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Audio-visual video based circuit training model development design in futsal sports

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ABSTRACT

This study aimed to develop a circuit training model using audio-visual video media in futsal. The researcher used the R&D method. The subject possessed the characteristics of being male, aged between 20 and 30 years, with a Body Mass Index between 18 and 34, and was a futsal athlete. Before the study began, the researcher explained the research procedure, and the subjects filled out informed consent forms. This technique was used to analyze the data obtained from distributing questionnaires. Questionnaires were given to futsal experts, media experts, and coaching experts. The reliability test was carried out by 12 subjects from the small group test and 24 subjects from the large group test. The results of this development are in the form of videos; in these videos, there are 4 training models consisting of 4 posts each. The 4 posts are arranged in 1 round, with each post consisting of 3 athletes. In this training model, the athletes exercise at each post for 20 seconds; after completing one exercise model, they move to the next post. Exercises are done for 3 sets, with 1-minute recovery between sets. Based on the expert validity test, the evaluation results of futsal experts averaged 85.5%, media experts averaged 82.0%, and coaching experts averaged 83.3%. Furthermore, the results of the reliability test for the small group obtained a percentage of 88%, and for the large group, it was 87.87%. The development of a circuit training model in futsal games can help athletes become more enthusiastic and can also enable them to do additional exercises outside the schedule by using this video product as a training guide.

KEYWORDS

Development; Training; Circuit Training; Futsal

1. INTRODUCTION

Futsal is a type of football that is played indoors and outdoors (Mendes et al., 2022; Teixeira et al., 2019). Because there are fewer players than in football and the playing field is narrower, futsal is a more dynamic and technical game (Tanyeri & Öncen 2020). Because futsal is a fast-paced game that includes many different movements, especially the intense and maximal loadings that exist in futsal, aerobic and anaerobic endurance becomes important (Alvurdu & Köse, 2016). In the game of futsal, every player must be very involved in the game because of the limited playing space and limited number of players. In this case, playing games in confined spaces requires more open space, more running and more activity (Katis & Kellis, 2009).

Optimal physical conditions are needed to support the performance of futsal athletes in every match (Naser, Ali & Macadam, 2017; Silva et al., 2022). The characteristics of intermittent futsal require physical, technical, and tactical abilities from athletes throughout the game with an emphasis on the ability to make decisions in a short time (Ayubi et al., 2022, 2023; Tur, González-Haro & Ferre, 2012). Physical training and sports performance involve the effectiveness of body movements, this is because futsal is an intermittent sport where aerobic metabolism is responsible for supplying 75% of the energy used during matches (de Oliveira et al., 2019). One type of exercise that can improve the physical performance of futsal athletes is circuit training. Futsal athletes need to be supported with physical and physiological preparation and several methods can be applied by coaches to improve athletic performance, including circuit training (Silva et al., 2018).

Circuit training is a form of conditioning that combines resistance training and high-intensity aerobics that is easy to follow and targets building muscle strength and endurance (Invernizzi et al., 2020; Yadav & Sardar, 2017). Circuit training is also very effective for developing strength, endurance, flexibility and coordination, versatility making it a popular exercise for the general public to elite athletes (Buch et al., 2017; Dharmarajan, 2019). Through circuit training, futsal athletes can increase their strength and endurance by repeating the exercise at each station or by performing the required exercise frequency in a shorter form (Mohamad, Hamezah & Nadzalan, 2018). If the workload is kept constant, athletes can develop strength and endurance by gradually reducing the time needed to complete a circuit (Praveen, 2021).

Based on interviews conducted with Bina Harapan Setia futsal trainers in Malang City, it was found that athletes were less interested in doing physical exercise and athletes preferred playing games rather than doing physical exercise. From the results of observations and needs analysis questionnaires that have been given by researchers to 36 futsal athletes from Bina Harapan Setia Malang City, the following data are obtained: (1) 52.7% of athletes stated that practicing futsal aims to improve skills, 19.5% stated that they channeled hobbies and 27 .8% channeled talent (2) 75% of athletes said they did not understand circuit training, 22.2% said they understood enough and 2.7% athletes said they did not understand circuit training, (3) 83.4% of athletes said circuit training was very important to be applied in futsal and 16.6% stated that it was quite important to implement, (4) 75% of athletes stated that circuit training was very beneficial for physical endurance and 25% stated that it was quite useful (5) 83.4% of athletes stated that they were very interested in doing the exercise circuit training and 25% of athletes said they were quite interested in doing circuit training, (6) 100% of athletes said they had never seen a learning video about circuit training, (7) 100% of athletes stated that they were very interested in watching a learning video about circuit training. Based on the percentage of needs analysis results, it can be concluded that the futsal athlete Bina Harapan Setia states that it is necessary to develop a circuit training model in the form of an audio-visual video. Therefore, researchers wanted to provide a solution to this problem by making audio-visual video-based circuit training models in futsal games. This development product uses audio-visual media to facilitate the application by athletes of circuit training. Audio-visual technology is a way of producing or disseminating material with mechanical or electronic machines to present auditory and visual messages. This study aimed to develop a circuit training model using audio-visual video media in futsal sport.

2. METHODS

The method used in developing circuit training models in futsal games refers to the Research and Development research model from Borg & Gall (1983) with the following steps: (1) Requirements analysis, (2) Initial product, (3) Expert evaluation, (4) Small group trial, (5) Product revision, (6) Large group trial. Product revisions are carried out if there is a shortage of products during small group tests. this is intended so that the resulting product can be more perfect when a large group test is carried out.

The subjects in this research and development were as follows: (a) the subjects in the initial research (needs analysis) were conducted on 1 coach and 36 futsal athletes, (b) the subject of the expert evaluation consisted of 1 futsal expert, 1 media expert, and 1 expert training (c) trial subjects (small group) were 12 people, (d) field test subjects (large group) were 24 people. The subject has the characteristics of being male, age range 20-30 years, Body Mass Index between 18-34 and the subject is a futsal athlete. Before the study began, the researcher explained the research procedure and the subjects filled out informed consent.

The data collection instrument for the development of the circuit training model uses a qualitative and quantitative approach in the form of a questionnaire. Questionnaires were used to collect qualitative and quantitative data from needs analysis, expert evaluation, small-group trials and large-group trials, to determine the percentage of product needs. Statistical analysis used in this study used a descriptive method to determine the score, maximum score, percentage, and average.

The product developed in this study is a circuit training model in futsal games which is packaged in a training model video. The contents of the circuit training model video are as follows: (1) History of Futsal, (2) Definition of Futsal, (3) Explanation of how to do circuit training, (4) In this video there are 4 training models where in each training model there are 4 posts different variations of the exercise.

3. RESULTS

Based on Figure 1, this video contains 4 training models and consists of 4 posts. The 4 posts are arranged in 1 round and each post consists of 3 athletes. In this training model, the athlete exercises at each post for 20 seconds, after doing 1 exercise model, the athlete moves to the next post. Exercise is done as much as 3 sets and recovery between sets for 1 minute. The exercise model in each post is shown in Figure 2-5.

Figure 1. Results of the development of the training model

Figure 2. Post 1 with the body sprint training model

Figure 3. Post 2 with the zig-zag sprint training model and jump

Figure 4. Post 3 with the movement shuttle run training model

Figure 5. Post 4 with the dribble movement training model

3.1. Expert validation test

Based on the results of the evaluation of futsal experts, the average percentage of results was 85.5%. Based on the specified criteria, it is stated that this circuit training model is very good as a training model in futsal games. This percentage is obtained from the average of several aspects presented in table 1 below.

Table 1. Data from the Evaluation of Futsal Experts

Number	Sub Variable	Result Score	Max Score	Percentage	Average Percentage
1	Goal suitability	50	60	83,3%	85,5%
2	Easy instructions	34	40	85%	
3	Attractiveness	20	20	100%	
4	Safe to do	15	20	75%	
5	Effectively used	15	20	75%	
6	Usefulness	20	20	100%	

Based on the evaluation results of media experts, the results obtained were 82.03125%. Based on the specified criteria, it was stated that the development of the circuit training model was very good as a medium used to support the training process. This percentage is obtained from the average of several aspects presented in Table 2 below.

Table 2. Data from Media Expert Evaluation Results

No	Sub Variable	Result Score	Max Score	Percentage	Average Percentage
1	Understanding	3	4	75%	82.03125%
2	Design suitability	25	32	78.125%	
3	Design clarity	42	56	75%	
4	Design attractiveness	32	32	100%	
5	Completeness	3	4	75%	

Based on the results of the evaluation of the coaching experts, an average percentage of 83.3% was obtained. Based on the specified criteria, it is stated that this circuit training model is very good to be applied as a training model in futsal games by paying attention to training volume and intensity. This percentage is obtained from the average of several aspects presented in Table 3 below.

Table 3. Data from the Evaluation of Coaching Experts

Number	Sub Variable	Result Score	Max Score	Percentage	Average Percentage
1	Goal suitability	48	60	80%	83,3%
2	Easy instructions	36	40	90%	
3	Attractiveness	16	20	80%	
4	Safe to do	17	20	85%	
5	Effectively used	15	20	75%	
6	Usefulness	18	20	90%	

3.2. Reliability

Based on the data from the small group trials, the results obtained were 88%. Based on the specified criteria, it is stated that the development of a circuit training model is very good to be used as a training product for futsal athletes. This percentage is obtained from the average of several aspects presented in table 4 below.

Table 4. Data from Trial Results (Small Group)

Number	Sub Variable	Result Score	Max Score	Percentage
1	Attractiveness	114	120	95%
2	Suitability	96	120	80%
3	Benefits	108	120	90%
4	Safety	108	120	90%
5	Easiness	102	120	85%

	Amount	528	600	88%

Based on the data from the large group trials, the results obtained were 87.87%. Based on the specified criteria, it is stated that the development of a circuit training model is very good to be used as a training product for futsal athletes. This percentage is obtained from the average of several aspects presented in Table 5 below.

Table 5. Data on trial results (Large group)

Number	Sub Variable	Result Score	Max Score	Percentage
1	attractiveness	540	600	90%
2	suitability	540	600	90%
3	Benefits	480	600	80%
4	Safety	570	600	95%
5	Easiness	510	600	85%
	Amount	2640	3000	87,87%

4. DISCUSSION

Circuit training models in this futsal game have been evaluated by several experts, these circuit training models can be used as training variations for athletes and futsal coaches so that athletes can further develop their potential by practicing circuit training models. With this variety of circuit training models using training model video media, athletes will not experience difficulties and can be more active and participate in futsal training activities. This exercise is easy for athletes to do and the tools used are quite safe, interesting, easy to understand, and can be used in other physical exercises that have been adapted to the principles of exercise.

Circuit training is a form of conditioning that combines resistance training and high-intensity aerobics that is easy to follow and targets building muscle strength and endurance (Ahmeti et al., 2020; Yadav & Sardar, 2017). Circuit training is also very effective for developing strength, endurance, flexibility and coordination, versatility making it a popular exercise for the general public to elite athletes (Dharmarajan, 2019). Circuit training is done by dividing the developed components into several stations arranged in a circle so that they train muscle groups alternately from station to station (Malar & Maniazhagu, 2022). Circuit training ranges from easy to difficult, each exercise item affects the other exercise items, so players are challenged to do other exercises (Kasper, 2019). Through circuit training, athletes can improve the components developed by repeating the exercise at

each station or by performing the required training frequency in a shorter form (Hassan, 2018; Lawal et al., 2015).

The result of this development research is a circuit training model using video training media in futsal games. In this circuit training, athletes will do exercises using video media. The exercise model in this video is interesting and easy to do. Video is one of the audio-visual media that is used as a medium of communication in development and to explain or convey messages, as well as to be used as entertainment. Audio-visual technology is a way of producing or disseminating material by mechanical or electronic means to present auditory and visual messages (Dwiyogo & Wasis. 2010; Stacey et al., 2022). The product that has been developed by the athletes is expected to make athletes happy, and active, and increase their interest in training, and enthusiasm so that when training activities take place athletes do not feel difficult but will make researchers feel happy and challenged to do various variations of circuit training. This circuit training has many variations of exercises to train the athlete's skills and physical strength.

5. CONCLUSIONS

The development of circuit training models in futsal games can help athletes become more enthusiastic and can also do additional exercises outside the schedule by using this video product as a training guide, so that athletes have many variations in doing exercises.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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