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The development of a Zumba fitness-based training model to improve endurance, agility and flexibility of karate athletes

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Abstract

The background of this research is the development of supporting diverse sports and the lack of physical exercise models a combination of karate and music for karate athletes.

The analysis of requirements using interviews and observations concerning the movement characteristics zumba and physical training methods and techniques of karate. the product effectiveness test by comparing the experimental group and the control group with the use of pretest-posttest.

The final conclusion is the product-based model development support zumba fitness workout for athletes karate proven effective in improving the performance of athletes in terms of endurance, agility, and flexibility.

Keywords: Development, Exercise, Zumba, Karate, Endurance, Agility, Flexibility

Introduction

Preliminary

The development of sport in karate branches abroad and within the country very rapidly. The last few years the popularity of karate in Indonesia continues to increase. It can be seen karate has been studied by various groups, education, military, security, general population, men, women, teenagers, children, and adults. Evident from some extracurricular activities the school karate, sports compulsory in institutions, places of karate, and championships are held.

Development of a sports achievement will also affect the development of the sport. Many of holding a race or competition from local to international levels as a benchmark for achievement in a sport. Indonesia's performance can not be underestimated at the international level. As evidence of the most prestigious sporting event of the 2016 Olympic Games in Brazil, Indonesia was able to obtain gold and silver.

Indonesian karate sports achievements can not be underestimated by the countries in the world, especially Southeast Asia region. M. Nakayama (1989: 14) ^[5] states that, "karate was a martial art, but it was Also the mean of building character. Karate is gaining great popularity as a competitive sport, the which stresses mental discipline as well as physical power.

In Karate there are two categories dipertandingan, kumite (fighting) and word (stance). Each category has a different biomotor component to support the process of exercise, especially exercise. In kumite biomotor main component is the speed while the word is power. In practice the physical condition of a coach should know the model of a good physical workout with aerobic or anaerobic energy systems.

The exercise pattern in supporting performances karate athlete is more focused on the pattern of exercise with anaerobic energy systems. Because in a karate match the appearance of more or less require in a short period of 3-5 minutes. To support the appearance of the athlete takes practice speed, strength, flexibility, coordination, and endurance. Many methods regarding physical exercise such as interval training to resistance training, plyometric to exercise power and motor coordination, and much more.

Supporting sports development practice today is increasingly diverse. The variety of sports such as frelatic, piloxing, pilates, bodycombat, and zumba is a sport that was popular with the public. One of the popular among the public is zumba. Zumba is a combination of dance sports and fitness combined with basic music with dance movements such as merengue, salsa,

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cumbia and reggeton. Zumba Fitness was created as a Latin-inspired dance fitness program that combines various types of dance elements (eg hip-hop, samba, etc.) to music as a method to engage in aerobic exercise as an alternative to running or cycling (Eric Sternlich *et al.*, 2013: 155)^[3].

According to Umar Syarief (national athlete karate and zumba instructor) in the Coaching Clinic Karate in Jakarta in 2013, argued that the zumba is a sport that can improve motor coordination, fleksibility, agility, and endurance in athletes karate. The music is also able to make the athletes feel happy and not bored in training. Zumba has several benefits related to the world of coaching, as proposed by Samir Becic (2015)^[1] as follows;

- By following the Zumba class, you will definitely improve your coordination, which is very important to sustain as you get older.
- Zumba provides exercise for the whole body. From the rolls of the head and shoulders loosening the neck and warming the upper body, with bracing legs and stretching the calves and ankles, this fitness method touches almost every muscle and joints.
- Zumba makes your target heartbeat much easier than the standard workout routines you find on DVD or in the gym. This is done by using a song that is played around 145 beats per minute. This fast speed makes it natural to move quickly. This will lead you to the true path of aerobic exercise. If you are trying to build resilience, this is the best thing you can do for yourself. Exercising for a long period of time at this level can increase your heart's strength.
- Because Zumba music is played at high speed, moving to a musical rhythm can start building your endurance after just a few rehearsals. It builds up your anaerobic endurance quite quickly. Overall, it is very useful to help maintain a good cardiovascular respiratory system. This increases the amount of oxygen you can breathe while doing high-intensity activities.

The observations and interviews to karate coach Forki Surakarta, physical exercise, especially exercise supporting endurance, coordination, and agility in Karate has not been done. Some have done just relying on old models of physical exercise.

With the development of modern sport increasingly diverse and that has been raised by several speakers, researchers are interested in developing a model of modern sport based physical exercise that is zumba fitness as supporting the athlete's performance biomotor need endurance, agility, and flexibility of the sport of karate.

Research methods

This type of research is a research and development. Borg and Gall (1983)^[2] states that research and development is "a process used develop and validate educational product" is research oriented to the development and validation of learning products. Methods of research and development is also defined as a method of research used to produce a particular product, and test the efficacy of such products (Sugiyono, 2013)^[7]. Research and Development is also defined as a process or steps to develop a new product or enhance existing products that can be accounted for (Nana Syaodih, 2015)^[6].

Based on some of the above definition, it is understood that development research is a step to develop a new product or enhance existing products and test keefektifannya. Research

carried out for the development plan, produce, and evaluate the product in the form of material and a decent media used in learning. Products developed in this study a model of Karate-based support zumba exercise to support the needs of karate athletes biomotor research study on endurance, agility, and flexibility

Model development in research Research & development adapted from the model of development of Borg and Gall (1983)^[2]. The steps of research and development conducted Borg & Gall, namely: (1) research and data collection (research and information collection), (2) planning, (3) development of draft products, (4) field trials beginning, (5) revise the results of the trial, (6) the trial court, (7) product enhancements field test results, (8) the implementation of the test field, and (9) the improvement of the final product, (10) the dissemination and implementation

Data collection techniques and instruments

The data obtained in this study is a quantitative and qualitative data. Qualitative data in the form of data that is obtained based on the validation of expert practitioners, subject matter experts, and athletes in the form of comments, feedback or suggestions to determine the feasibility of the model-based karate supporting zumba workout. Quantitative data is based on data obtained from the score responses experts and athletes to measure the feasibility of this type of training, as well as a score of pretest and post-test to determine the effectiveness of this type of training are developed.

The research instrument used in the study of this development are:

- a. Observation sheet
- b. sheets interview
- c. questionnaire
- d. Tests given to athletes that pretest and posttest form of MFT (Multistage Fitness Test) and Hexagonal Obstacle Test and Modified Sit and Reach Test

Data analysis technique

Data from this study uses data analysis of qualitative and quantitative data analysis. Content or material data such as comments, suggestions of experts and teachers, as well as the observations of investigators during the trial were analyzed by descriptive qualitative, and concluded as a suggestion to improve or revise products have been developed. While the data in the form of expert feedback score of material and subject matter experts obtained through quantitative questionnaire were analyzed descriptively by percentages and categorization techniques. In addition to scores of responses to the experts, the data pretest and posttest results UNS PP athlete was quantitatively analyzed descriptively.

Feasibility test

This study collected data using quantitative descriptive percentages. Data from the quantitative content analysis gained through pilot activities, in the form of input, feedback, and, criticisms and suggestions. Quantitative data in the form of ratings, gathered through a questionnaire testing the product, at the time of testing, were analyzed with descriptive quantitative analysis.

The percentage is intended to determine the status of something in persentasekan and served still in the form of a percentage. After up to a percentage and then interpreted by a sentence that is qualitative, for example categorized Good (76% - 100%), categorized Pretty Good (56% - 75%),

categorized Less Good (40% - 55%) and considered not good (less of 40%).

Questionnaire used in this study was a questionnaire assessment or feedback to shape the answer "Very Decent", "Worth", "Decent Enough", "Worth Less" And "Not Worth It". Results of subsequent data calculations are made in the form of a percentage by multiplying 100%. Having obtained the percentage formula, then the feasibility of this type of training in the research supporting this development is classified into four categories: eligibility using the following scale: "click table 1 here"

Test effectiveness

This test was conducted to determine the effectiveness of the model-based Karate supporting zumba exercise for karate biomotor needs. In evaluating the effectiveness of this, data analysis technique used is the Independent Test Samples Test (t-test). Analisis data by t-test was used to determine the difference in effectiveness between before and after using a model-based support zumba exercise for karate athletes. To get good results is necessary to test the normality and homogeneity.

Results

Data from Needs Analysis

Preliminary stage in this research is the analysis of the need to identify the problem, in this study with the needs analysis interview and observation of zumba instructor, karate coaches and sports practitioners. Interviews were conducted to determine the assumptions zumba needs and concerns among the public about the model of an existing physical exercise.

Below is the assumption Data zumba needs in Jakarta, Bandung, Semarang, Yogyakarta and Surakarta. The average number of people who attend classes are 30 people persesi. "click table 2 here"

Interview with Coach Karate "click table 3 here"

Based on the table above observations and interviews concluded that the absence of supporting exercises that blend engineering and music to physical exercise karate. Type of physical exercise are still using the existing training methods and make the athletes feel bored.

Evaluation Expert

Quantitative Data Expert Evaluation Results Academics "click table 4 here"

Based on the results of these calculations the percentage of 86% thus obtained can be stated that according to academic experts, at this stage of the exercise developed model validation of the feasibility aspect of getting material content category "very decent".

Data Quantitative Evaluation Expert Practitioners "click table 5 here"

Based on the results of these calculations the percentage of 86% thus obtained can be stated that according to expert practitioners, at this stage of the exercise developed model validation of the feasibility aspect of getting material content category "very decent".

Field Trial

Small Group Test

Questionnaire Results of Test Small Group "click table 6 here"

The results of the questionnaire respondents regarding support practice models show that for the assessment in terms of the material aspect of 85% were categorized as "Very Decent",

amounting to 90.62% in terms of design that is categorized as "Very Decent". And in terms of aspects of the use of 84.16% were categorized as "Very Decent". Total assessment test small groups according to the respondents trials of 86.53% categorized as "Very Decent"

Large Group Test

Amounting to 17 athletes as test subjects. Questionnaire Results Trial Large Group "click table 7 here"

The results of the questionnaire respondents regarding support practice models show that for the assessment in terms of material aspects of 83.33% were categorized as "Very Decent", amounting to 87.05% in terms of design that is categorized as "Very Decent". And in terms of aspects of the use of 86.27% were categorized as "Very Decent". Total assessment test small groups according to the respondents trials of 85.15% categorized as "Very Decent"

Normality test

Statistical analysts to test for normality using the Shapiro-Wilk test performed with SPSS 16 for data obtained ≤ 50 , the use of the Shapiro-Wilk test is more effective than Kolmogorov-Smirnov test.

Data of Shapiro-Wilk normality test "click table 8 here"

According to Ali Maksum (2012) ^[4], called the data requirements of normal at the Shapiro-Wilk test if significance level or probability $p > 0.05$. Data obtained from the pre test-post test of endurance, agility, and flexibility shown in the table above, it appears that the above data have significance level or probability (p) is more than 0.05 it means the data pre-test and post-test good endurance, agility, and flexibility is a normal distribution.

Homogeneity test

Homogeneity test aims to determine whether the samples come from the same variant or not. In this study, homogeneity test carried out by using Levene Test in SPSS 16, "click table 9 here"

According to Ali Maksum (2012) ^[4], the homogeneity test such provisions apply normality test, namely: if the p-value is greater than 0.05, then the data is expressed homogeneous.

Different test

Data of different test experimental vs. control "click table 10 here"

According to the above table endurance $t_{count} > t_{table}$ (4,025 > 1,761) and P value (0.01 < 0.05), t agility > t table (3,998 > 1,761) and P value (0.01 < 0, 05), t flexibility > t table (7,964 > 1,761) and P value (0.00 < 0.05), then H_0 is rejected, it means that there is a difference score endurance, agility, and flexibility of the experimental and control groups. It can be concluded that the influence of a given increase in athlete development model-based support to athletes exercise control group.

Discussion

A. Preparation of Initial Product

The development of the investigational product in the form of a model-based support zumba fitness workout. Based on a preliminary study of the activities previously conducted by researchers and assessment of empirical theories are used as a basis to define the creative thinking that will be developed, then to the drafting of the initial product in this case is determining and modeling exercises that will be applied in the study. Practice models that will be developed in this study is a

model supporting exercise to improve performance based zumba fitness karate athletes. Model development in this study consist of several items, namely:

1. Theoretical study as the basis for other forms of movement and exercise program supporting the drafting of
2. Forms-based physical exercise zumba fitness in accordance with the characteristics of the subjects to improve the performance of athletes karate.
3. The evaluation of the product development, evaluation of physical performance of endurance, agility, and flexibility of karate athletes.

B. Trial Product

1. Trial Small Group

Small group trial stage is a stage to know the opinion of karate athletes associated with a product which is developed a model practice. Test a small group in this study using the 8 test subjects from the PP athletes UNS Surakarta. The small group trial was held on 18 April 2017 at the Campus JPOK Manahan.

Information in the form of opinion of the athlete in the small group trial was obtained using a questionnaire instrume closed, so that the data collected in the form of quantitative data. The results of the test small percentage of 86.53%, so that it can be interpreted that the practice model development product support received by athletes and ready to be tested on a larger group.

2. Trial Large Group

The test phase is the stage for a large group of karate athletes know the opinion related to the product model of practice which is developed with the subject more than the small group trial. Test a large group in this study using 17 subjects tested are derived from PP athletes UNS Surakarta. The small group trial was held on 25 April 2017 at the Campus JPOK Manahan.

Information in the form of opinions athletes in testing this large group obtained using a questionnaire instrume closed, so that the data collected in the form of quantitative data. Results of a large percentage of the test group amounted to 85.15%, so that it can be interpreted that the practice model development product support received by the athlete and is ready to test its effectiveness.

3. Effectiveness Test Products

Test the effectiveness of the investigational product support model development exercise was held on April 28 - May 26, 2017, at 4:00 p.m. to 18:00 pm, located on the campus JPOK UNS. Performed on 16 karate athletes UNS PP consists of eight athletes experimental group and the control group of eight athletes, in order to know the level of effectiveness of product development to be formulated into a final product as well as the further utilization for the application of exercise in the future. To draft design of experiments using quasi-experimental design draft Nonequivalent Control Group Design. This design is similar to the pretest-posttest control group design, only in this design the experimental group or the control group were not chosen at random (Sugiyono, 2013)^[7].

Based on the calculation of the data using SPSS 16 increase test results for a more experimental group showed a significant increase compared with the control group. The final test is obtained after the implementation of training programs for each group. Exercise programs in each group is

different from the material side of exercise performed. For the experimental group used for the practice program which contains material products practice models developed by the researchers, while the control group using conventional training program. For the final result can be concluded that the product of exercise can improve endurance, agility, and flexibility of PP UNS Surakarta karate athletes.

Conclusion

A. Preliminary studies

This preliminary study was conducted through interviews with karate coach Forki UNS Surakarta and PP, as well as assumptions observation zumba needs in several major cities in Indonesia. Based on the interview concluded the absence of a model of physical exercise that combines basic karate techniques, physical training materials, and music in particular to improve the performance of athletes karate. Provision of physical exercise are still using conventional materials and monotonous that cause athlete bored. Moreover, the assumption of the need zumba in the big city of Jakarta 70%, 66.7% Bandung, Semarang, 60%, 65% Yogyakarta and Surakarta 60% with an average of 30 people per class numbered.

B. Stage Trial Products

1. Evaluation expert

Expert evaluation used in this study using a 1 expert academics and 1 expert practitioners then the result of quantitative and qualitative data because in the expert evaluation using a questionnaire mix. The results of the expert evaluation of the quantitative data obtained final results the percentage of 86%, so it can be interpreted that the initial product design development models based support zumba fitness exercise to improve the performance of karate athlete could be tested at a later stage.

2. Trial Small Group

Implementation of the small group trial held on Tuesday, April 18, 2017, 16:00 pm located on the campus of JPOK UNS. Amounted to 8 athletes as test subjects. The process of testing a small group of products is completed at 17:00 pm, followed for filling the questionnaire by athletes. The assessment results according to the respondents small group test trials by 86.53% categorized as "Very Decent".

3. Trial Large Group

Implementation of a large group trial held on Tuesday, April 25, 2017, 16:00 pm located on the campus of JPOK UNS. Amounting to 17 athletes as test subjects. The process of testing large groups of finished products at 17:00 pm, followed for filling the questionnaire by athletes. The assessment results according to the respondents small group test trials by 85.15% categorized as "Very Decent".

4. Effectiveness Test Products

T value endurance > t table (4,025 > 1,761) and P value (0.01 < 0.05), t agility > t table (3,998 > 1,761) and P value (0.01 < 0.05); t flexibility > t table (7,964 > 1,761) and P value (0.00 < 0.05), then Ho is rejected, it means that there is a difference score endurance, agility, and flexibility of the experimental and control groups.

Thus supporting product-based practice models developed zumba fitness Prominent researchers can improve endurance, agility, and flexibility of karate athletes PP UNS

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