchez-Luengos et al. (2021) performed a systematic review to determine the benefit of cognitive rehabilitation programs specifically tailored to individuals with Parkinson's disease. This review found that many studies honed in on working memory, verbal

memory, executive function, processing speed, and attention. The analysis discovered many cognitive rehabilitation programs had a moderate effect on general cognitive status and working memory. In general, studies had less of an impact on verbal memory and executive function and little to no impact on attention, visual memory, processing speed, and verbal fluency for those with Parkinson's. The analysis showed no effect on visuoconstructive abilities and visual-spatial skills. This large-scale review shows there is certainly potential for cognitive rehabilitation programs to assist with remediation of working memory for those with Parkinson's disease.

Alashram et al. (2019) ran a level I review on protocols guiding virtual reality use for TBI-specific cognitive rehabilitation programs. Results from this analysis showed that 10-12 sessions in total (provided at a rate of 2-4 sessions per week) was sufficient enough to offer gains in cognitive function. Sessions were deemed most effective when they lasted from 20 to 40 minutes each. While there was overall little evidence to support the efficacy of VR training focused on attention, this type of treatment was found beneficial for remediating memory and executive function in those recovering from TBI. Therapists can use this information to help structure a patient's plan of care when writing goals and determining a patient's therapeutic frequency.

Level I Cognitive Rehabilitation Reviews

There are other level I reviews that weighed the efficacy of cognitive rehabilitation programs as a whole. Gavelin et al. (2021) measured how beneficial joint physical and cognitive rehabilitation programs were for older adults with and without cognitive deficits. While this is a common technique for many programs aiming to prevent dementia, researchers are presently unsure what specific combinations (sequential, simultaneous, or exergaming) are most effective. Older adults with and without cognitive impairments experienced statistically significant improvements in overall cognition and physical function compared to the control

group. Additional analysis found that simultaneous provision of each intervention was the most beneficial for participants' cognition followed by a sequential combination and then cognitive rehabilitation alone. Exergaming was found to rank low for both cognitive and physical improvements. This review covered a wide range of studies and assessed outcomes related to several characteristics, therefore the results can be considered quite reliable.

Exergaming was not deemed favorable in the above study, but similar interventions have been explored in other research. Tortora et al. (2024) performed a level I study to determine how well virtual reality-based cognitive rehabilitation addressed cognitive deficits in older adults with mild cognitive impairment (MCI) compared to other types of cognitive rehabilitation. This systematic review included both semi-immersive and full-immersive virtual reality experiences. While there were limited studies and most had a small sample size along with some methodological concerns, results showed virtual reality has promise in treating this population. Outcome measures showed improvements in IADLs, cognitive function, and executive function.

A review conducted by Maggio et al. (2019a) also evaluated the effectiveness and usage of virtual reality tools in cognitive rehabilitation programs for those with stroke. Globally, results showed these programs were more common than providers believed them to be. Virtual reality cognitive rehabilitation also led to significant gains across a range of cognitive domains (most notably executive function, speech, attention, memory, and visual-spatial skills). This review of studies also suggested that the boost in outcomes from virtual reality-based cognitive rehabilitation could help improve overall participation in and motivation for services, which can lead to additional benefits. In another systematic review, Maggio notes that virtual reality may be most efficacious when used to heighten the benefits of conventional rehabilitation. In particular, virtual reality can help engage patients in longer treatment sessions and even minimize the length of their hospital stays (2019b).

A somewhat unique level I study compared the rehabilitation potential and overall efficacy of virtual reality and computer-based cognitive rehabilitation programs for stroke patients. Researchers focused on comparing the two more novel approaches to one another rather than traditional cognitive rehabilitation programs. Upon looking at more than 20 randomized controlled trials, this analysis found that virtual reality-based and computer-based programs were overall superior to control groups that took part in traditional programs. Participants in the VR and computer-based groups performed much better on the MoCA as a result of the program and only somewhat better on the MMSE. However, the overall ranking this analysis yielded determined that computer-assisted cognitive rehabilitation programs were the most superior of those assessed followed by VR and then traditional approaches.

In an effort to delve more into best practices, The Cognitive Rehabilitation Task Force conducted a review on evidence-based literature pertaining to cognitive rehabilitation (Cicerone et al., 2019). This review found the most evidence in the form of practice standards for the following areas:

- Attention deficits after stroke or TBI
- Neglect training to assist with vision concerns after stroke impacting the right hemisphere
- Compensatory strategies for mild memory impairments
- Language retraining after stroke affecting the left hemisphere
- Metacognitive strategy training for executive dysfunction
- Communication deficits after TBI
- Holistic neuropsychological rehabilitation to address cognitive deficits and functional concerns after stroke or TBI

These guidelines can also be considered reliable in terms of structuring treatment based on evidence.

More research on computer-assisted programs comes from Bashiri et al. (2023) who aimed to determine the validity of computerized cognitive rehabilitation programs for children and adolescents above the age of 4 who have attention-deficit hyperactivity disorder (ADHD). There is not much research on cognitive rehabilitation for children, so this is important for many clinicians in this specialty. The analysis showed most programs were effective at improving various types of attention, including divided, intermittent, focused, selective, and continuous. Due to the small sample size of these studies, results suggest that computerized cognitive rehabilitation programs can potentially be helpful as complementary interventions for the treatment of ADHD.

While comprehensive cognitive rehabilitation is essential for the best outcomes, some research lends support to singular interventions that can be incorporated into programs. In developing practice guidelines for individuals with stroke, Hildebrand et al. (2023) conducted a level I analysis to determine the most efficacious interventions. This systematic review looked at nearly 170 studies and found that cognitive behavioral therapy (CBT) had moderate strength evidence for helping with balance self-efficacy. As a result, this modality could be a useful way for therapists to help patients build confidence and enhance quality-of-life as part of cognitive rehabilitation.

A level I review by Loetscher et al. (2019) honed in on cognitive rehabilitation focused on improving attention in those with a history of stroke. This analysis found there were little to no changes in subjective attention immediately after treatment or at follow-up visits. Studies did show cognitive rehabilitation improved divided attention immediately after the program concluded. However, these gains along with those in selected attention, sustained attention, and alertness did not persist. Such results suggest these cognitive training methods

may need to incorporate more skill transfer and generalization to improve long-term outcomes in attention and related areas.

Fernandes et al. (2019) performed a level I review to determine how effective cognitive rehabilitation can be for individuals recovering from cancer who are experiencing cognitive dysfunction. This review looked at those with non-central nervous system cancers and found that, of 19 studies, all showed improvements in at least one cognitive measure (self-reported or based on functional performance). Out of all the cognitive domains assessed, participants in these studies demonstrated objective gains in memory most often followed by overall executive function and information processing speed. While its results are helpful, the results of this study should be weighed with caution since participants demonstrated related cognitive concerns rather than true cognitive conditions or injuries.

In the realm of emotional and cognitive-based family treatment for children with acquired brain injuries, Laatsch et al. (2020) ran a level I review to determine the most advantageous treatment types. A total of 56 studies were reviewed along with practice recommendations that covered potential limitations related to treatment. Results showed strong evidence for interventions that involved or focused on caregiver and/or family involvement along with modalities that directly addressed executive function, memory, attention, and emotion regulation. In addition, most of the practice standards reviewed as part of the analysis offered a high degree of credibility to the use of technology in the service delivery process.

Ali et al. (2020) conducted a level I review to determine the utility of neurofeedback-based interventions for the purpose of cognitive rehabilitation for individuals with acquired brain injury. The analysis found that results were largely inconsistent across various studies and even moreso when factoring in different cognitive domains. While there is some potential for the use of neurofeedback, this review determined that skills training and hands-on application after the use

of neurofeedback is often lacking and can be considered a determining factor for its effectiveness.

In the realm of assistive technology, Pappada et al. (2021) aimed to discover how various devices can aid in cognitive rehabilitation for individuals with dementia. These researchers focused on nearly 40 reviews and studies that looked at AT for the purpose of sustaining daily life, being used as part of therapeutic interventions, and helping with monitoring and security for those with dementia. The review found that AT proved highly beneficial for each category. Results also showed that assistive technology was most helpful for psychoeducation and training for caregivers along with rehabilitative modalities for both physical and cognitive training. Across the board, assistive technology was found to improve socialization, skill development, and mental health. However, as several other researchers found, Pappada et al. notes there is a scarcity of common methodologies that guide therapists and other providers in using assistive technology for these purposes.

Vilou et al. (2023) gathered information from a range of research studies to weigh the therapeutic benefits of electroencephalogram (EEG)-based neurofeedback for the cognitive rehabilitation of individuals with stroke, TBI, dementia, and multiple sclerosis. This intervention entails altering a patient's brain activity using operant conditioning. Researchers found there are various protocols that govern the use of EEG-based neurofeedback for this purpose, and they have proven generally beneficial in improving at least one cognitive domain. These benefits were seen regardless of how many sessions patients received and the specific protocols that were used. Neurofeedback as a whole is known to be more effective in the short-term rather than long-term, so this is another modality that should only be used in combination with functional skills training to maximize outcomes. This research is particularly relevant due to its inclusion of patients with various conditions.

A level I systematic review by Brandt et al. (2020) assessed how beneficial Information and Communication Technology-based Assistive Technology (ICT-

based-AT) was toward compensatory training for cognitive rehabilitation. These devices largely include smartphones, mobile phones, personal digital assistants (PDAs), and similar products that offer digital reminders and the like. ICT-based-AT is deemed most effective for this population when it incorporates audio-verbal, picture, and video-based task sequencing feedback. This review specifically focused on studies involving people with impaired cognition that was not the result of degenerative diseases. The main outcome measures monitored were memory and task execution. Researchers found that devices with digital calendars proved helpful for individuals with ABI and similar devices can also help people with a range of cognitive diagnoses improve task execution. However, therapists should always personalize devices and offer ample training before allowing patients to use them during daily tasks.

Level II Cognitive Rehabilitation Studies

Ajtahed et al. (2019) conducted a level II study to determine the impact of computerized cognitive rehabilitation on quality-of-life after coronary artery bypass graft (CABG). The program consisted of 20-minute sessions that took place three times per week for 8 weeks. Modules addressed working memory, processing speed, attention, and response inhibition. When compared to a control group, participants demonstrated significant improvements in cognitive function and quality-of-life both at the end of the program and 6 months later. Further analysis showed a positive correlation between enhanced quality-of-life, working memory improvements, and increased sustained attention. While intervention was simply computerized and did not address the transfer of skills in real-time, it appeared to be effective for both markers.

Rogers et al. (2019) performed a level II study to discern how effective cognitive rehabilitation with virtual reality was for individuals with sub-acute stroke. Participants received three weekly sessions of virtual rehabilitation for four weeks along with conventional occupational and physical therapy. The control group

received conventional OT and PT alone. Participants in the experimental group demonstrated statistically significant improvements in executive function, generalized intellectual function, and motor function in the affected hand compared to the control group. In terms of recovery, the experimental group also experienced two to three times more progress than the control group. Both groups maintained the gains from the program at their follow-up visit one month after the study concluded.

Faria et al. (2020) performed a level II study that explored the benefits of specific adaptations to virtual reality-based cognitive rehabilitation programs for stroke patients. The study compared adapted cognitive training through standard daily activities using VR simulations to a program called Task Generator, which is the equivalent of adapted paper-and-pencil cognitive rehabilitation. Each group received 12 sessions, and results showed that the adapted VR simulation group experienced improvements in attention, visual-spatial skills, executive function, verbal memory, processing speed, subjective cognitive deficits, and overall cognitive function. The Task Generator group displayed improvements in processing speed, verbal memory, and a specific domain of the MoCA. The Task Generator group maintained these gains in speed and verbal memory 2 months later and also showed improvements in language at that time. Researchers found that the VR group had higher ecological validity, which is likely why their outcomes translated to immediate and long-term improvements in daily function.

Through a level II study, Aran et al. (2020) measured the effectiveness of virtual reality cognitive rehabilitation for children with hemiplegic cerebral palsy. The intervention group participated in virtual reality alongside 20 sessions of traditional OT while the control group received the same amount of traditional OT in isolation. The virtual reality program addressed skills such as visual-motor construction, spatial perception, praxis, and thinking processes. Results showed that both groups experienced improved cognition after taking part in 10-week programs. However, the intervention group saw significantly higher levels of cognitive function than the control group did. Based on the outcomes of this

study, it is recommended that future virtual reality programs incorporate many of the same aspects, as they proved to be formative for cognitive function.

Egset et al. (2021) conducted a level II feasibility study to determine the impact of Goal Management Training (cognitive rehabilitation) on health outcomes of adults with residual executive dysfunction from childhood acute lymphoblastic leukemia. Participants received five group sessions with a focus on compensatory strategies. Researchers assessed outcomes 2 weeks and 6 months after the study concluded. Initial measures showed improvements in attention, processing speed, and overall executive function, and participants reported being satisfied with the intervention. Two participants also noted improvements in executive function in their typical daily activities. While the sample size was small, results show promise for the use of cognitive rehabilitation with this population.

Sani Usman et al. (2023) discussed the influence cognitive rehabilitation had on individuals with hemiplegia in a level II study. A total of 30 patients between the ages of 45 and 65 participated in the study. The sample consisted of individuals with mild to moderate cognitive impairments as a result of stroke. The program consisted of five cognitive rehabilitation sessions per week for 8 weeks. Results showed that participants' cognitive abilities improved from a testing standpoint as well as a functional standpoint, since their ADL performance increased after the program concluded.

Kim et al. (2022) conducted a level II study exploring the use of a cognitive rehabilitation program to improve mnemonic skills and memory in older adults. Some participants had normal cognition and some were diagnosed with mild cognitive impairment (MCI). Participants received 8 weekly sessions in total. The group of older adults who demonstrated normal cognition experienced improvements in verbal memory after the program concluded. At the end of the study, participants with MCI were found to have better attention, language abilities, verbal recognition memory, nonverbal memory, and processing speed.

These results suggest that cognitive rehabilitation programs can be an effective way to address trained and untrained cognitive skills in older adults with MCI.

Through a level II study, Clare et al. (2019) hoped to take a closer look at how goal-oriented cognitive rehabilitation could improve daily performance for individuals with mild to moderate dementia. The study involved providing cognitive rehabilitation to one group of participants along with their usual treatment and compared the effects to a group that received only the usual treatment. Participants in the cognitive rehabilitation group received 10 weekly sessions across 3 months along with 4 maintenance sessions over 6 months. At the three-month follow-up, participants in the cognitive rehabilitation group experienced significant improvements in subjective goal attainment along with cognition and quality-of-life. These gains were supported by a similar increase in caregiver ratings for these outcomes. Similarly improved results were still seen at the 9-month follow-up for both participants and their caregivers. This not only emphasizes the importance of caregiver involvement but also alludes to its impact on overall satisfaction and goal maintenance.

A group of occupational therapy researchers conducted a level II study to explore the effect of dual-task cognitive training programs on individuals recovering from stroke (Park et al., 2019). One group participated in dual-task training for both physical and motor function while the control group received standard OT services. Both groups received 30-minute sessions three times each week for 6 weeks. At the end of the study, the experimental group experienced significantly more improvements in cognitive and physical outcomes than the control group did. These results suggest dual-task cognitive rehabilitation can lead to even greater outcomes in the areas of attention, memory, executive function, and physical skills such as balance.

Richard et al. (2019) performed a level II study to determine how helpful cognitive rehabilitation was for patients with brain tumors that caused executive dysfunction. The study offered goal management training to the intervention

group while the active control group entered a Brain Health Program and another control group received traditional care. The Brain Health Program entailed supportive interventions such as education and general brain health activities in the absence of cognitive strategy training. Participants in the active control group and intervention group received 8 sessions along with home assignments. The intervention group displayed improvements in executive function while the other two groups did not. The intervention and active control groups noted less cognitive concerns at the end of the study and at the 4-month follow-up visit. In terms of functional goal attainment, the intervention group saw the most improvements by far and these gains also extended to the 4-month follow-up visit. While this study was small, it can be used to inform the development of standards of care for this population, since there are presently none.

Key Takeaways

Based on this evidence, therapists can use several categories of interventions in good confidence. Virtual reality-based cognitive rehabilitation can be effective for improving cognitive outcomes in several diagnoses. This modality can also assist with boosting motivation and participation. Programs focused on remediating or compensating for memory were most effective on their own, while programs that addressed attention were beneficial in varying degrees based on how much carryover was included. Computer-based programs that addressed attention were found to work better than traditional cognitive rehabilitation for this purpose. In addition, there is a great deal of evidence supporting assistive technology use with those who have dementia. This is the case for preventive, compensatory, and remediatory therapies. While there is not much research on cognitive rehabilitation in children, studies do show family-focused therapy produced better cognitive outcomes than just individual therapy did.

Overall, many studies found there is a lack of best practice for cognitive rehabilitation. That being said, some aspects should always be included for

optimal results. Research supports therapists personalizing treatment as much as possible and offering ample training on all devices and strategies implemented. Therapists should also emphasize goal management during each session and facilitate individuals' independence in functional tasks whenever possible.

Section 3 Personal Reflection

What is the best way for therapists to determine the frequency for patients receiving cognitive rehabilitation?

Section 3 Key Words

Dual-task costs - Expressed as percentage, dual-task costs refer to a person's single-task performance

Ecological validity - A study quality that involves matching a research study's design to the context(s) most familiar and relevant to its participants

Metacognitive strategies - Educational methods that help patients better understand their learning style; in colloquial terms, these strategies can be defined as 'thinking about thinking'

Section 4: Case Study #1

A 54-year-old woman recently diagnosed with early dementia is presenting with a lot of difficulty organizing tasks. She is currently aware of her limitations and, as a result, is experiencing a lot of frustration. She recently began working less hours, though she has expressed a desire to keep her home life the same as much as she possibly can. After being referred to OT for these concerns, she noted her main goal is to keep managing her family's schedule, which entails coordinating games, practices, and activities for her two active teenage daughters. She is

understandably nervous about what is to come and has specifically said she doesn't want to let her family down. However, she is motivated to work together with the therapist to address any concerns that come up along the way.

1. What aspects of treatment should the therapist be sure to incorporate into this patient's sessions?
2. What environmental modifications might this patient benefit from?
3. Is this patient a good candidate for assistive technology? Why or why not?

Section 5: Case Study #1 Review

This section will review the case studies that were previously presented. Responses will guide the clinician through a discussion of potential answers as well as encourage reflection.

1. What aspects of treatment should the therapist be sure to incorporate into this patient's sessions?

   Since managing her household's calendar is a big priority to her, it's essential that the therapist include family in sessions. Firstly, this will allow the therapist to get a realistic view of what needs to be coordinated for the sake of planning treatment and setting goals. Collaborating with the family will also allow the therapist to get her family's view of the patient's concerns, gauge their ability to provide support, and identify any environmental barriers that can impact treatment. The therapist will also need to emphasize carryover for the most success and offer education about what to expect along the way as well as strategies to assist with symptoms.

2. What environmental modifications might this patient benefit from?

This patient is in the early stages of her condition, so major safety modifications are not necessarily indicated now but they will be needed in the near future. The therapist should educate the family about what warning signs to look out for that may indicate the condition is progressing. At that point, environmental modifications within the home will be indicated.

3. Is this patient a good candidate for assistive technology? Why or why not?

   Yes, assistive technology is likely one of the best tools for this patient at the present time. The therapist can train the patient in the use of both low- and high-tech devices based on her preference and what she picks up on the most quickly. Paper calendars, placing items in certain spots to serve as a physical reminder for certain events or tasks (e.g. pill bottle on the nightstand or notes near important items such as her keys), post-it notes, agendas, and more are all great low-tech options for assistance with organization, as well as orientation. PDAs, basic smartphone and computer features such as the calendar and notepad functions, and smartphone apps or computer software for more specific organization purposes are high-tech options that are likely most effective if the patient already has working knowledge of smartphones and computers.

Section 6: Case Study #2

A 36-year-old male recently sustained a TBI due to a car accident. His diagnosis is major multi-trauma, and he has been in the hospital for 3 days so far due to having multiple fractures that need healing. He is demonstrating a lot of impulsivity, aggression, and very limited insight as to why he is in the hospital and why he cannot move around without help. He is expected to be in the hospital for at least another 3 weeks. He is non-weight bearing so there is very little motor training therapists can do with him, which is partly why OT's focus has mostly

been on cognition. Prior to his accident, this patient was employed in electronics repair and enjoyed working on various electronics even in his spare time. He is not very verbal at this time, but has pointed to pictures of his family in an effort to indicate his desire to see his girlfriend and newborn son, who is only 2 weeks old.

1. What goals are most appropriate for this patient?
2. What cognitive modalities might the OT use to initially work with this patient?

Section 7: Case Study #2 Review

This section will review the case studies that were previously presented. Responses will guide the clinician through a discussion of potential answers as well as encourage reflection.

1. What goals are most appropriate for this patient?

   Since the patient is constantly trying to move around but cannot due to medical restrictions, a seated activity tolerance goal allowing him to sit and attend to an activity for 2-3 minutes would be a great starting point. The patient demonstrates some concerns that could pose a safety risk to himself and others, so these should also be addressed in his goals. A goal for using a communication board to select feelings, current needs, and activity preferences could be addressed in collaboration with a speech-language pathologist where OT focuses on visual-motor skills, upper extremity use, and productive coping with frustration.

2. What cognitive modalities might the OT use to initially work with this patient?

   Since the patient has a history with electronics, he may be particularly interested to participate in computer-assisted cognitive programs. This can help improve his motivation while also engaging him in a way that takes his

mind off not being able to move for the time being. These can slowly be upgraded and, once his movement restrictions are lifted, they can be incorporated with real-life activities to enhance carryover.

Section 8: Case Study #3

A therapist begins working with a 70-year-old woman who is 4 months post-stroke. She has mild left hemiparesis in the arm but not in the leg. Over the past few months, she relearned the process for all ADLs and is now modified independent in them, only needing some additional time but no equipment. She continues to experience cognitive concerns, though, that mostly revolve around task sequencing of multi-step IADLs. She lives at home with her husband who is willing and able to help with any IADLs his wife needs. She just got referred to outpatient OT for these residual cognitive deficits. In the process of goal setting, the therapist learns the patient is mostly concerned about doing laundry and cleaning the house. The therapist also finds the patient has some balance impairments and moves quickly so she is a bit of a fall risk, especially since she lives in a two-story home with her bedroom and the main living area being on the second floor. The second floor houses a finished basement where her adult son lives. The OT sets goals so the patient can learn to utilize AT to perform laundry and clean the home.

1. What aspects of these tasks might the therapist use the compensatory approach with and what aspects of these tasks might the therapist use the remediatory approach with?

2. What type of AT might the therapist recommend to help this patient?

Section 9: Case Study #3 Review

This section will review the case studies that were previously presented. Responses will guide the clinician through a discussion of potential answers as well as encourage reflection.

1. What aspects of these tasks might the therapist use the compensatory approach with and what aspects of these tasks might the therapist use the remediatory approach with?

   The patient is within the 6-month window after a stroke, so it's possible for her to make gains in all therapy areas. In terms of balance and fall risk, the therapist should use a remediatory approach since this will be most effective for safety. In order to help the patient with sequencing and give her the more immediate satisfaction of keeping up with a valued task such as cleaning, the compensatory approach may be more effective for those goal aspects.

2. What type of AT might the therapist recommend to help this patient?

   Before providing any physical intervention, the therapist chooses to guide the patient through cleaning her home using virtual reality to determine where her main deficits lie. Based on some of these simulated sessions, the therapist offered some balance education to address the patient's fall risk status along with some help with planning and sequencing each cleaning task.

   The therapist can recommend a robotic vacuum to help the patient clean parts of the home that are only accessible by stairs (e.g. the finished basement where her son lives). This will not only prevent her from needing to remember and initiate the task of vacuuming there, but it will also sidestep the need to carry the vacuum up and down the stairs to do so. The therapist also sets the patient up with a motion-sensor camera in the

basement so the patient can “check its work” to be sure the vacuum has done its job. In addition, the therapist chooses to train the patient in the use of a comprehensive reminder system that is tailored toward cleaning and creates reminders based on your present cleaning habits. The patient expressed being very happy with not needing to keep track of when it should get done, especially since she doesn’t like the house getting too dirty.

Section 10: Case Study #4

A 19-year-old patient with ADHD presents to outpatient OT with major concerns over his ability to manage schoolwork. He recently went back to school in an effort to get his GED and is having difficulty motivating to get the work done along with managing his standard work responsibilities as a delivery driver. He has been diagnosed with ADHD since he was 10 and reports it definitely impacted his ability to perform in school when he was younger; it was also part of the reason he chose to not finish high school. He feels that his attention, memory, organization, and ability to plan are all impacted and affect his performance at school (and work) these days. The patient also reports a lot of difficulty sleeping. He says he used to take medication for it and has tried “nearly everything” but it never seems to help him sleep more than 4 hours a night.

1. Can an OT help this patient?
2. What sort of OT program would be most beneficial for this patient?
3. What other disciplines might also be indicated to assist with this patient’s concerns?

Section 11: Case Study #4 Review

This section will review the case studies that were previously presented. Responses will guide the clinician through a discussion of potential answers as well as encourage reflection.

1. Can an OT help this patient?

   Yes, an OT can help this patient. Due to his self-reported concerns functioning at work and school, this patient is experiencing occupational performance issues. Even if standardized testing does not show enough deficits to warrant insurance-covered treatment or determines something else may be at the root of his problems, the therapist can offer strategies, recommendations, and even make referrals to other professionals.

2. What sort of OT program would be most beneficial for this patient?

   The therapist should first start with a comprehensive evaluation including standardized testing to determine exactly what skills are impaired and need to be addressed. From there, the therapist can form an occupational profile to gauge the patient's interests in preparation for developing a plan of care. Based on preliminary information, this patient would likely be a good candidate for computer-assisted cognitive rehabilitation. This can help with their motivation for therapy and the games and programming can be used at home to assist with carryover. As with many aspects of cognitive rehabilitation, the therapist also needs to ensure they address skill transfer, so the therapist may want to first visit the patient at work and at home to get a better idea of how the environment may be impacting their work. This will help them determine if some environmental modifications may be needed to assist with their treatment.

3. What other disciplines might also be indicated to assist with this client's concerns?

It’s possible that a psychologist can help with this patient’s sleep problems. Sleep concerns certainly have an impact on brain health, so this will be part of comprehensive cognitive rehabilitation. While OT is in a position to assist with sleep hygiene to some extent, it appears this patient has already tried many approaches and may need more targeted help outside of an OT’s scope of practice. By making a referral to psychology, this OT will be doing all they can to improve this patient’s executive functioning.

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