

Challenges and Effectiveness of Neurological Therapy: New Bobath Concept in Stroke Patient Rehabilitation

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Abstract

Background: This study investigated the effectiveness of the New Bobath Concept and virtual therapy in the rehabilitation of patients with neurological conditions, especially stroke. **Method:** A literature review of five scientific articles revealed that the New Bobath Concept is effective in improving motor function and functional activity of stroke patients. **Result:** The use of virtual therapy as a support for the New Bobath Concept has also been shown to accelerate the recovery process and increase patient participation. The analysis of scientific articles also highlighted the importance of developing more specific therapeutic strategies to maximize neuroplasticity adaptation and accelerate the recovery process. **Conclusion:** Suggestions are suggested to conduct further research with a wider sample, integrate the latest technology, and involve health experts in developing practical guidelines. These efforts are expected to improve the effectiveness of rehabilitation and the quality of life of patients with neurological conditions.

Keywords: New Bobath Concept, virtual therapy, rehabilitation, stroke, neuroplasticity

INTRODUCTION

Neurophysiological therapies such as Bobath Therapy and Virtual Therapy have become important approaches in the rehabilitation of patients with neurological conditions such as stroke. These therapies, first introduced in the 1950s, are still widely used in therapeutic and athletic settings today [1]. Advances in technology and growing knowledge of the human nervous system have fueled increased research in neuroscience and biomechanics, providing the foundation for innovative and effective rehabilitation approaches. For example, research has shown that engaging in activity-focused exercise, along with strength and fitness training, can improve patients' motor skills and functional performance.

Implementation of community service activities aimed at preventing stroke using Bobath therapy in RW.06 Wonokromo Village. This activity not only ran smoothly, but was also greeted with high enthusiasm by the participants during the activity. The attention and active participation of the participants illustrate that Bobath therapy is considered a relevant and useful solution in overcoming existing health problems, especially related to stroke prevention. The success of this activity highlights the importance of a preventive approach in managing public health as well as the importance of providing services that are easily accessible and accepted by the community. Thus, the

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results of this activity show the great potential of Bobath therapy as part of a stroke prevention strategy at the community level [2].

Rehabilitation of stroke patients using the new Bobath concept has also been proven effective in improving motor function and functional activity [3]. These techniques, such as sensory stimulation and functional training, are based on the principles of neuroplasticity that allow for adaptation and improvement in neurological function. With the latest technological advances and scientific findings, these rehabilitation approaches continue to evolve to provide more effective care for patients with neurological conditions.

This article aims to explain the importance of neurophysiological therapies such as Bobath Therapy and Virtual Therapy in the rehabilitation of patients with neurological conditions, especially stroke. With the advancement of technology and the growing knowledge of the human nervous system, this article aims to illustrate how these therapies have made significant contributions in improving motor skills and functional performance of patients. Through a review of the literature and empirical research, this article also introduces the reader to an innovative and effective rehabilitation approach that combines the principles of neuroplasticity and cutting-edge technology, thus providing more effective and holistic care for individuals with neurological conditions.

Based on the background of the importance of Bobath Therapy as an effective rehabilitation approach for patients with neurological conditions, especially stroke, and the emphasis on the use of technology in virtual therapy, there are several relevant problem formulations to be studied related to the application of the New Bobath Concept. These problem formulations include: 1) How does the latest Bobath concept affect post-stroke rehabilitation, especially in increasing muscle strength in the limbs?; 2) What are the limitations faced in defining and standardizing Bobath therapy interventions between therapists or trials, and how can these challenges be overcome?; 3) How effective is Bobath therapy compared to other approaches such as task-specific training and robotics in increasing arm activity and strength in post-stroke patients, and what are the implications of these findings for clinical practice?

Based on the formulation of the problem that has been provided, the objectives of this scientific article are: 1) To analyze the influence of the latest Bobath concept in post-stroke rehabilitation, especially in increasing muscle strength of the limbs, by considering the latest developments in neuroscience and biomechanics; 2) To identify challenges and limitations in the application of Bobath therapy in post-stroke rehabilitation, including in defining Bobath therapy and standardizing interventions between therapists or trials; 3) To evaluate the effectiveness of Bobath therapy in increasing muscle strength of the limbs of post-stroke patients, as well as understanding the role of Bobath therapy in the broader context of post-stroke rehabilitation.

Neurophysiological therapies such as Bobath Therapy and Virtual Therapy have been a major approach in the rehabilitation of patients with neurological conditions since their introduction in the 1950s [1]. Despite the passage of several decades, this method is still widely used in therapeutic and sports settings. Advances in neuroscience and biomechanics have fueled increased research, driven by technological developments and a deeper understanding of the human nervous system. As a result,

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neurological rehabilitation has advanced rapidly with more scientific ideas and more creative treatment plans.

Studies related to the latest Bobath concept in stroke cases highlight the important role of postural control and selective movement in post-stroke rehabilitation. Bobath therapy, as an approach that focuses on normalizing movement patterns, has been the subject of debate regarding its effectiveness compared to other approaches, such as task-specific training and robotics. The Bobath concept emphasizes movement analysis by considering selective movement, postural control, and sensory roles, but limitations in defining Bobath therapy make it difficult to standardize interventions between therapists or intervention trials [4]. Previous studies have shown that Bobath therapy is less effective than task-specific training in improving arm activity and strength in post-stroke patients, as reflected in the Fugl-Meyer Assessment score. Nevertheless, Bobath therapy is still considered one of the relevant approaches in post-stroke rehabilitation, especially because of its focus on postural control and selective movement. Thus, a deeper understanding of the latest Bobath concept and its comparison with other approaches may help guide clinical practice and improve the effectiveness of post-stroke rehabilitation [2].

In addition to conventional methods, virtual therapy is also attracting attention in supporting the rehabilitation of patients with neurological conditions. The use of virtual therapy devices has been shown to reduce stress and anxiety, as well as increase patient participation in the rehabilitation process. This approach is based on the concept of the Virtual Therapy Garden which utilizes sensory and hypnotic communication to strengthen patient persistence in achieving rehabilitation goals [3].

Limitations in defining Bobath therapy and challenges in standardizing interventions between therapists or intervention trials. Bobath therapy is seen as an approach rather than a discrete intervention, making it difficult to standardize interventions across therapists or trials. However, Bobath therapy has a fundamental belief that therapists should facilitate movement that focuses on posture and trunk control, and this appears to be common to the interventions described in these trials. However, there are some limitations in the studies conducted, such as the publication date and quality scores of the included trials, which indicate variation in methodological quality [5]. However, a strength of this review is that the search was comprehensive, and included a larger number of trials than previous reviews on this topic. In conclusion, the review concluded that Bobath therapy was less effective than task-specific training and robotics for improving arm activity and strength in post-stroke patients. Therefore, the use of Bobath therapy is not supported compared to other interventions [6].

Challenges and limitations in implementing Bobath therapy in post-stroke rehabilitation. Although this therapy has been used for a long time, recent studies have shown that Bobath therapy may not be as effective as other approaches in improving arm activity and strength in post-stroke patients. Therefore, further research is needed to better understand the role of Bobath therapy in post-stroke rehabilitation, as well as the development of new concepts that are more effective and efficient [7].

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Bobath therapy has a significant effect on muscle strength of the limbs before and after being performed on patients with post-stroke infarction. Bobath therapy is an approach that focuses on normal movement patterns by increasing control over selective postural movements [8]. The Bobath concept emphasizes movement analysis by considering selective movements, postural control, and sensory roles. In the movement process, postural muscle tone has a significant impact on the effectiveness and efficiency of the resulting movement [9]. It is expected that with Bobath therapy, the postural muscles will become more active again and can increase the strength of the limb muscles. According to researchers, non-pharmacological therapy in patients with post-stroke infarction is used as an alternative to movement exercises to increase muscle strength of the limbs. Specifically, Bobath therapy can be used to determine changes in muscle strength of the limbs in patients with post-stroke infarction [10]. This therapy is one of the activities that is oriented towards normal movement patterns by increasing the ability to control postural movements and selective. Thus, after Bobath therapy, postural muscle tone will greatly determine the effectiveness and efficiency of the resulting movement, so that the function of limb mobility can be improved with adequate postural stability. Through Bobath therapy, it is expected that patients can experience significant improvements in the strength and function of their limb movements [11].

METHOD

This research method combines a review of five scientific articles consisting of journals related to the field of neurological rehabilitation with a focus on the New Bobath Concept and other therapies. The first stage is to identify articles that are relevant to the research topic. After that, in-depth reading and analysis of each article is carried out to extract relevant and significant information. Then, the results of the review of each article are compiled into a comprehensive summary. The information collected from each article will be structured and organized to form a coherent whole. This process involves synthesizing information, comparing results, and explaining the concepts contained in the articles.

After the summary of each article is compiled, the process of writing a scientific article is carried out by considering the structure and format commonly used in scientific journals. The scientific article produced will include the research background, research objectives, literature review consisting of the results of a review of five scientific articles, research methodology, results and discussion, and conclusions and suggestions. During the process of writing a scientific article, attention is paid to the accuracy and objectivity in presenting information obtained from the results of the review of the five scientific articles. Article writing is carried out by considering a holistic and comprehensive perspective on the research topic, and following the applicable writing rules and ethical principles of scientific research.

RESULTS AND DISCUSSION

Below is a table containing the article title, year of publication, and a brief review for each article.

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Table 1. List of the articles review

No	Scientific Articles	Year	Reviews
1	Bobath Therapy and Virtual Therapy in Neurological Stroke Rehabilitation	2024	This article discusses the importance of Bobath Therapy and Virtual Therapy in neurological rehabilitation. It is argued that these two therapies are still the mainstay of choice in therapeutic and sports settings, despite several decades having passed since their introduction in the 1950s. Research in this area highlights significant advances in neuroscience and biomechanics, which have enabled the development of scientific ideas and creative treatment plans in neurological rehabilitation for stroke.
2	Draft Latest Bobath in Rehabilitation Post-Stroke: A Literature review	2022	The important role of the latest Bobath concept in post-stroke rehabilitation. The Bobath concept emphasizes postural control and selective movement as an effort to facilitate the improvement of arm activity and strength in post-stroke patients. However, the limitations in defining Bobath therapy make it difficult to standardize interventions between therapists or intervention trials, which then affects its effectiveness. Previous studies have shown that Bobath therapy tends to be less effective than other approaches such as task-specific training in improving arm activity and strength in post-stroke patients. Nevertheless, Bobath therapy is still considered a relevant approach in post-stroke rehabilitation because of its consistent focus on postural control and selective movement. Therefore, a deeper understanding of the latest Bobath concept and its comparison with other approaches can help guide clinical practice and improve the effectiveness of post-stroke rehabilitation.
3	Review To Effectiveness Therapy Bobath in Rehabilitation Post-Stroke: Challenges and Practical Implications	2023	This article provides an in-depth understanding of the challenges and limitations in implementing Bobath therapy in post-traumatic stress rehabilitation. stroke. Although this therapy has been used for a long time. Recent studies have suggested that Bobath therapy may not be as effective as other approaches in improving arm activity and strength in post-stroke patients. Therefore, this review provides important awareness to healthcare practitioners about the need for critical assessment of

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			Bobath therapy in the context of post-stroke rehabilitation. Further research is needed to better understand the role of Bobath therapy in post-stroke rehabilitation and to identify new concepts that are more effective and efficient in optimizing rehabilitation outcomes. Thus, this review has significant practical implications in guiding clinical practice and the development of better post-stroke rehabilitation interventions in the future.
4	New Bobath Concept for Stroke Rehabilitation	2023	This article discusses the use of New Bobath Concept in the rehabilitation of patients with non-hemorrhagic stroke. It is stated that therapy using New Bobath Concept has successfully produced positive changes in patients, including changes in posture, improved balance, and better functional abilities after a series of regular therapies.
5	Influence Therapy Bobath to Muscle Strength in Post-Stroke Patients: Bobath's New Concept Approach	2023	Bobath therapy in post-stroke patients highlights the importance of the new Bobath concept approach in understanding and implementing this therapy. The results showed that Bobath therapy has a significant effect on limb muscle strength in post-stroke patients. The Bobath concept emphasizes the importance of postural control and selective movement in facilitating improvements in limb muscle strength. Previous studies have also highlighted that Bobath therapy can be used as an effective non-pharmacological alternative in improving muscle strength and movement function in post-operative patients stroke. Thus, a deep understanding of the Bobath concept and its application in clinical practice can improve the effectiveness of post-stroke rehabilitation and improve the quality of life of patients.

These five scientific articles provide valuable insights into neurological rehabilitation approaches, with a focus on Bobath Therapy, Virtual Therapy, and related concepts. In this series of studies, the use of advanced neurophysiological methods and technologies, such as virtual therapy, has been shown to be effective in improving motor function and functional performance in neurological patients. Therapy using the New Bobath Concept has also resulted in positive changes in patients with non-hemorrhagic stroke and other motor disorders. In addition, the development of

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clinical frameworks, such as the BCRF, provides a more holistic view in the management of cerebral palsy and other neurodevelopmental conditions. Further research is needed to explore the effectiveness and mechanisms of action of these approaches and to enrich clinical practice in neurological rehabilitation.

The analysis of the objectives of the scientific article is as follows: **1) The Influence of Bobath's Latest Concept in Post-Stroke Rehabilitation.** Data shows that Bobath therapy is one of the main approaches in post-stroke rehabilitation. Although this therapy has been used since the 1950s, advances in neuroscience and biomechanics have led to an increase in more in-depth research. Bobath therapy, which focuses on normalizing movement patterns by improving control of selective postural movements, has been the subject of debate in the literature regarding its effectiveness compared to other approaches such as task-specific training and robotics. Nevertheless, Bobath therapy is still considered a relevant approach in post-stroke rehabilitation because of its focus on postural control and selective movements. **2) Challenges and Limitations in the Implementation of Bobath Therapy.** Data show that there are several challenges and limitations in implementing Bobath therapy in post-stroke rehabilitation. One of these is the difficulty in defining Bobath therapy and standardizing the intervention between therapists or trials. Bobath therapy is seen as an approach rather than a discrete intervention, which makes it difficult to organize the intervention between therapists or trials. However, efforts to overcome these challenges. This has been done by conducting a comprehensive and inclusive search in research. **3) The Effectiveness of Bobath Therapy in Increasing Muscle Strength of the Limbs of Post-Stroke Patients.** The data shows that Bobath therapy has a significant effect on muscle strength of the limbs in post-stroke patients. This therapy focuses on normalizing movement patterns by increasing control over selective postural movements, thereby increasing muscle strength of the extremities. Research shows that Bobath therapy can be used as an alternative to movement exercises to increase muscle strength of the limbs in post-stroke patients. It is expected that with Bobath therapy, patients can experience significant improvements in the strength and function of their extremity movements.

CONCLUSION

In the context of the latest Bobath concept in stroke, this therapy remains a relevant approach in post-stroke rehabilitation with a focus on postural control and selective movement. Despite challenges in defining and standardizing Bobath interventions, research shows that this therapy has a significant effect on improving limb muscle strength in post-stroke patients. In the face of recent developments in neuroscience and biomechanics, a deeper understanding of the latest Bobath concept can help guide clinical practice and improve the effectiveness of post-stroke rehabilitation.

ACKNOWLEDGMENT

For further development, it is recommended to conduct further studies involving a wider sample and stricter controls to verify the effectiveness of the New Bobath Concept and virtual therapy in the rehabilitation of patients with neurological conditions, especially stroke. In addition, in-depth

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research is needed to understand the neuroplasticity mechanisms involved in the New Bobath Concept, so that more specific and effective therapeutic strategies can be designed.

Another suggestion is to integrate the latest technologies, such as virtual reality and augmented reality, into the New Bobath Concept to improve the efficiency and effectiveness of rehabilitation. In addition, it is important to involve health experts and practitioners in the development of practical guidelines for the implementation of the New Bobath Concept in daily clinical practice. Thus, this effort can provide greater benefits for patients with neurological conditions in improving their quality of life and accelerating the recovery process.

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