

## Conference Paper

# Development of Teacher Module for Learning Static Dominant Movement for Students with Autism

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**Abstract.**

This research aims to offer solutions to overcome the difficulty of teachers in finding resources for PJOK learning modules in SLB schools. The purpose of this study was to develop a teaching module for learning about static dominant motion for students with autism in class 1 SDLB. This research follows the ADDIE model. A quantitative descriptive data analysis technique was used in this study, while the data was collected using a questionnaire instrument. The research subjects were 9 autistic students and 18 special school teachers. The module has been validated by media experts, material experts, and characteristics experts for autistic children. The results of the large group trial showed a percentage value of 92%. The product of this module was then concluded to be valid and suitable for use by SLB teachers. This module is expected to provide convenience for teachers in teaching autistic students, especially static dominant motion.

**Keywords:** kwd

## 1. Introduction

Adaptive physical education includes all forms of disorders experienced by children, one type of characteristic is autism. Autism Spectrum Disorder (ASD) is a developmental nervous system disorder that causes social communication deficits, and limited, repetitive behavior patterns (1). Autism is caused by a neurological condition that interferes with the normal functioning of the brain, interferes with the development of social relationships and the ability to speak as well as slower thinking skills than other normal children (2). Autistic children show problems with balance and poor motor control skills, which can affect daily activities (3). The ability to balance the body in autistic children is

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**Published** 21 December 2022

Publishing services provided by Knowledge E

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Selection and Peer-review under the responsibility of the ICESRE Conference Committee.

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influenced by the level of Intellectual Quotient (IQ) (4), and differences in balance can also be affected by gender differences, in the tests carried out boys are more wobbly than girls (5).

Balance is an important component in a child's development, balance is needed by children as a better motor movement improvement and prevention of injury due to falls (5). So that in learning for autistic children requires a special approach (6). This requires teachers to have good abilities for the implementation of complete learning. The term "physical activity" is different from "exercise". Exercise is part of a structured, repetitive, and purposeful physical activity (7). Children with autism are a special risk group because of their sedentary lifestyle, which can increase the risk of heart disease, diabetes, and obesity (8). Therefore, physical activities carried out in schools with a short time division need to be carried out as effectively as possible.

Good mastery of the material becomes the main capital for a teacher to carry out the learning and learning process. Mastery of the material in carrying out learning requires sources as a guide or teacher's handle, the module is one of the teaching materials. The module is one type of learning media that is often used in the classroom (9). Modules can be thought of as books that are structured with the aim of enabling students to learn on their own (10). Learning modules are tailored to the needs of the students being taught. Learning innovation is related to students' ability to learn teaching materials provided by the teacher in a comfortable way (11). One of the learning media used in learning is the motion learning module.

The problem of movement learning in autistic children is in addition to the child's adjustment to the given motion task (12). So it becomes very important to continue to provide movement activity patterns in autistic children (13). However, there are other issues that are important to note, one of which is the qualifications of educators, most of whom are not physical education teachers but teachers from other study programs who fill physical education subjects due to a shortage of educators (14). This problem is supported by the results of the initial needs analysis where a needs analysis was carried out on 40 respondents who work as SDLB teachers in East Java. From the results of the questionnaire distribution, only 30% of teachers use module books for learning static dominant material, and there are 87.5% of teachers experience problems when teaching static dominant material, and 97.5% of teachers need to develop PJOK learning books/modules. especially dominant static in school. There are several modules available, but the motion material used by the teacher is still limited in the form of motion and lacks variety.

Based on previous research related to the development of dynamic balance modules for grade 3 SDLB with autism (15), the development of a teacher module on variations and combinations of non-locomotor manipulative locomotor movements for autistic students (16), the development of a Teacher Module on Variations and Combinations of Locomotor and Manipulative Motion for Autism. SMALB (17), Development of Teacher Guidelines on Non-Locomotor Movement Learning for Students with Autism (18), and the development of the Teacher Module in Learning Basic Locomotor Movement Materials for Class II SDLB Autism (19). The resulting learning products are considered suitable for use in physical education learning, and suggestions for further research are to develop modules with other levels and motion materials. The static dominant modules found in some special schools are still limited, including the non-specific static dominant material which is still combined with other sports material, there is no instruction for every movement, the module is not equipped with images or video links, and the module still contains a combination of several materials (social, motor, self-ability, language & communication). Therefore, the development of the teacher module in learning the material for a static dominant motion for class I SDLB with autism needs to be done.

## 2. Method

The research method used is Research and Development (R&D) which refers to the process of developing and testing new goods. The ADDIE model is used as a research model, which uses several stages, namely analysis, design, development, implement and evaluate (20). The research subjects used were autistic students of SDLB State University of Malang and students of SDLB C Tuban. The technique of taking research subjects from each school is purposive sampling, data collection is based on certain criteria based on the research conducted. Teachers of SDLB with autism and SDLB students with autism grade 1 were used as the criteria for the research sample. The research sample used 9 autistic students and 18 special school teachers. The following steps - the ADDIE model research steps were carried out:

### 2.1. Analysis

Stage The analysis stage is the stage of defining the problem and the source of the problem. An analysis of the needs of SDLB teachers in East Java was conducted to find out the problems that occurred. The problem that occurs is that there are obstacles in learning because learning resources in the form of modules with static dominant

material are still rarely found. Furthermore, the results of the analysis are used as input for the design stage.

## 2.2. Design

Phase The design phase is the use of the results from the analysis phase to plan product development. The initial design (prototype) was prepared in the form of a static dominant balance motion. The initial design was in the form of a learning arrangement for lifting the legs and arms in various directions. The results of the next design stage are continued at the development stage.

## 2.3. Development

Stage The development stage is composed of the analysis and design stages. From the initial design, it was developed in the form of a module. Modules are designed and adapted to the specified material. Media experts, materials, and characteristics of autistic children will validate the modules that have been developed. The adapted 2016 BSNP Questionnaire was used to collect data. The media expert validator is Eka Pramono Adi, S.IP, M.Si a lecturer at the Department of Educational Technology, Faculty of Education, State University of Malang. Validation was carried out on October 25, 2021. The material expert validator was Dr. Pramono, S.Pd, M.Or a lecturer in the Department of Elementary and Preschool Education, Faculty of Education at the State University of Malang. Validation was carried out on October 25, 2021. The expert validator on the characteristics of autistic children was Dimas Arif Dewantoro, M.Pd a lecturer in the Department of Special Education, Faculty of Education at the State University of Malang. Validation was carried out on October 25, 2021. The results of the validated modules were continued at the implementation stage.

## 2.4. Implementation

module products are tested in the field during the implementation phase. The trials were conducted in small and large groups. Small group trials were conducted at the SLB Autism Lab, the State University of Malang with 3 students with autism in grade 1 SDLB. Then for the small group trial, the assessment instrument was handed over to 6 teachers from the SLB Autism Laboratory, State University of Malang. The small group trial was held on October 28, 2021. The large group trial was conducted at SDLB C

Tuban with 6 students with autism in grade 1 SDLB. Then for the large group trial, the assessment instrument was handed over to 12 teachers from SDLB Tuban. The large group trial was carried out on November 15, 2021. From the results of the field trial, it was continued at the evaluation stage.

## 2.5. Evaluation

Stage The evaluation stage is the last step in determining the quality of the module. The teacher assesses and evaluates students during product testing using an assessment questionnaire. The questionnaire includes questions with a score range of 1 to 5. The data obtained is then processed by data analysis and the analysis is matched with the validity criteria. Very valid, moderately valid, invalid, and very invalid are the four product quality standards. The results of the evaluation phase will be the final product improvement.

## 3. Result and Discussion

### 3.1. Analysis

#### Analysis Curriculum

The analysis curriculum at this stage is in the form of an analysis of learning outcomes in accordance with the subjects. The analysis was developed based on the PJOK curriculum at SDLB Autism. The analysis is based on Core competencies and Basic Competencies. This is based on the application in SLB Autism Laboratory UM. results Based on the study obtained, the curriculum review is as shown in Table 1:

TABLE 1: Analysis of the Physical Education, Sports, and Health Curriculum for SDLB Class 1.

Basic Competencies (Knowledge)	Basic Competencies (Skills)
3.2 Recognize various basic static dominant movements (lift one thigh, raise an arm in various directions) in a simple manner	4.2 Practice various static dominant basic movements ( lift one thigh, raise arms in various directions) in a simple way.

#### Analysis concept

Analyzing the concepts that will be presented in the motion module, followed by compiling material concepts. This concept is used as the basis for the movement exercises that are arranged, as shown in Table 2 :

#### Analysis of learning resources

TABLE 2: Analysis concept.

Concept	Elements of Motion Elements
Static Basic Motion	Performing one thigh lift Lifting the arm in various directions

The next step is to analyze the learning resources that will be used in the implementation of the module. After analyzing learning resources, then collecting various references to learning resources. Some of the learning resources studied include, as shown in Table 3 :

TABLE 3: Analysis of learning resources.

Learning Resources	Description
Curriculum Guidelines	2013 Curriculum regarding Core Competencies and Basic Competencies of
Autism Autism	Learning Teacher Module Competence A - F
Basic Movement	Understanding Physical Education Book (Green & Hardman, 2005)
Recent Research	- (Cheldavi, et al., 2014) . The effects of balance training intervention on postural control of children with autism spectrum disorder: Role of sensory information. - (Fournier et al., 2010) Decreased static and dynamic postural control in children with autism spectrum disorders. Gait & Posture, - (Salar et al., 2014). The Relationship of Core Strength with Static and Dynamic Balance in Children with Autism.

### 3.2. Design

This stage consists of activities, namely: Designing the Exercise Module by including several things including Cover, Preface, Compilation Sheet, Table of Contents, Glossary, Concept Map, Introduction, Exercise Title, Exercise Duration, Companion, Ability Target, Type of Autism, Age Group, Equipment Used, Preparation Stage, Core Stage, Cool-down Stage, Exercise, Evaluation, Self-Assessment, Bibliography.

### 3.3. Development

At this stage, several development activities were carried out, namely making a motion module design by making several movement models, as shown in Figure 1:

#### Perform validation test

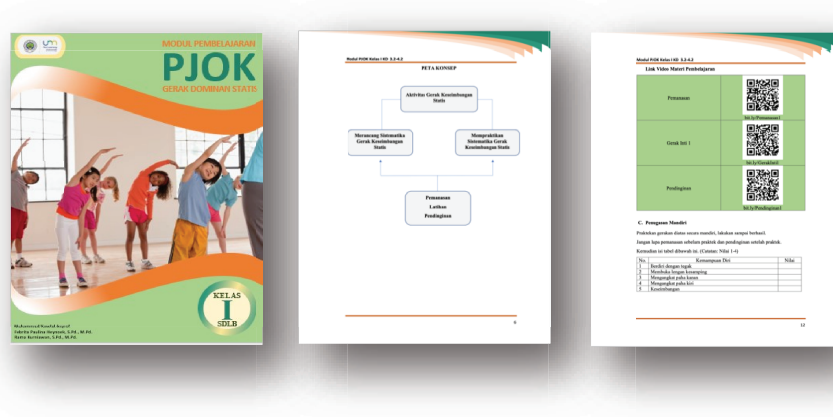


Figure 1: Module design.

The test is carried out by providing a questionnaire to the validator to assess the feasibility of the device. Validation was carried out by 1 media expert, 1 material expert, and 1 expert on the characteristics of autistic children.

**Media Expert**

The media expert validator is Eka Pramono Adi, S.IP, M.Si a lecturer at the Department of Educational Technology, Faculty of Education, State University of Malang. Validation was carried out on October 25, 2021. The following graph illustrates the data analysis for each aspect of the assessment, as shown in Figure 2:

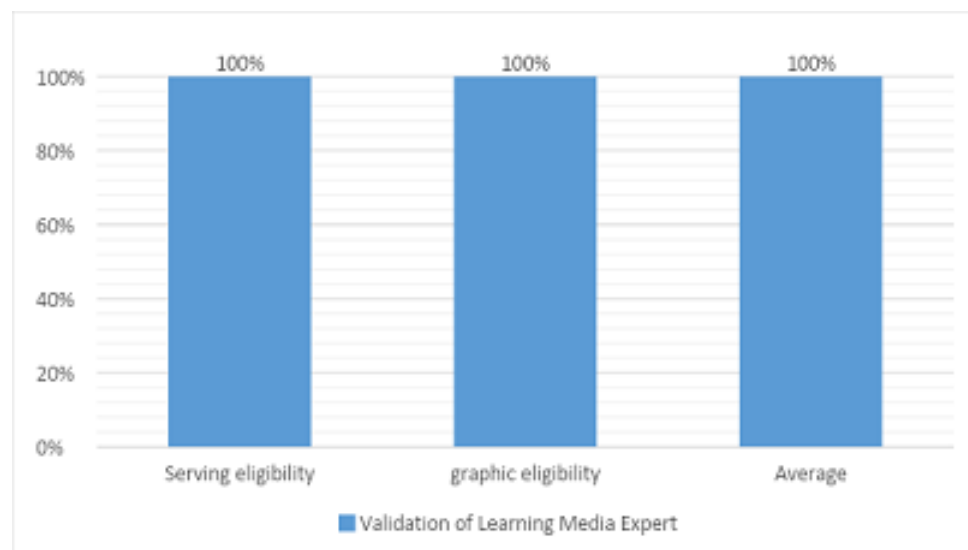


Figure 2: Diagram of the results of the analysis of the validation of learning media experts.

The results of the media expert’s validation questionnaire show that the product development of the teacher module in the learning of static dominant motion material for class 1 SDLB with autism can be used for group trials. With the ability to make several revisions based on input and advice from media experts so that it can be used for

### Material Expert

The material expert validator is Dr. Pramono, S.Pd, M.Or as a lecturer in the Department of Elementary and Preschool Education, Faculty of Education at the State University of Malang. Validation was carried out on October 25, 2021. The following graph illustrates the data analysis for each aspect of the assessment, as shown in Figure 3:

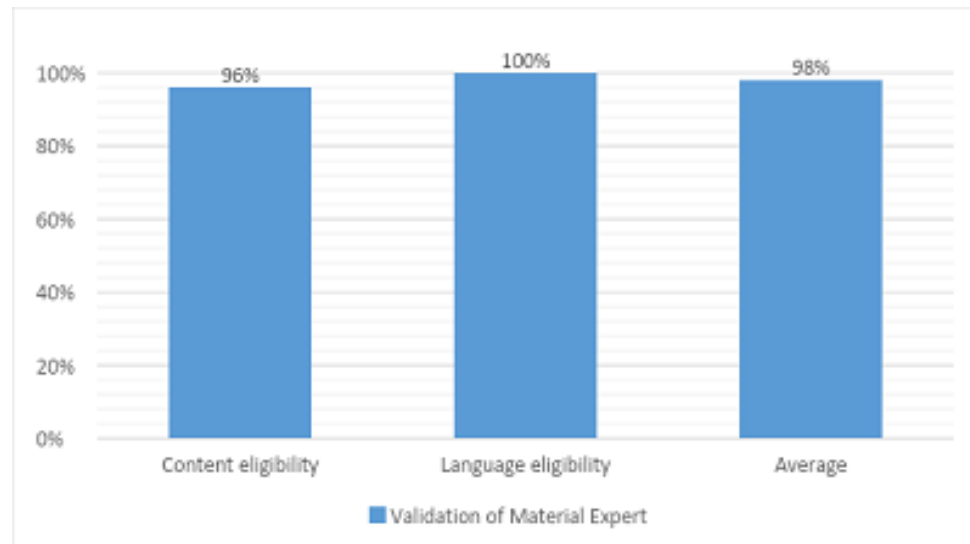


Figure 3: Diagram of the results of material expert validation analysis.

Results of the material expert validation questionnaire show that the product development of the teacher module in the static dominant motion learning material for class 1 SDLB with autism can be used for group trials. With the ability to make several revisions based on input and advice from media experts so that it can be used for group trials.

### Characteristics of Autistic Children Expert

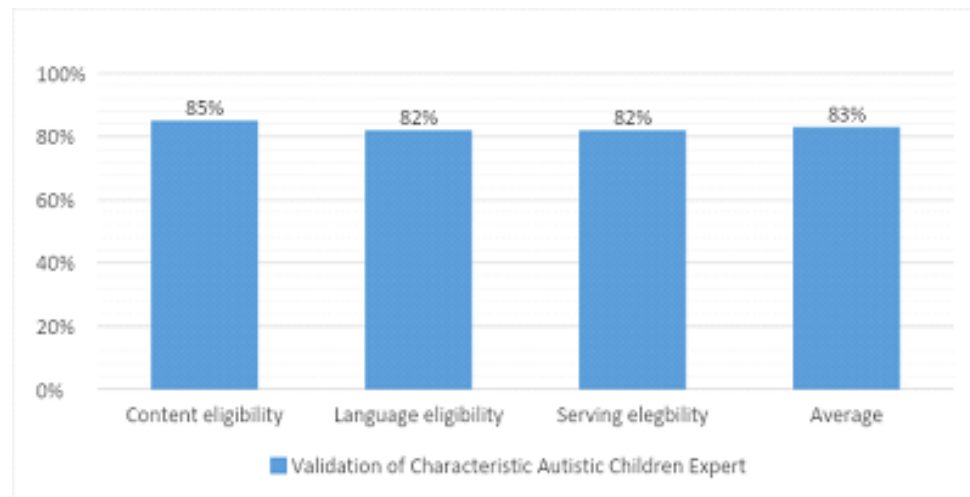
The expert validator for the characteristics of autistic children is Dimas Arif Dewantoro, M.Pd a lecturer in the Department of Special Education, Faculty of Education at the State University of Malang. Validation was carried out on October 25, 2021. The following graph illustrates the data analysis for each aspect of the assessment, as shown in Figure 4:

The results of the expert validation questionnaire on the characteristics of autistic children indicate that the product development of the teacher module in learning static dominant motion material for class 1 SDLB with autism can be used for group trials. With the ability to make several revisions based on input and advice from media experts so that it can be used for group trials.

### Revision of the exercise module

Suggestions or inputs and assessors from the validator are reviewed and taken into consideration for revising the module. The revisions to the module included changing





**Figure 4:** Diagram of expert validation results analysis of the characteristics of autistic children.

the font color of the title to be darker, adding the module title text on the cover, adding the type of autistic barrier on the cover, adding an introduction to the module, clarifying the suitability of the level of autism disorder, adding a bibliography, completing the instructions for using the module for teachers, added how to use barcodes in the instructions for use of the module, added markers for barcode display and color tables, spaced the display of material images.

### 3.4. Implementation

At this stage, the validated revision is then tested on students to obtain data about the feasibility of the developed motion learning module. Small group trials were conducted at the SLB Autism Lab, the State University of Malang with 3 students with autism in grade 1 SDLB. Then for the small group trial, the assessment instrument was handed over to 6 teachers from the SLB Autism Laboratory, State University of Malang. The small group trial was conducted on October 28, 2021. The following graph illustrates the data analysis for each aspect of the assessment, as shown in Figure 5:

Based on the data analysis table above, an overall average score of 82 percent was obtained which was then converted into a feasibility qualification table, which shows that the results of making a static dominant motion exercise module for autistic children are very valid and can be used. A large group trial was conducted at SDLB C Tuban with 6 students with autism in grade 1 SDLB. Then for the large group trial, the assessment instrument was handed over to 12 teachers from SDLB Tuban. The large group trial was conducted on November 15, 2021. The following graph illustrates the data analysis for each aspect of the assessment, as shown in Figure 6:

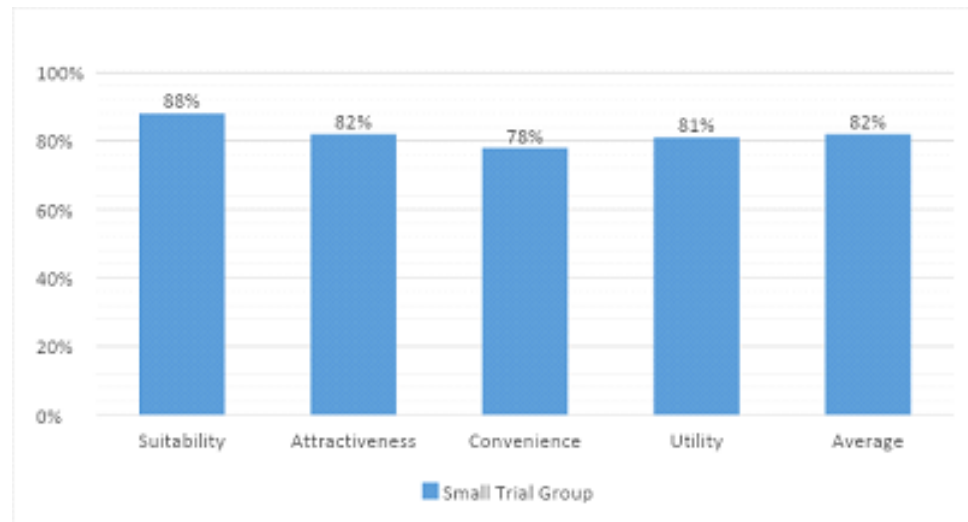


Figure 5: Small group trial results diagram.

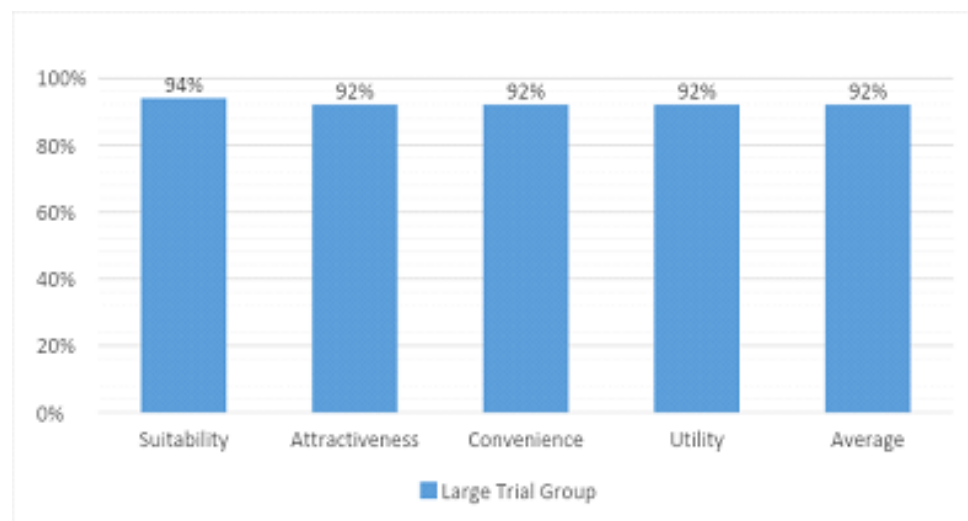


Figure 6: large group trial results diagram.

Based on the data analysis table above with the percentage level of eligibility, an overall average score of 92% was obtained, which was then converted into a qualifying qualification table, indicating that the teacher module in learning motion material is dominantly static for grade 1 SDLB with autism very valid and usable.

### 3.5. Evaluation

The results of the implementation of the exercise module are then analyzed so that further revisions can be made to the model. Suggestions and inputs are: Adding a timeline for each move, Completing independent tasks, and Improving self-assessment.

## 4. Discussion

Research on the development of teaching materials in the form of teacher modules with static dominant balance material for class 1 SDLB with autism aims to overcome obstacles in learning because learning resources in the form of modules with static dominant material are still rarely found. From the results of the module quality assessment, it can be categorized that the module is very valid. In this study, communication is very much needed, especially the motivation of a teacher to his students or the teacher's treatment of his students greatly helps the level of understanding and confidence of children to dare to try.

Dominant static movements that are practiced include raising the hands to the side, forward, up and lifting the legs forward, backward, and sideways. The movement of lifting one leg is related to the strength of the hip muscles (21). Some of the advantages of this module are that it is easy to use the module because there are instructions for use, the learning process and delivery of information are easier for teachers and students to observe and understand, the module is equipped with images of static dominant movements, in addition to images, there are also motion videos that can be accessed by scanning barcodes. The module also includes quiz questions, self-assessments, and evaluations. So that the findings of this study can be utilized and applied in the PJOK learning process in schools.

Based on school conditions, researchers analyzed learning resources, teaching materials, and student characteristics. The researcher found that the teaching materials available in some of the schools surveyed only had learning resources that were less relevant when used in learning. In addition, there is also a lack of variation in motion in a static dominant. So there is an additional variation of motion in this study, namely the attitude of the tower, where the motion is related to objects around the environment that can increase the child's imagination. Autistic children who enter the SDLB education level have different types of autism characteristics, one of which is the Asperger's type. This type is more likely to experience difficulties in the areas of social imagination, social communication, and social interaction (22). Observing the results of the analysis of the needs of teachers in various schools, it is necessary to use PJOK learning resources that are relevant to the characteristics of students.

Then the preparation of the module with the appropriate components. The finished module will be tested on the validator or the expert validation stage will be carried out. At the validation stage, experts were carried out in 3 fields, namely media experts, characteristics of autistic children, and material experts. After the product has gone

through the expert validation stage, the product enters the testing stage. At the testing stage, a small group test and a large group test were conducted. After conducting 2 product trials, the final stage of a review or product refinement of module development is carried out before being used in bulk.

The results of the research on the development of movement activity modules for children with autism in physical education learning are supported by the results of previous studies. The results of a study conducted by (23) that static balance with eyes open in both groups increased significantly after the intervention. Sensory balance testing by standing on the Wii Balance Board, children with autism have greater destabilization than normal children (24).

Gymnastic exercises combined with music have been proven to be effective in increasing balance scores, increasing locomotor levels, coordination, and flexibility in autistic children (25). The single-leg stance, balance path, dynamic balance, and double-leg balance training program effectively improves postural control in children with autism (26). Research by (27) has that not all individuals with autism have postural stability on unstable surfaces. Balance assessment must be seen and detected early so that it can guide the implementation of appropriate interventions (28).

Disorders of balance in children with autism are influenced by sensory integration in the cerebellum (29). Disorders experienced by autistic children, in general, are the same as other young children, who require movement activities that are very important for the development of their movement stages. Movement activities play a complex role between the skeleton, muscles, and nervous system in balance control (30). Standing on one leg, and raising the arm have a positive influence on the development of static balance in children. The obstacle that often occurs is in communication, where the teacher or assistant must provide motivation and direction in a brief and easily understood by children.

## 5. Conclusion

Based on the results of data analysis in the research on teacher module development in learning static dominant motion material for class 1 SDLB with autism, it can be said that the development of teaching materials in the form of this module can answer problems caused by the lack of PJOK teaching resources/materials used in the learning process. The results of small group testing and large group testing, the validation of the feasibility of the module increased with very valid information. Based on these data, it can be concluded that the Development of Teacher Modules in Learning Materials for

Static Dominant Movement Class 1 SDLB Autism is very valid to be used in learning. However, there are some limitations to the module, namely the module only focuses on static dominant motion, the module is only intended for grade 1 SDLB and needs to be upgraded to the next level.

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