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DEVELOPMENT OF THE SHOT PUT EXERCISE MODEL

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Abstract
The purpose of this development research is to produce the latest model of shot put practice, with the result of a book product developing the latest shot put training model that can be used in shot put practice. The method used in this research is development research adopted by the ADDIE model development research design. The place where the research was carried out on the Universitas Negeri Jakarta KOP shot put athletes was 23 people at the Rawamangun Athletic Stadium, East Jakarta. Data was collected by observation, interviews and questionnaires. The stages of data collection are carried out in the early stages, which consist of five stages starting from Analysis, Design, Development, Implementation and Evaluating, testing effectiveness and normality using statistical methods. The results of the study prove that from the evaluation results of athletic experts, shot putters and motion experts, it was found that overall this product met the criteria of being eligible so that it could be used in the next stage of research. The conclusion is seen and proven that the development of this shot put training model is effective in increasing the repulsion results of shot put athletes.

Keywords: *shot put; exercise model; Development*

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INTRODUCTION

Sport is an integral activity of human civilization whose existence is useful for life. By exercising, besides being able to maintain one's health, it can also be directed to a higher level, namely towards increasing achievement. One type of sport is athletics, which we do without realizing the movements we do in everyday life. Athletics will always be related to competition and achievement and both are basic aspects of participating in sports (Muller & Ritzdorf, 2000). Success at the individual level demands high qualities such as strength, endurance, speed, coordination and technique that must be learned and required.

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The essence of athletics is a competitive physical activity, including several separate race numbers based on basic human movement abilities such as walking, running, jumping and throwing (Sukirno & Pratama, 2018). When examined in more detail the aspects of walking, running, jumping and throwing are simple movements (Risma et al., 2021). But behind this simplicity there is a synergistic coordination of various body elements to make good and correct movements, resulting in an achievement (Wilke et al., 2020).

The numbers contested in athletics include road, running, jumping and throwing numbers (Winarno & Firmansyah, 2019). The throwing number itself consists of javelin throwing, discus throwing, hammer throwing and shot puts (Cahyono et al., 2018). The nature of this number is that it requires a lot of neuromuscular functions such as coordination of movement and strength of locomotion (Díaz, 2021). Especially for strength must be applied at high speed (Borba et al., 2017). Of course, the shot put number itself in its development underwent various technical changes in accordance with the development of science and technology which directly affected sports achievements, especially shot put (Tuo & Li, 2020).

Shot put is the individual's ability to display the movement of rejecting objects/bullets to reach as far as possible with the following sequence of technique movements; preparatory, gliding, resisting and final stances (continued movement) (Purnomo & Dapan, 2017). To produce optimal performance in shot put, it must be supported by several components, including: qualified coaches, talented athletes, the right training program, good physical condition, excellent mental health and appropriate training methods (Thaqi et al., 2021). Efforts to give birth to high-achieving athletes are not easy, but require time and involve various components.

As for the components that play a role in achievement, there are four factors that influence sports achievement, namely (1) physical condition, (2) technique, (3) tactics, (4) psychological (Gunadi & Kuncoro, 2020). These four components must be given to athletes in a programmed, regular, directed and

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measurable way to get optimal performance (Wicaksono, 2019). So it's not only physical ability but good technical ability, especially doing good and correct movements, of course, will achieve maximum results. So that athletes who have the ability. Better technique means better performance and is supported by other supporting factors.

If you look at the shot put training in Indonesia, they usually still use conventional training models. The conventional method is an approach that emphasizes technical exercises that are usually carried out as a whole movement as well as weight training that is the focus (Şah & Direkoğlu, 2021), because the trainers consider bullets heavy, especially the shot put trainers. This training method does not contribute to the improvement of the athlete's achievement in shot put. This can be seen from the achievements made by our male athletes in each event that have not improved.

This research is a breakthrough in using training methods and training models that are quite developed in athletics, namely: a new technique of training methods, where the form of training uses various media and tools for each phase of the shot put movement and pays attention to the didactic method of practicing shot puts. properly and correctly with the aim of improving the quality of mastery of the athlete's movement that contributes directly to power which is carried out explosively with reactive movements. With the application of this method, it is hoped that there will be a synergy between increasing the explosive power of the arm muscles, leg muscles and other body parts that produce repulsion as far as possible. Because the results of the repulsion will be further if it is supported by high technical maturity carried out with explosive power.

METHOD

The development research in this exercise uses the ADDIE research and development by Reiser and Mollenda (Tegeh & Kirna, 2013). The place where the research was carried out on the Universitas Negeri Jakarta KOP shot put athletes was 23 people at the Rawamangun Athletic Stadium, East Jakarta. The approach adopted from this research is a quantitative and qualitative approach. The

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relevance of this research needs analysis is the effectiveness of providing a step-by-step training model that will be applied in this model. Athletes as determinants of character and further development of motor movements carried out then perform the specified techniques in the formation of automation in carrying out a series of shot put movements. The process in presenting the concept of shot put practice is equipped with systematics in the order of the simplest to the most complex movements and the easy to the difficult movements. ADDIE is a development model consisting of five stages starting from Analysis, Design, Development, Implementation and Evaluating.

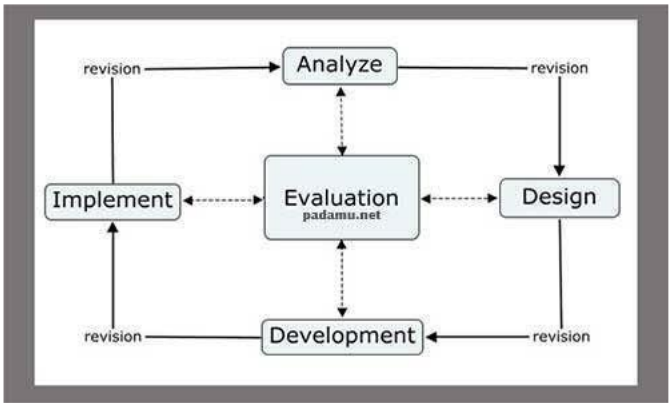

Figure 1. ADDIE Model Development Stage

A Analysis	Analisis kebutuhan untuk menentukan masalah dan solusi yang tepat dan menentukan
D Design	Menentukan kompetensi khusus, moetode, bahan ajar, dan startegi pembelajaran
D Development	Memproduksi program dan bahan ajar yang akan digunakan dalam program pembelajaran
I Implementati	Melaksanakan program pembelajaran dengan menerapkan desain atau spesifikasi program
E Evaluation	Melakukan evaluasi program pembelajaran dan evaluasi hasil belajar

Figure 2. ADDIE models

Researchers use expert judgment to examine the product and measure the quality (validity, practicality, and effectiveness) of the product being developed. In the validation process, the researcher used 3 experts/experts. Data analysis technique is a way to find out the results of research conducted. Data analysis

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includes all activities of clarifying, analyzing, using and drawing conclusions from all data collected in action. The data obtained is in the form of qualitative data which is used to determine the quality of the development of instruments in the form of questionnaires, interviews and observations.

RESULT AND DISCUSSION

This study uses the type of Research and Development (R&D) with the product developed in the form of a shot put training model. The development model used in this research is the ADDIE model, with the stages of analysis, design, development, implementation, and evaluation.

The analysis has 5 types of analysis that must be observed, namely: analysis of objectives, analysis of the state of the research subject, analysis of the characteristics of research subjects, analysis of the research environment, and content of research. The objective analysis obtained the results of the assessment and analysis of 32 shot put athletes related to the research results obtained in the field, all agreed that the previously applied shot put training model only used conventional exercises as usual, there were no variations in training so athletes felt bored and lacked enthusiasm for training. . Analysis of the characteristics of the research subjects has the result that the application of the exercise model requires an update. Analysis of the research environment found that a new product was recommended in the form of an exercise model. The content analysis of the research recommends to design a model of shot put practice as in the existing research.

The design is made based on the design model that will be developed according to the results of the analysis carried out previously, in this case the shot put training model which has the aim of determining decisions and detailed specifications of the product model item components in the form of an exercise model in accordance with the analysis that is still contained in the athletic training reference.

Development in this stage details the development of the training model carried out as in the model design stage. At this stage, the researcher developed an

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exercise model into 18 exercise items which contained objectives, tools/media used, implementation instructions and pictures. This stage is equipped with three systematics, including: product development, expert validation, and product revision.

Implementation is a real step to implement the training model development system that was created. So at this stage the researcher implements and implements a product design for the development of a shot put practice model that has been compiled based on the first to third phase based on the results of validation and expert testing on 32 shot put athletes. In general, the implementation uses the following stages: product testing, model effectiveness testing, and interviews.

Evaluation is a process to see whether the model being built is successful, in accordance with initial expectations or not and whether it is effectively used for shot put athletes. The evaluation stage can be carried out at these four stages, but the evaluation occurs at each stage. The shot put training model was developed to be used in the training process of shot put athletes. The shot put practice model is used to improve the shot put skills that are carried out during practice and in a shot put competition. This evaluation stage is described in two stages consisting of formative and summative.

This study resulted in 18 models of exercise that have been tested.

Table 1. Research results

No	Practice Items	Test Results
1.	Bouncing Bullets Into The Mat	Well done
2.	Bullet Rain	Well done
3.	Right Soken Soft	Well done
4.	Right Soken Iron	Well done
5.	Soft Left Soken	Well done
6.	Iron Left Soken	Well done
7.	Front Soken	Well done
8.	Slide Back Plane	Well done
9.	Slide Back Stick	Well done
10.	Glide Off	Well done
11.	Power Position Rubber	Implemented
12.	Ball Power Position	Well done
13.	Twisted Hips And Blocks	Well done
14.	Repel Bullets From The Front	Well done

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15.	Repel Bullets From the Side	Well done
16.	Moving Feet	Implemented
17.	Advanced Movement Hands and Feet	Well done
18.	Body Balance	Well done

The results of the existing trials led to the results of 16 items being carried out well, meaning that they were in accordance with what the researchers expected from both the training objectives and the exercise management. However, there are 2 items that are carried out in the "ordinary" category. This is because each item that has a level of difficulty makes subjects who do not have good flexibility and power will find it difficult to do.

It is hoped that the shot put practice model can and can be put into practice so that it will be effectively used to practice shot put skills. This implies that the shot put practice model is a model that is designed and developed based on a strong theoretical foundation, can be practically implemented in the field, and can improve the results of the shot put practice. The athletic sport of shot put cannot develop independently, so it requires the synergy of all aspects, in order to ensure an increase in performance. Where in the exercise must refer to all the supporting aspects in it, namely the physical, technical and mental aspects of the athlete. So that the resulting performance will be maximized.

Based on the results of the analysis, design, development, implementation and evaluation, the effectiveness test of the shot put practice model has met the valid and effective criteria. The effectiveness of the product is shown from the results of the post test conducted on the athletes. Seeing the advantages and disadvantages of the shot put exercise model are as follows: In essence, almost every training model can be applied, however, athletes need to adjust to the place and training infrastructure facilities, understanding the space for movement, so that athletes are expected to be able to master the situation in the shot put field. This shot put training model is a new innovation to improve the athlete's ability in shot put technique. Its use must be appropriate and systematic, in didactic and methodical training and coaching sports achievements must start from an early age to achieve maximum performance.

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Discussion

The development of the shot put training model has quite a variety of exercises that can be used for athletes, while the development of an exercise model that uses these tools can help athletes in the training process to improve their technical abilities in order to reach the peak of the targeted achievement (Priono, 2019). The result of a good throw in shot put is a push or repulsion of an object (bullet) with one hand starting from the base of the shoulder (Garcia-Carrillo & Ramirez-Campillo, 2020). The thrower holds the bullet and places it near the chin at the base of the shoulder with the elbow always raised (Jarver, 2014). The bullet is not placed behind the shoulder/shoulder line, not even off the shoulder (Freire et al., 2019). This is so that there is no throwing motion. The thrower starts his throw from a crouched stance so that the bullet will move upwards with his head held high for additional thrust upon release. Also move across hoops by jumping or by sliding. Some throwers are able to make rotational movements of their bodies to gain momentum and this is justified by law.

Further deepening the number of puts there are several principles that must be remembered, the distance of the throw obtained in putting the shot is very dependent on the speed of motion and the angle of the hand that rejects the bullet, to obtain maximum speed it takes the greatest power that can be mobilized, this power is used to repel the bullet. as far as possible. Increasing the repulsion distance requires body strength, the right shoulder and hip should be pulled back slightly (Makaruk et al., 2013). For maximum power, both horizontally and vertically, the front foot should remain in contact with the ground during the throwing motion. When repelling a bullet, the expediting of energy begins with forward rotation of the right hip followed by the athlete's torso and ends with a wrist movement when the bullet is released. When this successive outpouring of energy is carried out, attention should always be paid to keeping the movement looking simultaneous and not stiff, and all phases of the movement being carried out vigorously and quickly or powerfully.

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CONCLUSION

Based on the development steps that have been carried out, the researchers adopted the ADDIE steps. This step consists of analyzing needs, designing models and instruments to be made, developing a model according to the design with expert validation, applying the model developed by empirical testing, overall testing, testing its effectiveness and evaluating the final validation of the implementation of the developed model by including the results. field observations.

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