

# Effectiveness of a Task-Oriented Approach in Improving Productivity in a Community-Dwelling Post-Stroke Client: A Case Study

Rahmadina Rizqi Aulia<sup>1\*</sup>, Andreany Kusumowardani<sup>2</sup>

<sup>1</sup> Diploma III Occupational Therapy, Department of Occupational Therapy, Poltekkes Kemenkes Surakarta, Indonesia

<sup>2</sup> Department of Occupational Therapy, Poltekkes Kemenkes Surakarta, Indonesia

\*Corresponding Author: [rahmadinarizqi@email.com](mailto:rahmadinarizqi@email.com)

## Article Information

### Article history:

Received June 17, 2026 ;

Revised June 25, 2026 ;

Accepted June 28, 2026

### Keywords:

Task-Oriented Approach;  
stroke; farming; productivity.

## ABSTRACT

**Background:** Stroke is a neurological disorder caused by either the rupture or blockage of cerebral blood vessels, resulting in motor impairments that reduce functional independence. Unilateral weakness, balance deficits, and decreased endurance may hinder post-stroke individuals from returning to productive work activities. Occupational

therapy plays an important role in stroke rehabilitation through various approaches aimed at restoring function and productivity, thereby improving quality of life.

**Case Study:** Mr. T, a 59-year-old farmer residing in Sobokerto Village, Boyolali, experienced a stroke one year ago. The client demonstrated an abnormal gait pattern and low endurance during walking and daily activities due to pain and joint stiffness, particularly in the left hip. He expressed a strong desire to recover and return to farming activities in his field. Occupational therapy intervention focused on pain management and endurance enhancement through farming-related activities using a Task-Oriented Approach (TOA). The intervention incorporated task segmentation, graded tasks, repetition and variability, and functional feedback strategies.

**Results:** Following eight therapy sessions, the client showed reduced pain, improved endurance, enhanced gait pattern, and better balance. He was able to perform farming activities independently for more than 60 minutes. Appropriate selection of the therapeutic approach, combined with the client's high motivation and strong family support, contributed to the success of the intervention.

**Conclusion:** The TOA utilizing farming activities was effective in improving productivity in this post-stroke client. This case study highlights the potential of occupation-based and task-oriented interventions in facilitating the return to productive roles among community-dwelling stroke survivors.

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## 1. INTRODUCTION

Stroke is one of the major non-communicable diseases and a leading cause of morbidity, mortality, and disability worldwide. Modern lifestyle changes, including physical inactivity, unhealthy dietary habits, and high levels of stress, contribute to the increasing incidence of stroke, cardiovascular disease, and diabetes mellitus. According to the World Health Organization (WHO), stroke remains one of the leading causes of death and disability globally, with ischemic stroke (cerebral infarction) accounting for the majority [1]. Indonesian Health Survey (SKI) data from 2023 reported 638,178 individuals living with stroke in Indonesia, with Central Java contributing 13.32% of the total national cases [2].

Cerebral infarction is a type of ischemic stroke caused by impaired blood flow to brain tissue, resulting in neuronal damage. This condition frequently causes motor impairments, including hemiparesis, reduced muscle strength, impaired coordination, and balance deficits, which negatively affect activities of daily living and overall quality of life [3]. Therefore, appropriate rehabilitation is necessary to maximize functional recovery and improve patient independence [4].

Occupational therapy plays an important role in post-stroke rehabilitation, one of which is through the Task-Oriented Approach (TOA). This approach emphasizes meaningful functional activity-based training through repetitive task practice, problem-solving, and environmental adaptation to enhance occupational performance [5]. Previous studies have demonstrated that TOA effectively improves functional abilities, including balance, gait speed, and endurance in individuals with ischemic stroke [6]. However, the implementation of TOA through productive occupations such as farming has rarely been reported.

In this case study, a post-stroke client presented with reduced walking and daily activities endurance, accompanied by an abnormal gait pattern and activity-related pain. These impairments limited the client's ability to engage in productive occupational performance as a farmer.

The intervention utilized farming activities because they were meaningful and aligned with the client's interests, thereby promoting greater participation and motivation throughout the rehabilitation process. The intervention focused on improving motor function, balance, gait pattern, and pain management to enable the client to return to productive farming activities with optimal endurance and occupational performance.

## 2. MATERIALS AND METHODS

### 2.1. Client's Profile

This study employed a case study design involving Mr. T, a 59-year-old male farmer from Sobokerto Village, Boyolali Regency, who had experienced a cerebral infarction one year prior, resulting in left-sided hemiparesis. The client had a history of a first-ever ischemic stroke and hypertension as a comorbid condition. He was able to ambulate independently within the home environment but occasionally relied on a single-point cane for longer distances because of reduced walking endurance and gait instability. Before receiving occupational therapy, the client had undergone physiotherapy focused on lower-extremity strengthening and gait training. He expressed a strong desire to recover and return to farming activities.

### 2.2. Evaluation

Evaluation was conducted using the Visual Analog Scale (VAS) to assess pain intensity, the Functional Independence Measure (FIM) to evaluate the client's level of independence in activities of daily living, the Six Minute Walk Test (6MWT) to measure functional capacity and walking endurance, lower extremity Range of Motion (ROM) assessment, and the Tinetti Balance and Gait Assessment to evaluate balance and gait performance.

In addition to standardized assessments, productivity outcomes were evaluated using occupation-based indicators, including the duration of participation in farming activities, the level of assistance required during task performance, the ability to complete farming tasks independently, and

the frequency of rest periods needed throughout activity engagement. These indicators were selected to directly reflect the client's occupational productivity and participation in meaningful work-related activities.

Cognitive screening during the initial assessment indicated intact cognitive function, with no evidence of deficits in attention, memory, orientation, or the ability to follow instructions. Despite maintaining independence in basic activities of daily living, the client demonstrated reduced endurance, hip pain, gait abnormalities, and balance impairments that limited participation in farming activities, which constituted his primary productive occupation.

### **2.3. Intervention Strategy**

The intervention aimed to enable the client to independently perform farming activities for 60 minutes within eight therapy sessions. This goal was achieved through several short-term objectives by gradually increasing the duration of activities. The intervention was implemented using the TOA through farming activities over eight sessions, with a frequency of three sessions per week and duration of 30–60 minutes per session. The intervention strategies included task segmentation, graded tasks, repetition and variability, and functional feedback. Therapy sessions were conducted in the client's home yard in Sobokerto Village, Ngemplak District, Boyolali Regency, using polybags, planting media, vegetable seeds, and manure fertilizer as therapeutic materials.

### **2.4. Intervention Program**

The therapy program consisted of four stages: adjunctive activity, enabling activity, purposeful activity, and occupational performance.

During the adjunctive activity stage, a graded task strategy was implemented through active and passive stretching exercises to improve joint range of motion and prepare the client's physical condition. The client performed active, passive, and active-assisted exercises involving the lower extremities, including hip flexion-extension, knee flexion-extension, and ankle dorsiflexion and plantar flexion. These activities were provided progressively to reduce pain, improve tissue flexibility, increase joint range of motion, and prepare the client for the main therapeutic activities.

At the enabling activity stage, the client performed lower extremity strengthening exercises using a resistance band. The exercises involved hip flexion-extension and knee flexion-extension exercises, as well as postural control training through weight-shifting activities. These activities were performed repeatedly using repetition and variability strategies to improve muscle strength, postural stability, motor control, and the ability to maintain standing and walking during farming activities.

During the purposeful activity stage, the client participated in simulated farming activities, including retrieving gardening tools, watering plants using a bottle, removing dry leaves, and transferring polybags. Various vegetable plants such as spinach, water spinach, and bok choy were used as therapeutic media. A task segmentation strategy was applied by dividing farming activities into simpler and more manageable tasks. In addition, this strategy was implemented by adjusting the height of the polybags, the volume of water used for watering, and the duration of the activities according to the client's tolerance. During the intervention, the therapist delivered visual and verbal feedback to facilitate improvements in movement quality and increase the efficiency of task performance.

At the occupational performance stage, the client independently carried out the entire farming process in the home yard using polybags as a planting medium. The activities included preparing tools and materials, walking to the planting area, watering plants, removing dry leaves, and transferring polybags. The duration of the activities was gradually increased according to the client's tolerance, starting at 20 minutes, progressing to 30 minutes, and ultimately reaching 60 minutes. Throughout the intervention, the therapist monitored pain response, fatigue, and gait quality. This stage aimed to improve standing and walking endurance while supporting the client's ability to resume productive farming activities optimally.



**Figure 1.** Implementation of a Farming-Based Intervention Program

### 3. RESULTS

The client presented with hip pain and reduced walking endurance, resulting in limitations in productive occupational performance as a farmer. Before the intervention, the client reported pain during activity with a VAS score of 5. The Six-Minute Walk Test (6MWT) revealed a walking duration of 3.62 minutes and a walking distance of 120 meters. Furthermore, the client achieved a Tinetti Balance and Gait Assessment score of 19/28, indicating gait impairment and an increased risk of mobility limitations. According to the Functional Independence Measure (FIM), the client demonstrated an independent level of functional performance with a total score of 122; however, supervision was still necessary during toileting and locomotion tasks.

Following eight therapy sessions, improvements were observed across the measured functional outcomes. The client's activity-related pain decreased from a VAS score of 5 to 4. The Six-Minute Walk Test (6MWT) demonstrated an improvement in walking endurance, with performance increasing from 3.62 minutes and a distance of 120 meters to continuous walking for the full 6 minutes without rest, covering a total distance of 195 meters. In addition, the Tinetti score increased from 19/28 to 26/28, indicating improvements in balance and gait performance. A comparison of pre- and post-intervention outcomes is presented in Table 1.

| <b>Table 1.</b> Pre- and Post-Intervention Outcomes |            |             |
|-----------------------------------------------------|------------|-------------|
| <b>Instrumen</b>                                    | <b>Pre</b> | <b>Post</b> |
| VAS                                                 | 5          | 4           |
| 6MWT                                                | 120 m      | 195 m       |
| FIM                                                 | 122        | 122         |
| Tinetti Balance and Gait Assessment                 | 19/28      | 26/28       |

Occupation-based productivity outcomes also demonstrated clinically meaningful improvements. Prior to intervention, the client was able to participate in farming activities for only 4 minutes and 23 seconds and required one rest period due to fatigue and discomfort. Following the intervention, the client successfully performed farming activities continuously for 60 minutes without

requiring rest. Furthermore, the client progressed from requiring supervision during farming-related mobility tasks to completing the entire sequence of farming activities independently, including walking to the planting area, watering plants, removing dry leaves, and transferring polybags. These findings indicate substantial improvement in occupational productivity and successful reintegration into the client's productive role as a farmer.

Based on the established therapeutic goals, all short-term and long-term goals were successfully achieved. The reduction in pain, improvements in walking duration and distance, and enhanced balance and gait performance positively contributed to the client's endurance in independently performing farming activities for 60 minutes, as targeted in the intervention goals.

#### 4. DISCUSSION

The findings of this case study demonstrated that implementing the Task-Oriented Approach (TOA) through farming activities positively affected the client's endurance and occupational performance. These improvements were reflected by the increase in the Six Minute Walk Test (6MWT) distance from 120 to 195 meters, the improvement in the Tinetti score from 19 to 26, and the extension of walking duration during the 6MWT from 3.62 minutes to six minutes without rest. The reduction in pain intensity from 5 to 4 may also have contributed to these improvements. Collectively, these findings indicate enhanced functional capacity, which supported the client's ability to perform productive activities more independently.

These improvements may be explained by the principles of TOA, which emphasize meaningful and functional activity-based training. This approach focuses on real-life task performance through repetition, problem-solving, and the adaptation of movement strategies according to task demands. The farming activities used in this study incorporated multiple performance components, including walking, standing, maintaining balance, bending, carrying objects, and coordinating upper and lower extremity movements. Repeated participation in these activities may facilitate motor learning and neuroplasticity, which are essential mechanisms underlying post-stroke recovery [7].

The improvement in balance and gait performance, as demonstrated by the increased Tinetti score, also suggests that farming activities provided functional stimulation tailored to the client's needs. These activities required the client to maintain postural alignment, perform transitional movements, and walk under various environmental conditions, thereby providing opportunities to train postural control and dynamic stability. This finding is consistent with the study conducted by Zhang et al. [6] which reported that task-oriented training is more effective than conventional training in improving walking ability, balance, and functional capacity in individuals with ischemic stroke. It is further supported by Almhdawi [8] who explained that the TOA facilitates motor learning through meaningful activities, repetitive practice, and appropriate feedback. In the present study, the improvement in the client's endurance may be attributed to the use of farming activities, which provided functional training involving repeated standing and walking within the context of activities that were relevant to the client's occupational needs. Furthermore, Jung et al. demonstrated that task-oriented training can improve functional performance and activities of daily living in individuals with stroke through task practice tailored to individual abilities and performed repeatedly within meaningful activity contexts [5].

In addition to physical improvements, the use of farming as a meaningful occupation contributed to the success of the intervention. In occupational therapy, activities that align with an individual's interests, habits, and roles can enhance motivation, engagement, and adherence throughout the rehabilitation process. In this case, farming was a productive occupation that the client had routinely performed before the stroke; therefore, the client demonstrated active participation throughout the intervention. This finding supports the occupational therapy principle that meaningful occupations serve as a primary therapeutic medium for improving occupational performance and participation in everyday life.

Overall, implementing TOA through farming activities not only improved endurance and mobility but also supported the restoration of the client's productive role. These findings suggest that

meaningful occupation-based interventions may serve as an effective alternative in post-stroke rehabilitation, particularly for individuals experiencing productivity limitations due to impaired mobility and reduced endurance.

Despite the positive outcomes observed, this case study has several limitations. First, as this intervention involved only a single client, the findings cannot be generalized to the broader population of individuals with similar conditions. Second, the absence of a comparison case limits the ability to determine whether the observed improvements were attributable solely to the intervention. Third, external factors that were not controlled such as the client's motivation, family support, prior rehabilitation experiences, and natural recovery processes may have influenced the outcomes. Therefore, future studies involving larger samples, controlled designs, and longer follow-up periods are recommended to further examine the effectiveness of task-oriented occupation-based interventions in improving occupational productivity among stroke survivors.

## 5. CONCLUSIONS

The implementation of the TOA through farming activities was effective in improving the client's productivity in this case study. The therapeutic goal of independently performing farming activities for 60 minutes was successfully achieved. The improvement in endurance during activity performance was supported by enhanced walking endurance, improved balance and gait performance, and reduced pain intensity. This case study demonstrates that TOA, when implemented through meaningful occupations, can effectively improve productivity among community-dwelling post-stroke clients. Nevertheless, further research involving broader populations and more comprehensive evaluations is needed to explore the effectiveness of this approach in other rehabilitation domains.

## ACKNOWLEDGEMENT

The authors would like to express their sincere gratitude to all parties who contributed to the completion of this study. Special appreciation is extended to the supervisors for their valuable guidance, insightful suggestions, and continuous support throughout the research process. The authors also acknowledge the participant and family for their cooperation and commitment during the intervention program. Furthermore, the authors would like to thank the Department of Occupational Therapy, Surakarta Health Polytechnic, for providing academic support and resources that contributed to the successful completion of this study

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