
CASE REPORT

Use of the Occupational Therapy Task-Oriented Approach to Optimize the Motor Performance of a Client With Cognitive Limitations

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KEY WORDS

- cognition disorders
- psychomotor performance
- stroke
- task performance and analysis

This case report describes the use of the Occupational Therapy Task-Oriented Approach with a client with occupational performance limitations after a cerebral vascular accident. The Occupational Therapy Task-Oriented Approach is often suggested as a preferred neurorehabilitation intervention to improve occupational performance by optimizing motor behavior. One common critique of this approach, however, is that it may seem inappropriate or have limited application for clients with cognitive deficits. This case report demonstrates how an occupational therapist working in an inpatient rehabilitation setting used the occupational therapy task-oriented evaluation framework and treatment principles described by Mathiowetz (2004) with a person with significant cognitive limitations. This approach was effective in assisting the client in meeting her long-term goals, maximizing her participation in meaningful occupations, and successfully transitioning to home with her daughter.

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The aim of the Occupational Therapy Task-Oriented Approach is to improve occupational performance by optimizing motor behavior (Bass-Haugen, Mathiowetz, & Flinn, 2002; Flinn, 1995). This approach is based on a systems model of motor behavior and emphasizes the interrelatedness of client, task, and environment factors on motor performance (Gillen, 2000; Mathiowetz, 2004; Mathiowetz & Bass-Haugen, 1994, 2002). The Occupational Therapy Task-Oriented Approach is often cited as a preferred neurorehabilitation intervention to improve occupational performance, especially for clients with neurological conditions such as cerebral vascular accident (CVA) and traumatic brain injury. People with neurological conditions frequently receive occupational therapy services (National Board for Certification in Occupational Therapy, 2004), and these conditions often result in changes in multiple body functions including mental, sensory, and neuromusculoskeletal and movement-related functions.

The Occupational Therapy Task-Oriented Approach, however, has been critiqued as inappropriate or having limited application for clients with considerable cognitive limitations (Bass-Haugen, Mathiowetz, & Flinn, 2008; Mathiowetz & Bass-Haugen, 1994). It has been suggested in the literature that some of the key principles of the approach may still be useful for clients with cognitive limitations; however, none of the published case studies of the application of this approach (e.g., Bass-Haugen et al., 2002, 2008; Flinn, 1995; Mathiowetz, 2004) have illustrated how it can be used with clients with significant cognitive

limitations. Therefore, the purpose of this case report is to explain how the occupational therapy task-oriented evaluation framework and treatment principles described by Mathiowetz (2004) were used to optimize motor behavior and improve occupational performance of a client experiencing significant cognitive limitations. In this article, I answer the following questions for occupational therapy practitioners: (1) How can the Occupational Therapy Task-Oriented Approach be used to evaluate and treat a client with severe cognitive limitations? (2) What are the benefits of using this approach with this client population?

Overview of the Occupational Therapy Task-Oriented Approach

The Occupational Therapy Task-Oriented Approach is based on occupational therapy models with an occupation focus and client-centered orientation as well as on task-oriented approaches from physical therapy and exercise science (Bass-Haugen et al., 2008). The approach assumes that (1) functional tasks organize motor behavior, (2) motor behavior is the result of the interaction of the person with the environment, (3) occupational performance observed after central nervous system damage reflects the person's attempt to achieve task goals, and (4) exploration and practice are the means by which people find solutions to motor problems (Bass-Haugen et al., 2008; Mathiowetz, 2004).

The Occupational Therapy Task-Oriented Approach uses a top-down, client-centered, and occupation-focused approach to evaluation and treatment (Bass-Haugen et al., 2008; Mathiowetz, 2004). The evaluation process starts with the evaluation of role performance and occupational performance tasks, much like the evaluation process in other occupation-focused models of practice. The therapist then observes the client performing challenging and meaningful tasks, identifies preferred patterns for movement, and determines whether these patterns are stable or in transition.

Next, the therapist identifies and evaluates the critical person factors that interfere with task performance. These factors, known as *control parameters*, are personal or environmental variables that are thought to constrain movement into predictable patterns and have the potential to shift behavior to a new pattern of movement (Kielhofner, 2004). For example, a therapist might identify cognition or range of motion as person factors that affect task performance; those factors might be evaluated using a standardized cognitive assessment or goniometry. The final step of the evaluation process is to evaluate the environment.

After the assessment process, the therapist selects appropriate treatment principles of the Occupational Therapy Task-Oriented Approach. These treatment prin-

1. Assessment of role performance
2. Assessment of occupational performance tasks
3. Selection and analysis of tasks
4. Assessment of specific client factors, performance skills, and performance patterns which are thought to be critical control parameters
5. Evaluation of the environment

Figure 1. Evaluation Framework for the Occupational Therapy Task-Oriented Approach based on a systems model of motor behavior.

Note. From "Assessing Abilities and Capacities: Motor Behavior," by V. Mathiowetz and J. Bass-Haugen, in *Occupational Therapy for Physical Dysfunction* (6th ed., p. 186), by M. V. Radomski and C. A. Trombly Latham (Eds.), 2008, Philadelphia: Lippincott Williams & Wilkins. Copyright © 2008 by Lippincott Williams & Wilkins. Adapted with permission.

ciples include both compensatory and remediative strategies. I describe the treatment principles in further detail later in this case report.

Client History

Helen was an 83-yr-old woman with a history of dementia, myocardial infarction, and hypertension. Her daughter Nancy brought her to the emergency room of a large urban hospital because of right-sided weakness, difficulty speaking, and an acute decline in mental status. Helen was admitted to the hospital and diagnosed with a left CVA. After 5 days in acute care, she began inpatient rehabilitation, where she received occupational, physical, and speech therapies and care from a psychiatrist and rehabilitation nurses. Helen was referred to occupational therapy to improve her ability to perform activities of daily living (ADLs).

Evaluation

Helen's occupational therapist used the five-step evaluation framework described by Mathiowetz (2004; Figure 1). This framework begins with the evaluation of role and occupational task performance because they are the ultimate goals of improving motor behavior. The therapist attempted to interview Helen to determine her previous roles and occupations, current abilities and limitations, and goals. However, because Helen was generally confused during the interview and was a poor historian, the therapist interviewed Nancy by telephone. Nancy shared that Helen had lived most of her life in a small rural community but was now living with Nancy in an apartment in a metropolitan area where she spent most of her time "resting in her living room." Helen was unable to identify her occupational therapy goals. From Nancy's viewpoint, the primary goal was to increase Helen's self-care and mobility so that Nancy and a hired caregiver could reasonably and safely support Helen at home.

The second step of the evaluation framework is the observation of occupational performance. Given the goal of improving Helen's ability to perform self-care and mobility, the occupational therapist observed bed mobility, bed-to-wheelchair transfers, feeding, grooming, bathing, dressing, toilet transfers, and toileting. The occupational therapist used the FIM™ (Uniform Data System for Medical Rehabilitation, 1997) to measure the amount of assistance needed from a helper for self-care, mobility, and social cognition activities. The FIM has been shown to have excellent validity (Corrigan, Smith-Knapp, & Granger, 1997) and reliability (Chau, Daler, Andre, & Patris, 1994). Helen received a score of 1 (*total assistance*) on most of the FIM items evaluated by the occupational therapist. Selected results from Helen's initial FIM are shown in the first column of Table 1.

The therapist used the Assessment of Motor and Process Skills (AMPS; Fisher, 2006) to identify ADL motor and process skills that supported and hindered Helen's task performance. The AMPS is a valid and reliable assessment tool across many client populations (Fisher, 2006). Helen completed two AMPS tasks: brushing teeth and upper-body dressing. She was unsafe and unable to perform either task without almost constant physical assistance. Even though she completed both tasks from a seated position, Helen experienced great difficulty stabilizing her body. She also demonstrated great difficulty coordinating and manipulating objects and enduring these basic self-care tasks. She was frequently unable to initiate steps of the tasks or continue them to completion. Helen's AMPS ADL process skill measure suggested that she would require maximum assistance at discharge and that she would benefit more from an adaptive rather than a remediation approach. Helen's ADL motor ability measure indicated that she had generalized motor problems.

As the therapist observed Helen's task performance, she carefully observed the movement patterns that Helen used to determine whether these patterns were stable or

unstable. For example, Helen never attempted to use her affected right upper extremity during task performance; this motor pattern was stable. Her sitting balance was highly variable, however; she needed varying levels of assistance and would lose balance in several directions. Because unstable patterns have more potential to change (Kielhofner, 2004), the therapist concluded that Helen's sitting balance could potentially improve with intervention. The therapist also identified the following control parameters during Helen's task performance: (1) amount of trunk support, (2) level of attention to tasks, (3) amount of energy, (4) stabilization of task objects, (5) incorporation of her right upper extremity, and (6) amount of attention to the right side of her body.

Although the control parameters identified were not all specific to the motor system, each control parameter influenced Helen's motor control. For example, Helen's attention to a task varied depending on her interest in it, other stimuli in the environment, and her endurance. These factors, in turn, influenced her ability to maintain an upright posture during task performance. This example illustrates the importance of considering multiple factors when addressing motor behavior.

Next, the occupational therapist evaluated the hypothesized control parameters and underlying person factors. For example, range of motion, strength, sensation, and cognition were identified as factors that limited Helen's ability to use her right arm functionally. These client factors were evaluated by (1) measuring range of motion using goniometry; (2) determining manual muscle grades; (3) evaluating light touch and sharp-dull sensation; (4) informal observation of cognitive skills during occupations; and (5) administration of the Mini-Mental State Examination (MMSE; Cockrell & Folstein, 1988), a valid, reliable, and sensitive screening tool for assessing the severity of cognitive impairment (Tombaugh & McIntyre, 1992). Helen scored 9 of 30 points on the MMSE, indicating moderate dementia.

Finally, the therapist evaluated Helen's physical, social, and cultural environments. Most of this information was obtained by interviewing Nancy and asking her to provide diagrams and photographs of their home. Ideally, this step might include a home visit; however, home visits were not common practice in this setting.

After the evaluation process, the occupational therapist summarized the factors that supported and limited Helen's occupational performance. Supporting factors included functional use of her left arm and leg, ability to follow simple commands, procedural memory for basic tasks, and tangible social support. Key factors limiting

Table 1. Selected Scores on the FIM

FIM Item	Score on Admission	Score at Discharge
Feeding	4	5
Grooming	3	5
Bathing	1	2
Upper-body dressing	1	3
Lower-body dressing	1	2
Toileting	1	2
Bed-to-wheelchair transfers	1	3
Toilet transfers	1	3

Note. 1 = total assistance; 2 = maximal assistance; 3 = moderate assistance; 4 = minimal assistance; 5 = supervision and setup.

Helen's occupational performance were right-sided hemiplegia, poor attention to tasks, impaired initiation and continuation of steps of activities, apraxia, disorientation, problem-solving deficits, balance deficits, impaired trunk control, and limited activity tolerance. The occupational therapist set 1-week short-term goals and 4-week long-term goals (Figure 2) in collaboration with Helen and Nancy.

Intervention

Helen received 90 min of occupational therapy treatment 6 days/wk. On the basis of the assessment results, Helen's occupational therapist selected several of the task-oriented treatment principles recommended by Mathiowetz (2004; see Figure 3). Helen's ADL process skills were relatively poor, indicating that because of her potential difficulty with new learning, she would benefit more from an adaptive approach emphasizing environmental modifications and caregiver training (Fisher, 2006). Therefore, the therapist selected specific treatment principles from the Occupational Therapy Task-Oriented Approach that minimized Helen's need to learn new strategies for ADLs. For example, it would be difficult for Helen to benefit from the treatment principle that involves helping clients develop task analysis and problem-solving skills so that they can find their own solutions to performance problems. Each of the task-oriented treatment principles that Helen's occupational therapist selected are reviewed in the following sections.

Help Clients Adjust to Role and Task Performance Limitations

Despite Helen's history of limited occupational engagement and the fact that her CVA made basic activities even more difficult, the occupational therapist recognized that Helen had the potential to be more occupationally engaged. The occupational therapist,

By discharge, Helen will
<ol style="list-style-type: none"> 1. Feed herself when task objects are set up and minimal verbal cues are provided 2. Perform oral and hair care when task objects are set up and minimal verbal cues are provided 3. Bathe with moderate physical assistance and verbal cues 4. Dress with moderate physical assistance and verbal cues 5. Transfer to the toilet with moderate physical assistance and verbal cues 6. Move from supine to sitting with minimal physical assistance to assume a functional position for task performance 7. Use her affected right upper extremity as a stabilizer during functional task without verbal cues 8. Be able to engage in simple food preparation and light homemaking tasks (such as folding laundry, wiping a table) from wheelchair level with moderate physical assistance and verbal cues, and 9. Helen's daughter will demonstrate the ability to provide safe and effective physical guidance and verbal cues when Helen engages in functional task.

Figure 2. Helen's goals.

1. Help clients adjust to role and task performance limitations.
2. Create an environment that utilizes the common challenges of everyday life.
3. Practice functional tasks or close simulations to find effective and efficient strategies for performance.
4. Provide opportunities for practice outside of therapy.
5. Minimize ineffective and inefficient movement patterns
 - a. Remediate a client factor if it is a critical control parameter.
 - b. Adapt the environment, modify the task, use assistive technology, or reduce the effects of gravity.
 - c. Use contemporary motor learning principles in training or retraining skills.
 - i. Use random and variable practice in natural contexts in treatment.
 - ii. Provide decreasing amounts of physical guidance and verbal feedback.
 - iii. Develop clients' task analysis and problem-solving skills so that they can find their own solutions to occupational performance problems in home and community environments.
 - d. For people with poor control of movement, constrain the degrees of freedom.
 - e. For people who do not use returned function in their involved extremities, use constraint-induced therapy.

Figure 3. Treatment principles of the Occupational Therapy Task-Oriented Approach.

Note. From "Task-Oriented Approach to Stroke Rehabilitation," by V. Mathiowetz, in *Stroke Rehabilitation: A Function-Based Approach* (2nd ed., p. 66–69), by G. Gillen and A. Burkhardt (Eds.), 2004, St. Louis, MO: Mosby. Copyright © 2004 by Elsevier. Adapted with permission.

Helen, and Nancy identified a few simple activities that Helen could perform even with her severe limitations. For example, folding laundry was an appropriate occupation because it was something Helen was motivated to do and capitalized on her procedural memory of a familiar and meaningful task. The occupational therapist used folding laundry as both a means and an end: Folding laundry was not only the end goal but was also used to address specific impairments such as inattention, decreased initiation, and Helen's limited incorporation of her right upper extremity during task performance.

Create an Environment That Utilizes the Common Challenges of Everyday Life

One of the challenges of providing occupational therapy services in medical settings is that the physical environment is unfamiliar to clients, and it can be difficult to simulate the home environment. Treatment spaces that include relevant, everyday task objects and tools are ideal for task-oriented intervention. Much of Helen's treatment occurred in the occupational therapy department where a simulated kitchen, bedroom, living room, and laundry area were used.

Practice Functional Tasks or Close Simulations to Find Effective and Efficient Strategies

When treating from a task-oriented approach, functional and meaningful tasks are preferred over rote exercise (Mathiowetz, 2004), as is the use of real objects (Wu, Trombly, Lin, & Tickle-Degnen, 1998, 2000) and

environments (Walker, Gladman, Lincoln, Siemonsma, & Whiteley, 1999). Helen's occupational therapist simulated Helen's home environment as closely as possible. For example, she used a regular bed rather than a hospital bed and arranged furniture and Helen's wheelchair in the way in which Helen would encounter them at home.

Nancy frequently participated in training sessions, which were used to practice everyday activities in the way that she and Helen would perform them at discharge. The therapist taught Nancy how to safely and effectively guide and cue Helen during functional tasks. This family education also included discussions about desirable characteristics for Helen's new caregiver and suggestions about how Nancy could train this person to help maximize Helen's participation.

Minimize Ineffective and Inefficient Movement Patterns

Remediate a Client Factor If It Is a Critical Control Parameter. Because the occupational therapist identified sitting balance as a control parameter likely to improve with intervention, she provided treatment activities to challenge and improve Helen's sitting balance in the context of functional tasks. For example, bathing was one of Helen's goals; therefore, the occupational therapist used this task to gradually challenge Helen's sitting balance. The therapist initially had Helen perform bathing in a fully supported position while supine in bed. Next, Helen performed bathing tasks while seated in her wheelchair at the sink, which increased the challenge to her trunk control. At times, Helen also sponge bathed while seated on the edge of the bed with the occupational therapist providing decreasing amounts of physical guidance and verbal feedback. Eventually Helen's sitting balance improved so that she could safely bathe while seated on a tub bench in the shower, and her improved balance also enhanced her ability to safely perform other tasks.

Use Contemporary Motor Learning Principles in Training or Retraining Skills. Motor learning researchers have identified treatment strategies that maximize motor learning or relearning. One example is the use of random and variable practice in everyday contexts (Mathiowetz, 2004). Repetitive or "blocked" practice can be useful in the initial stages of learning (or relearning) a task; however, random practice in context is typically more effective for motor learning or relearning. Helen's occupational therapist provided random opportunities for practice in real-life contexts. For example, during a typical day, Helen might transfer to and from a hospital bed, toilet, tub bench, and a standard bed in the therapy department.

Helen's occupational therapist used another motor learning principle during Helen's treatment: decreasing amounts of physical guidance and verbal feedback. Clients with severe mobility and cognitive limitations often require a significant amount of physical assistance during ADL and mobility tasks. By changing the amount and types of guidance and feedback, the occupational therapist reduced Helen's dependence on feedback, thereby facilitating motor relearning.

Outcomes

After her participation in 4 wk of comprehensive multidisciplinary inpatient rehabilitation, including occupational therapy, Helen met all of her long-term goals with the exception of the bathing and dressing goals, which were only partially met. The FIM was readministered. Table 1 shows Helen's FIM scores at the time of her discharge from rehabilitation. Helen's level of independence improved on all of the FIM self-care items, which was critical in achieving the overall goal of decreasing her need for physical assistance so that she could return home with family and caregiver support. The AMPS was not readministered because this was not common practice in this setting, in part because third-party payers were mostly interested in changes in FIM scores.

A major accomplishment of Helen's participation in occupational therapy was the identification of simple occupations in which she could engage on discharge. The therapist educated Nancy about the benefits of occupational engagement and offered strategies to assist Helen in participating in a greater range of meaningful occupations. By observing Helen practice such activities in occupational therapy, Nancy realized Helen's potential and the benefits of occupational engagement. Even though Helen's ability to perform activities such as self-care and transfers remained below her before-CVA baseline, she was discharged home with a plan that would enable her to engage in more meaningful occupations than before her CVA.

Helen was able to return to her daughter's home on discharge from rehabilitation. She was discharged with home health services, including occupational therapy, to continue to increase her ability to perform ADLs, maximize her involvement in productive activities of her choice, and evaluate her home environment and identify modifications to enhance independence and safety. She would also receive home health physical therapy and nursing services.

Discussion

Although Helen had significant cognitive limitations, the therapist was able to use the Occupational Therapy Task-

Oriented Approach evaluation framework and treatment principles described by Mathiowetz (2004) to help Helen improve motor behavior despite her cognitive limitations. The evaluation framework provided a structure for approaching the evaluation process in a top-down, client-centered, and occupation-focused manner. During the evaluation process, specific instruments were selected because they provided needed information for one of the five steps of the evaluation framework. After the evaluation process, the therapist used the assessment information to determine an appropriate intervention plan. The therapist helped Helen maximize occupational performance by carefully selecting the most appropriate treatment principles of the Occupational Therapy Task-Oriented Approach, specifically those that limited the need for new learning to occur. Helen was therefore able to improve her occupational performance even though her cognitive limitations were not significantly remediated.

The Occupational Therapy Task-Oriented Approach was beneficial to Helen for several reasons. First, the evaluation framework provided an efficient and focused method for the therapist to identify key areas for intervention. Second, the treatment emphasis on meaningful occupations capitalized on this client's procedural memory, which was important given her cognitive limitations. Finally, this approach was beneficial because intervention was not limited to the remediation of client factors. Despite limited improvement on these factors, the client's occupational performance was enhanced. Significant improvement in some of Helen's impairments was not expected, yet the therapist still helped to improve her motor behavior by addressing activity demands and contexts, ultimately resulting in improved occupational performance.

Several evaluation methods were used with this client, including semistructured interviews, observation of occupational performance, the AMPS, the FIM, and the MMSE. As a performance-based assessment, the AMPS is useful with the Occupational Therapy Task-Oriented Approach for several reasons and is particularly beneficial when working with clients with cognitive limitations. The AMPS can guide therapists toward appropriate treatment approaches, assist them in selecting the most appropriate Occupational Therapy Task-Oriented Approach treatment principles for a particular client and help them to make clinical decisions about potential performance skills to remediate, when appropriate. Although it was not common practice in this setting to readminister the AMPS at the time of discharge, a postintervention AMPS would have been useful to measure occupational therapy intervention outcomes.

The FIM is used routinely in many inpatient rehabilitation settings, including the setting in which Helen

received her rehabilitation. Third-party payers often use FIM results to determine the effectiveness of therapy services. Helen did make gains in FIM scores as a result of intervention, even though her cognitive limitations did not improve significantly. Her FIM scores improved because the therapist used treatment principles that facilitated improvement of occupational performance while minimizing the need for new learning. The MMSE was also used with this client to gain information about the severity of her cognitive limitations, which helped to establish that her cognitive limitations were moderate, supporting the use of a mostly adaptive approach. The MMSE was not readministered at the time of discharge because the remediation of cognitive limitations was not a major focus of intervention with this client. A more occupation-focused and dynamic cognitive assessment, such as the Toggia Category Assessment (Toggia, 1994), may have been beneficial to use with this client because such assessments provide information about the client's potential response to intervention (Toggia, 2005).

With some modifications, the Occupational Therapy Task-Oriented Approach can be used to successfully optimize motor behavior and occupational performance in clients with cognitive limitations. For example, during the first steps of Mathiowetz's (2004) five-step evaluation framework, therapists gather information about the client's role performance and identify appropriate occupational performance tasks to observe and analyze. Clients with cognitive limitations may have difficulty providing this information; therefore, significant others will need to be consulted, as was done in this case. During the intervention process, some of the treatment principles may be more or less appropriate for clients with cognitive limitations. For example, the treatment principle of providing opportunities for practice outside of therapy time is relevant to all clients, regardless of cognitive abilities, whereas the treatment principle of assisting clients in developing the ability to analyze a task and problem-solve solutions to occupational performance problems could clearly be a challenge for people with cognitive limitations. By carefully selecting appropriate Occupational Therapy Task-Oriented Approach treatment principles, particularly ones that minimize the need for new learning, therapists can customize interventions to meet the needs and abilities of their clients with cognitive limitations.

The Occupational Therapy Task-Oriented Approach has several important implications for occupational therapy practice. First, it can be successfully used to improve occupational performance by optimizing motor behavior, even for clients with cognitive limitations whose cognitive skills are unlikely to improve. Although some authors

have suggested that this approach may still be applicable to this patient population (Bass-Haugen et al., 2008; Mathiowetz & Bass-Haugen, 1994), this case report is the first to illustrate how to use this approach with a client with cognitive limitations. Second, several benefits result from using the Occupational Therapy Task-Oriented Approach with this client population: (1) It provides a structured, efficient, and client-centered evaluation process; (2) the emphasis on familiar and meaningful therapeutic activities can capitalize on clients' procedural memory; and (3) treatment is not limited to improving client factors; rather, motor behavior can be improved by addressing activity demands and contexts, resulting in improved occupational performance. Third, measures that are commonly used in inpatient rehabilitation settings may not adequately measure the desired outcomes of intervention under the Occupational Therapy Task-Oriented Approach, especially for clients with cognitive limitations whose impairments may be unlikely to improve. Outcome measures that address task performance, client satisfaction, and participation are probably more beneficial to therapists using this approach than measures of independence such as the FIM. Finally, some modification of the Occupational Therapy Task-Oriented Approach is needed when using this approach with clients with cognitive limitations, including adjusting the evaluation process to accommodate cognitive limitations (e.g., altering questioning or asking family members about the client's past role performance) and choosing treatment principles that minimize the client's need for problem solving and new learning.

Conclusion

Several authors have stated that the Occupational Therapy Task-Oriented Approach may seem inappropriate or have limited application for clients with cognitive limitations, but that some of the key principles of this approach may be applicable to this population. To date, however, published case reports exemplifying the use of this approach in practice have included only clients with no or minimal cognitive limitations. This case report, therefore, fills a gap in the literature by illustrating how the Occupational Therapy Task-Oriented Approach can be used with a client with significant cognitive limitations. The effectiveness of the Occupational Therapy Task-Oriented Approach with this patient population should be evaluated in future studies with a larger sample size and greater control. ▲

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