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Development Of Rtj (Run–Throw–Jump) Training Model Based On E-Book To Improve Biomotor Components Of Disabled Athletes Npc North Sumatera

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Abstract
This study aimed to develop an RTJ (Run–Throw–Jump) training model based on an e-book to improve the biomotor components of disabled athletes at NPC North Sumatra. This research used the Research and Development (R&D) method with the ADDIE development model consisting of analysis, design, development, implementation, and evaluation stages. The research subjects consisted of disabled athletes at NPC North Sumatra with a small group trial of 10 athletes and a large group trial of 20 athletes. Data collection techniques were carried out through observation, interviews, documentation, and questionnaires. The results of material expert validation obtained a percentage of 85%, sports coaching experts obtained 85%, and media experts obtained 86.7% with the Very Good category. The small group trial results obtained a percentage of 85.8% and the large group trial obtained 90.6% with the Very Good category. Based on the results of the study, it can be concluded that the RTJ training model based on e-book is feasible, attractive, easy to use, and effective as a biomotor training medium for disabled athletes at NPC North Sumatra.

Keywords: *RTJ, Biomotor, Disabled Athletes, E-Book, ADDIE.*

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INTRODUCTION

Sports for people with disabilities are an important part of developing inclusive achievement sports that provide opportunities for disabled athletes to improve their physical, mental, and social abilities optimally. In the process of fostering achievement sports, disabled athletes require training programs that are adjusted to their physical conditions and movement characteristics so that the training process can run effectively and safely.

Biomotor components such as speed, coordination, balance, agility, and endurance are important aspects that must be developed in the training process of disabled athletes. However, based on observations at the National Paralympic Committee (NPC) of North Sumatra, the training model used is still conventional and does not yet have attractive training variations. In addition, there is no digital-based training media that can be used as a biomotor training guide for disabled athletes.

One of the training models that can be used to improve biomotor abilities is the RTJ (Run–Throw–Jump) training model. This training model integrates running, throwing, and jumping movements in one systematically arranged training series. The use of the RTJ training model is expected to increase the motivation and effectiveness of training for disabled athletes.

Technological developments also encourage the use of digital media in learning and sports training processes. The use of e-books as training media is considered more practical, interesting, and easy to use because it contains movement illustrations and systematic training implementation steps.

Based on these problems, the researchers were interested in conducting research entitled "Development of RTJ (Run–Throw–Jump) Training Model Based on E-Book to Improve Biomotor Components of Disabled Athletes NPC North Sumatra."

Table 1. Summary of Validation and Trial Results of the E-Book-Based RTJ Training Model

No	Types Of Research	Percentage	Category
1	Validation by Subject Matter Experts	85%	Very Good
2	Validation by Sports Coaching Experts	85%	Very Good
3	Validation by Media Experts	86,7%	Very Good
4	Small Group Trial	85,8%	Very Good
5	Large Group Trial	90,6%	Very Good

The table above shows that the e-book-based RTJ training model achieved a Very Good rating across all validation and testing stages. This demonstrates that the developed product is suitable for use as a biomotor training tool for athletes with disabilities in the North Sumatra NPC.

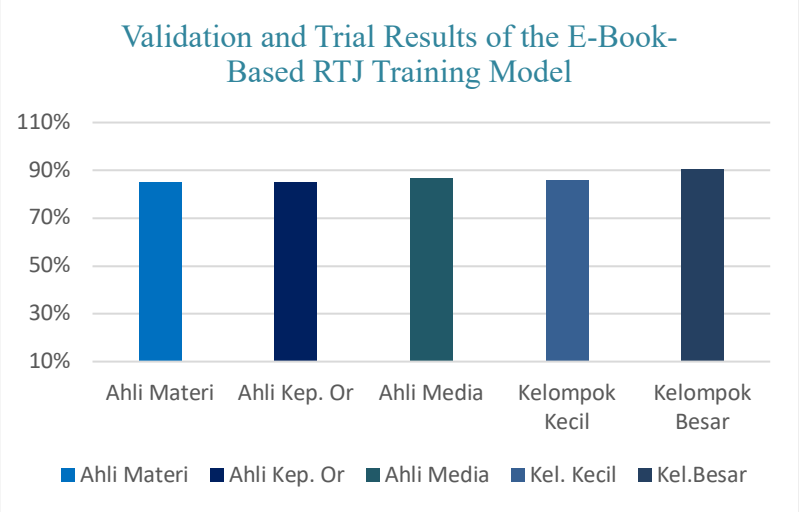


Figure 1. Bar Chart of Validation and Trial Results of the E-Book-Based RTJ Training Model

The bar chart above shows that all validation and trial results were categorized as Very Good. The highest percentage was achieved in the large group trial, at 90.6%. This indicates that the e-book-based RTJ training model experienced improved quality after undergoing product revision and refinement.

These research findings align with Branch (2009), who stated that the ADDIE model can produce effective learning and training products through systematic development stages. Furthermore, the use of digital media in the form of e-books is also considered capable of increasing user motivation and understanding of the training material.

Therefore, the e-book-based RTJ–Adaptive Smart Training model can be used as an alternative biomotor training model that is engaging, effective, and tailored to the needs of athletes with disabilities in the North Sumatra NPC.

METHOD

This study used the Research and Development (R&D) method with the ADDIE development model consisting of five stages, namely analysis, design, development, implementation, and evaluation. The ADDIE model was used because it has systematic development stages in producing a learning product or training media.

The analysis stage was conducted to identify the needs of athletes and coaches regarding biomotor training models. The design stage involved designing the RTJ training model based on an e-book. The development stage included product development and expert validation. The implementation stage was conducted through small group and large group trials. The evaluation stage aimed to determine the final feasibility of the developed product.

The research subjects consisted of disabled athletes from NPC North Sumatra. The small group trial involved 10 athletes, while the large group trial involved 20 athletes.

Table 2. Characteristics of Research Subjects

No	Characteristics	Small Group	Large Group
1	Number of Athletes	10 Athletes	20 Athletes
2	Gender	Male and Female	Male and Female
3	Age	15–23 Years	15–23 Years
4	Status	Disabled Athletes of NPC North Sumatra	Disabled Athletes of NPC North Sumatra

Data collection techniques were carried out through observation, interviews, documentation, and questionnaires. The research instruments consisted of validation

questionnaires for material experts, sports coaching experts, media experts, and athlete response questionnaires regarding the developed training model.

Instrument Validation Procedures

The research instruments were first validated by three validators consisting of a material expert, a sports coaching expert, and a media expert. The validation process was conducted to determine the feasibility of the instruments before they were used in data collection. The validators assessed several aspects, including material suitability, media appearance, exercise appropriateness, exercise safety, and ease of product use. The validation results were used as the basis for revising the instruments and the developed product.

The data analysis technique used descriptive percentage analysis with the following formula:

$$P = \frac{F}{N} \times 100\%$$

Description:

- P = Percentage
- F = Obtained score
- N = Maximum score

Table 3. Percentage Interpretation Categories

Percentage	Category
81% – 100%	Very Good
61% – 80%	Good
41% – 60%	Fair
21% – 40%	Poor
0% – 20%	Very Poor

The results of the data analysis were used to determine the feasibility level of the RTJ training model based on e-book according to expert validation results and the results of small and large group trials. The product was declared feasible if it obtained the “Good” or “Very Good” category.

RESULTS AND DISCUSSION

Result

The results showed that the product developed was an E-Book RTJ–Adaptive Smart Training Model containing variations of run, throw, and jump exercises to improve the biomotor abilities of disabled athletes.

At the analysis stage, it was found that athletes and coaches needed a more varied biomotor training model and easy-to-use digital-based training media. Athletes also needed more interesting exercises so they would not feel bored during the training process.

At the design stage, the RTJ training model consisting of run, throw, and jump exercises adapted to the conditions of disabled athletes was designed. The product was designed in the form of an interactive e-book containing training objectives, implementation steps, movement illustrations, and exercise adaptations for disabled athletes.

The development stage was carried out through material expert validation, sports coaching expert validation, and media expert validation. Material expert validation obtained a percentage of 85% with the Very Good category. Sports coaching expert validation obtained 85% with the Very Good category, while media expert validation obtained 86.7% with the Very Good category. These results indicate that the developed product is feasible to be used as a biomotor training medium for disabled athletes.

The implementation stage was carried out through small group and large group trials. The small group trial results obtained 85.8% with the Very Good category. After product revision, the large group trial obtained 90.6% with the Very Good category. These results indicate that the RTJ training model based on e-book is easy to use, attractive, and effective in helping athletes understand biomotor exercises systematically.

Discussion

The results of this study indicate that the RTJ training model based on e-book can be used as an alternative biomotor training model for disabled athletes. The high percentage results from expert validation and field trials indicate that the developed product has met the aspects of feasibility, attractiveness, convenience, and effectiveness.

This research is in line with Branch (2009), who states that the ADDIE model can produce effective learning and training products through systematic development stages. In addition, the use of digital media such as e-books can improve user motivation and understanding of training materials.

The use of e-books also provides convenience for athletes and coaches in understanding training variations through movement illustrations and systematic training instructions. Therefore, the RTJ–Adaptive Smart Training model based on e-book can be used as an effective and innovative biomotor training medium for disabled athletes

CONCLUSION

Based on the results of the research and development that has been carried out, it can be concluded that the RTJ (Run–Throw–Jump) training model based on e-book was successfully developed using the ADDIE model and was declared feasible to be used as a biomotor training medium for disabled athletes at NPC North Sumatra. This is proven by the

results of material expert validation of 85%, sports coaching expert validation of 85%, media expert validation of 86.7%, small group trials of 85.8%, and large group trials of 90.6% with the Very Good category. Thus, the RTJ–Adaptive Smart Training model based on e-book is considered attractive, easy to use, and effective in helping athletes understand and carry out biomotor training more systematically.

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