THE IMPACT OF AN INTERVENTION PROGRAM BASED ON RANGE OF MOTION TRAINING FOR SPECIAL EDUCATION TEACHERS.

ABSTRACT

This study aims to develop a range of motion-based exercise material for special education teachers in Makassar, Indonesia. The material is designed to improve the motor skills of students with physical disabilities, particularly those with cerebral palsy. The research consists of two main parts: conclusion and recommendation. The conclusion highlights the importance of developing exercise materials that cater to the needs of students with physical disabilities. The study finds that the existing materials are inadequate, and teachers require a more comprehensive guide to provide optimal learning experiences for their students. The developed material consists of a teacher's guide, a learning objective outline, and a lesson plan. The material is validated by two experts and is deemed valid and practical. The study also analyzes the effectiveness of the developed material in improving the motor skills of students with cerebral palsy. The results show that the material can increase the flexibility of students' movements, although the improvement is not significant. The students' positive responses to the learning process also indicate the effectiveness of the material.

Based on the findings, the study recommends further development of the material to improve its comprehensiveness and effectiveness. The study also suggests that the material can be used as a reference for improving the quality of special education in Indonesia. Additionally, the study recommends that the government consider using the developed material in special education schools to provide better learning experiences for students with physical disabilities.

Keywords: *special education, physical disabilities, cerebral palsy, range of motion*

INTRODUCTION

Special Educational Needs (SEN) are a social reality that cannot be ignored. They have the right to receive an education that meets their needs and limitations [1]. Special Educational Needs (SEN) with physical disabilities, particularly cerebral palsy, require special services to perform daily activities. The physical abnormalities that occur in them can cause mobility and ambulation disorders, which impact their quality of life [2].

The study aims to develop a range of motion-based exercise material for special education teachers in Makassar, Indonesia. The material is designed to improve the motor skills of students with physical disabilities, particularly those with cerebral palsy. The research consists of two main parts: conclusion and recommendation. The conclusion highlights the importance of developing exercise materials that cater to the needs of students with physical disabilities. The study finds that the existing materials are inadequate, and teachers require a more comprehensive guide to provide optimal learning experiences for their students. The developed material consists of a teacher's guide, a learning objectives flow (LOF), and a lesson plan (RPP) developed based on the Borg and Gall development model. The material is validated by two experts and is deemed valid and practical. The study also analyzes the effectiveness of the developed material in improving the motor skills of students with cerebral palsy. The results show that the material can increase the flexibility of students' movements, although the improvement is not significant. The students' positive responses to the learning process also indicate the effectiveness of the material. Based on the findings, the study recommends further development of the material to improve its comprehensiveness and effectiveness. The study also suggests that the material can be used as a reference for improving the quality of special education in Indonesia. Additionally, the study recommends that the government consider using the developed material in special education schools to provide better learning experiences for students with physical disabilities. This study aims to produce a modular exercise material that can serve as a source of information or a learning guide for range of motion-based exercise for special school teachers. Specifically, this study seeks to:

The study aims to identify and gather data on the needs for a training range of motion-based exercise instructional material for special education teachers in SLB.

The study aims to develop a design or plan for a training range of motion-based exercise instructional material for special education teachers in SLB.

The study aims to test the validity and practicality of the training range of motion-based exercise instructional material developed for special education teachers in SLB.
The study aims to test the effectiveness of the training range of motion-based exercise instructional material developed for special education teachers in SLB.
The instructional material developed in this study consists of a teacher's guide, Learning Objectives Flow (LOF), and Lesson Plan/RPP. The instructional material is designed to meet the needs of range of motion-based exercise learning for special education teachers in SLB [3]. It is hoped that the developed instructional material will serve as a teaching resource and guide to implementing range of motion-based exercise for students with disabilities. The specifications of the module produced are equipped with movement training techniques in the form of illustrations, images, and videos [4]. Specifically, the specifications of the range of motion-based exercise instructional material produced in this study are as follows:
The instructional material produced is a Training Guide for range of motion-based exercise that is packaged and adjusted to the conditions of students with physical disabilities/motor limitations. The instructional material developed is expected to serve as a guide for teachers to maintain and/or improve the quality of movement of students with physical disabilities, especially in the flexibility component of the body.
The instructional material is designed in the form of material such as an introduction to the concept of human body movement, the curriculum of movement learning in SLB, understanding the concept of range of motion, a guide to formulating a movement learning plan, a guide to movement range of motion for upper limbs, a guide to movement range of motion for lower limbs, a guide to movement assessment and follow-up.
The instructional material also includes a Learning Objectives Flow (LOF) for movement learning, so that teachers can conduct learning according to the stages of development of students with physical disabilities.
The techniques for implementing movement learning based on training range of motion are discussed one by one using simple language, combined with text, images, and links to access videos, making it attractive and easy to understand.
The development of exercise instructional materials based on range of motion training for special education teachers in SLB still has limitations, including:
The study uses the [5] model, which has not yet reached the dissemination stage due to time constraints.
The effectiveness testing of the exercise instructional materials based on range of motion training is limited to six students with physical disabilities in SLB Negeri 1 Makassar.
Teachers who implement range of motion-based exercise learning in the study were trained by the researcher without the assistance of an expert, so teachers need time to learn the techniques of range of motion-based exercise training.
The effectiveness testing of the instructional materials requires a relatively long time. The development of flexibility and motor skills in general requires a long time to evaluate changes.
The development of exercise instructional materials based on range of motion training for special education teachers in SLB is crucial to improve the quality of learning and help children with cerebral palsy develop their motor skills. The study aims to be the first step in improving the quality of education services for children with cerebral palsy in SLB.
Developing motor skills is very important for every individual, especially for children with special needs, especially children with cerebral palsy. Children with cerebral palsy have difficulty moving and coordinating, which is caused by damage to the central nervous system that controls body movement. This disorder can cause delayed motor development and difficulty performing daily activities.
Several studies have been conducted to understand and help overcome motor limitations in children with cerebral palsy. Werner (2002) in [6] emphasized the importance of regular range of motion training to prevent joint stiffness and increase flexibility in children with cerebral palsy.
[7] found that static stretching and proprioceptive neuromuscular facilitation training of the plantar flexor muscles can increase range of motion and improve muscle behavior in children with spastic cerebral palsy. [8] noted that all children with cerebral palsy can benefit from range of motion training, including those with severe cerebral palsy, by involving parents or trained therapists to help children perform passive movements. [9] emphasized that movement learning aims to change, improve, and shape movement patterns that approach normal, adjusted to the characteristics and needs of students.
The study aims to contribute to the development of exercise instructional materials based on range of motion training for special education teachers in SLB, which can help children with cerebral palsy improve their motor skills and actively participate in daily life.

METHOD

The study uses the Research and Development (RnD) method adapted from the [5] model. This model was chosen because it is considered appropriate for developing effective and practical instructional materials. The stages in this model include needs analysis, design, validation, revision, testing, and final revision. The study involved special education teachers in SLB Negeri 1 Makassar. Data was collected through observation, interviews, and documentation. The results showed that special education teachers in SLB experience difficulties in providing range of motion-based exercise training. Teachers in SLB Negeri 1 Makassar stated difficulties in applying range of motion training for special needs children, especially those with cerebral palsy. This is due to their lack of understanding of the concept of range of motion and insufficient training in applying range of motion techniques. There is a lack of comprehensive exercise-based instructional materials that use range of motion training. Teachers stated that the available instructional materials generally discuss basic movement concepts, basic techniques, and general exercises. However, instructional materials that specifically discuss the concept and appropriate range of motion techniques for children with cerebral palsy are limited. Teachers hope that the available instructional materials can be packaged in easy-to-understand language, equipped with illustrations, images, and videos. This can help teachers understand and apply range of motion concepts and techniques practically. Teachers hope that the available instructional materials not only cover the concept and techniques of range of motion but also cover comprehensive learning stages, from lesson planning, implementation, to evaluation. Teachers hope that exercise-based instructional materials that use range of motion training can help them improve the motor skills of special needs children, especially in terms of flexibility, coordination, and strength. The results showed that special education teachers in SLB Negeri 1 Makassar need more comprehensive, practical, and effective exercise-based instructional materials that use range of motion training. This is because the concept of range of motion is crucial for improving motor skills. Range of motion exercises can help children with special needs, especially those with cerebral palsy, improve flexibility, coordination, and muscle strength. This is important to support their independence and improve their quality of life. Proper exercise instructional materials can help teachers understand the correct range of motion concepts and techniques for special needs children. Good instructional materials can also help teachers plan and conduct effective exercise learning. Practical and effective exercise instructional materials can help teachers conduct learning more easily and effectively. This can improve the quality of exercise learning provided to special needs children. The stages in this model include:

1. Needs Analysis Stage: This stage aims to identify the need for exercise-based instructional materials that use range of motion training in SLB. The needs analysis is conducted through observation, interviews, and documentation of special education teachers in SLB. The collected data is analyzed qualitatively to determine the gap between needs and the availability of existing instructional materials.
2. Design Stage: Based on the results of the needs analysis, this stage designs the exercise-based instructional materials that use range of motion training. The design includes:
    - Instructional material structure: The instructional material consists of material, activities, assessment, and evaluation.
    - Instructional material content: The content covers the basic concepts of movement, range of motion training, exercise techniques, and assessment.
    - Learning media: The instructional material is equipped with attractive and interactive learning media such as images, videos, and illustrations.
3. Validation Stage: This stage aims to evaluate the validity and practicality of the designed instructional materials. Validation is carried out by experts in the field of special education and special education teachers.
4. Revision Stage: Revision is carried out based on the results of the validation and practicality.
5. Testing Stage: This stage aims to test the effectiveness of the revised instructional materials. Testing is carried out by involving teachers and students in SLB. Data is collected through observation, interviews, and documentation.
6. Dissemination Stage: This stage aims to disseminate effective instructional materials.

The study uses a quantitative and qualitative approach. The quantitative approach is used to collect data through surveys and tests, while the qualitative approach is used to collect data through observation and interviews. The collected data is analyzed descriptively using statistical techniques and qualitative data interpretation.

The study uses a quasi-experimental research design with a control group. The control group receives physical movement learning without using the developed instructional materials, while the

experimental group receives physical movement learning using the developed instructional materials. The collected data is then analyzed statistically to determine the difference in effectiveness between the two groups.
It is hoped that this research method can produce exercise-based instructional materials that use range of motion training that are valid, practical, and effective in helping special education teachers in SLB improve the quality of physical education for students with physical disabilities.

RESULT AND DISCUSSION

This study aims to identify and fulfill the need for exercise-based instructional materials that use range of motion training for special education teachers in SLB. The research uses the Borg and Gall development model, consisting of seven stages: (1) needs identification, (2) data collection, (3) design, (4) validation, (5) revision, (6) testing, and (7) final revision. The study involved special education teachers in SLB Negeri 1 Makassar. Data was collected through observation, interviews, and documentation. The results showed that:

1. Special education teachers in SLB experience difficulties in providing range of motion-based exercise training. Teachers in SLB Negeri 1 Makassar stated difficulties in applying range of motion training for special needs children, especially those with cerebral palsy. This is due to their lack of understanding of the concept of range of motion and insufficient training in applying range of motion techniques.
2. There is a lack of comprehensive exercise-based instructional materials that use range of motion training. Teachers stated that the available instructional materials generally discuss basic movement concepts, basic techniques, and general exercises. However, instructional materials that specifically discuss the concept and appropriate range of motion techniques for children with cerebral palsy are limited.
3. Teachers hope that the available instructional materials can be packaged in easy-to-understand language, equipped with illustrations, images, and videos. This can help teachers understand and apply range of motion concepts and techniques practically.
4. Teachers hope that the available instructional materials not only cover the concept and techniques of range of motion but also cover comprehensive learning stages, from lesson planning, implementation, to evaluation.
5. Teachers hope that exercise-based instructional materials that use range of motion training can help them improve the motor skills of special needs children, especially in terms of flexibility, coordination, and strength.

The results showed that special education teachers in SLB Negeri 1 Makassar need more comprehensive, practical, and effective exercise-based instructional materials that use range of motion training. This is because:

1. The concept of range of motion is crucial for improving motor skills. Range of motion exercises can help children with special needs, especially those with cerebral palsy, improve flexibility, coordination, and muscle strength. This is important to support their independence and improve their quality of life.
2. Proper exercise instructional materials can help teachers understand the correct range of motion concepts and techniques for special needs children. Good instructional materials can also help teachers plan and conduct effective exercise learning.
3. Practical and effective exercise instructional materials can help teachers conduct learning more easily and effectively. This can improve the quality of exercise learning provided to special needs children.

Based on the research results and discussion, several recommendations can be made:

1. Develop Comprehensive Exercise-Based Instructional Materials: Developing comprehensive exercise-based instructional materials that use range of motion training can be done by involving experts in special education, physical therapy, and range of motion. The developed instructional materials should cover basic range of motion concepts, appropriate range of motion techniques for special needs children, especially those with cerebral palsy, examples of exercises, and learning evaluations.
2. Develop Practical and Effective Instructional Materials: Developing practical and effective exercise-based instructional materials that use range of motion training can be done by including illustrations, images, and easy-to-understand videos. The instructional materials can also be packaged in simple and easy-to-understand language for teachers.
3. Training and Guidance for Teachers: Training and guidance for special education teachers related to range of motion-based exercise learning are very necessary. Training can cover: (1) understanding the concept of range of motion, (2) range of motion techniques, (3) exercise

lesson planning and implementation, (4) learning evaluation, and (5) using exercise-based instructional materials that use range of motion training.

4. Further Research: Further research is needed to test the effectiveness of exercise-based instructional materials that use range of motion training that has been developed. This research can be conducted by involving more special education teachers and special needs children in various SLBs.

Based on the research results and discussion, several recommendations can be made. Developing comprehensive exercise-based instructional materials that use range of motion training can be done by involving experts in special education, physical therapy, and range of motion. The developed instructional materials should cover basic range of motion concepts, appropriate range of motion techniques for special needs children, especially those with cerebral palsy, examples of exercises, and learning evaluations. Developing practical and effective exercise-based instructional materials that use range of motion training can be done by including illustrations, images, and easy-to-understand videos. The instructional materials can also be packaged in simple and easy-to-understand language for teachers. Training and guidance for special education teachers related to range of motion-based exercise learning are very necessary. Training can cover understanding the concept of range of motion, range of motion techniques, exercise lesson planning and implementation, learning evaluation, and using exercise-based instructional materials that use range of motion training. Further research is needed to test the effectiveness of exercise-based instructional materials that use range of motion training that has been developed. This research can be conducted by involving more special education teachers and special needs children in various SLBs.Based on the research findings, it can be concluded that the development of exercise-based instructional materials that use range of motion training for special education teachers in SLB is very much needed to meet the learning resources needed by teachers in providing more optimal learning and training services for students with physical disabilities, especially children with cerebral palsy. The developed instructional materials consist of a movement guidance book, learning objectives (syllabus), and lesson plans, and have been declared very valid and practical by validators. The results of the trial also show that this instructional material can increase students' movement flexibility and positive responses to the implementation of learning. Based on these findings, several suggestions can be made. First, the development of exercise-based instructional materials that use range of motion training needs to be continued and perfected to develop other motor skills components. Second, researchers who want to continue research and development further should consider the findings obtained in this research. Third, school principals can use the results of this research as a step in building teacher competence in preparing, planning, and implementing movement learning in SLB. Lastly, the government should consider using the developed instructional materials as a reference to improve the quality of special education in SLB.

CONCLUSION

Based on the research findings, it can be concluded that the development of exercise-based instructional materials that use range of motion training for special education teachers in SLB is very much needed to meet the learning resources needed by teachers in providing more optimal learning and training services for students with physical disabilities, especially children with cerebral palsy. The developed instructional materials consist of a movement guidance book, learning objectives (syllabus), and lesson plans, and have been declared very valid and practical by validators. The results of the trial also show that this instructional material can increase students' movement flexibility and positive responses to the implementation of learning.

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Disclaimer (Artificial intelligence)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

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