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Yoga Exercise Models for Flexibility

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ABSTRAK

Prestasi atlet silat untuk saat ini belum bisa dikatakan membangakan, masih banyak atlet yang masih belum mempunyai fisik yang baik. Tujuan penelitian ini untuk menghasilkan model latihan yoga untuk fleksibilitas. Jenis penelitian ini yaitu pengembangan yang diadaptasi dengan desain penelitian pengembangan oleh Borg and Gall. Partisipan yang terlibat pada penelitian ini adalah atlet pencak silat yang keseluruhan berjumlah 65. Metode pengumpulan data dilakukan dengan observasi, wawancara dan kuesioner. Tahapan pengumpulan data dilakukan pada tahapan awal, uji ahli, uji terbatas dilakukan terhadap kelompok kecil, uji lapangan (field Testing), uji efektifitas menggunakan metode statistik. Hasil penelitian membuktikan bahwa dari hasil evaluasi ahli yoga dan pelatih model latihan secara keseluruhan dapat digunakan dan dalam tahap uji coba. Uji coba kelompok kecil menyatakan bahwa model yang dikembangkan dapat diterapkan dan dipraktekkan oleh atlet silat. Uji coba kelompok besar menyatakan bahwa model latihan yang dikembangkan bermanfaat untuk menambah variasi latihan flexibelitas. Berdasarkan efektivitas model terdapat perbedaan fleksibilitas sebelum dan sesudah penerapan model latihan yoga. Disimpulkan bahwa pengembangan model latihan yoga terbukti bermanfaat untuk menambah variasi latihan atlet dan efektif meningkatkan fleksibilitas atlet pencak silat.

ABSTRACT

For now, the achievements of silat athletes cannot be said to be encouraging. There are still many athletes who still need a good physique. This study aimed to produce a yoga exercise model for flexibility. This type of research is adapted to the design of development research by Borg and Gall. The participants involved in this study were Pencak silat athletes, totaling 65. Observation, interviews, and questionnaires collected data. The stages of data collection were carried out in the early stages; expert tests, limited tests on small groups, field tests, and effectiveness tests using statistical methods. The study's results prove that the overall exercise model can be used and is in the pilot stage from the evaluation results of yoga experts and trainers. The small group trial stated that silat athletes could apply and practice the developed model. The large group trial stated that the exercise model developed helped increase the variety of flexibility exercises. Based on the model's effectiveness, there are differences in flexibility before and after implementing the yoga practice model. It was concluded that developing a yoga exercise model proved beneficial for increasing the variety of athletes' training and effectively increasing the flexibility of Pencak silat athletes.

1. INTRODUCTION

Sport is one of the activities carried out by humans that helps the process of growth and development. Sport can improve a person's psychological and life skills and sports activities, and sport helps a person to interact and collaborate with others (Cronin & Allen, 2017; Hayden et al., 2015; Marijon et al., 2015). Sport is all forms of physical and spiritual activity to maintain health and strengthen the body's muscles (Black et al., 2019; Cereda, 2016; Marlianto et al., 2018). So, doing sports not only has a positive influence on the physical but also the spiritual condition. One sport that is quite popular among people today is martial arts (Dongoran et al., 2020; Sin & Ihsan, 2020). Initially, human instincts practiced certain techniques to hunt and protect themselves from animals. At that time, humans used spears, maces, and arrows. When firearms became known, the glory of martial arts began to recede. However, that does not make martial arts extinct. Martial arts continue to grow and become one of the tools to protect oneself without carrying weapons. Also, in times of peace, people still demand martial arts because they are used to maintaining health. From here, martial arts developed as a sport (Coswig et al., 2018; Lafuente et al., 2021). Martial arts is a type of sport that is currently starting to be in great demand by many people, regardless of age or gender (Holmes et al., 2022; Khoirunnisa et al., 2012).

These martial arts groups, such as Silat, taekwondo, kung fu, judo, muay Thai, and wushu, come from Indonesia and outside Indonesia. One of the martial arts is pencak silat. Pencak silat is a branch of

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martial arts. Pencak silat is a martial arts sport originating from Indonesia which is currently starting to develop both in terms of regulation and organization (Hariyanti et al., 2016; Muhamad et al., 2019). Pencak silat, the martial art of pencak silat, is a sport of ancestral heritage and is included in the local content (Rosalina, 2018; Tama & Purwono, 2017). Pencak silat results from the Indonesian nation's culture maintaining the environment's existence and integrity to achieve harmony of life and increase public trust and religious attitudes (Cahyani, 2018; Sudirman et al., 2019). Pencak silat is a system consisting of attitudes (positions) and movements (movements). Pencak silat is a performance (skill) of self-defence that employs the ability to defend oneself, fend off attacks, and finally attack the enemy, with or without weapons (Darminto, 2017; Sin & Ihsan, 2020). Pencak silat is also a self-defence method created to defend oneself from danger. Pencak silat is a performance (skill) of self-defence that employs the ability to defend oneself, fend off attacks, and finally attack the enemy with or without weapons (Cahyani, 2018; Halbatullah et al., 2019). So, pencak silat is a martial art with four values: ethical, technical, aesthetic, and athletic.

A fighter needs complete physical conditions in order to be able to achieve higher achievements in addition to technical, strategic, and mental mastery (Halbatullah et al., 2019; Hariyanti et al., 2016). The physical condition, mental and strategy determine an athlete's achievement. To produce good physical conditions, a training model is needed following the conditions and problems faced by pencak silat athletes. However, the current problem is that the achievements of silat athletes need to be more proud. There are still many athletes who need a better physique. This statement is also supported by research stating that pencak silat athletes generally have significant weaknesses in terms of anatomical aspects of pencak silat athletes (Halbatullah et al., 2019; Rosalina, 2018). It can be seen from the anthropometric structure, namely overweight body weight and disproportionate height, in terms of physiological cardio-respiratory endurance ability, muscle endurance, strength, speed, power, flexibility, and agility. Other findings also state that many children still have less than perfect split flexibility (Kurniawan et al., 2018; Susanto et al., 2013). The failure of these Indonesian fighters can be caused by training that has not been programmed properly, training is only incidental and not continuous, and has not used many more modern training methods based on scientific training studies, management attention is not optimal, management is not professionals and lack of funds (Rosalina, 2018; Sin & Ihsan, 2020; Syaifullah, 2011).

One of the important components of physical condition that determines the achievement of a silat athlete is flexibility. Flexibility is the joint's ability to move optimally (Kurniawan et al., 2018; Sin & Ihsan, 2020). Flexibility is a person's ability to move freely, balanced, comfortably, and strongly in the maximum range of motion of joints, muscles, and ligaments (Halbatullah et al., 2019; Ibrahim et al., 2015). These descriptions provide an overview of the physical condition, especially the athletes' flexibility and anaerobic endurance, which are not simply obtained but require programmed training. Because one of the solutions that can be offered to overcome the low flexibility is to develop a training model, the existence of an appropriate training model will be able to have a positive impact on the athlete's physical condition (Crunkhorn et al., 2019; Siekańska et al., 2021). It is consistent with other studies finding that training programs improve the physical condition of athletes (Edwarsyah et al., 2019; Purnomo, 2019).

One model of exercise that can be applied is Yoga. Yoga is a discipline of body, mind, and spirit (Frayeh & Lewis, 2018; Kinasih, 2016). Yoga is easy and can be done by people with disabilities and even the elderly. Yoga has been widely known by the people of ancient India and has now developed into a comprehensive and comprehensive health system. Previous research has also examined the benefits of Yoga as a therapy that can overcome anxiety (Romadlon et al., 2019; Sena et al., 2020). It is why yoga practice can provide beneficial effects as an exercise model. Yoga is generally used as a form of exercise that combines physical postures with breathing exercises and meditation that can work on balance and flexibility (Lazaridou et al., 2013; Yağlı & Ülger, 2012). The elements contained in Yoga can be used on large or small levels and adjusted according to age (Kan et al., 2016; Sivaramakrishnan et al., 2019). The yoga practice model will give someone a sense of fun. In practicing Yoga, one is expected to be able to feel the effects of Yoga based on awareness of the body's function.

Previous research findings also state that yoga movements can improve balance, flexibility, and muscle strength (Alleva et al., 2020; Yağlı & Ülger, 2012). Other research findings state that Yoga develops willpower, discipline, and self-control and forces the body to work synergistically and perfectly (Kan et al., 2016; Lazaridou et al., 2013). The model of yoga practice can improve the physical condition of the athlete. There has been no study on the yoga practice model for flexibility. This yoga practice model is different from existing yoga practices. The Yoga practice model focuses more on flexibility-focused movements and will be developed as an exercise program. The Yoga that will be given at the beginning is a warm-up program before practicing pencak silat. The yoga model will be given per stage from the first Yoga practice model to the seventh practice model, and each model is 10 minutes long. This research aims to develop a yoga practice model for flexibility.

2. METHOD

The approaches and methods used in this research are research and development (R&D) methods. The selected development model refers to the development proposed by Borg and Gall, which consists of 10 stages, namely needs analysis, research planning, design development, research planning, design development, preliminary field testing, result revision, main field test, result revision, feasibility test, final revision of due diligence results and dissemination (Saidah & Damariswara, 2019). The research location was carried out at the Klub Bakti Negara Banyuning.

Subjects in the research on the development of a yoga practice model for flexibility are pencak silat athletes. The number of subjects in this study was 65 athletes. In particular, athletes aged 15-23 years at the high school and senior levels. Children enter the stage of maximum strength training, anaerobic, aerobics, and individual training following the chosen sport (of interest). They are ready to be trained to be high-performance Elite Athletes (Long Term Development Training). The methods used to collect data are observation, interviews, and questionnaires. In research activities, tools are needed to collect data. These tools are said to be instruments. The instruments used in this study were a questionnaire for needs analysis and a questionnaire for model validity. The instrument grid is presented in Table 1.

Table 1. Instruments for assessing yoga movements

No	Yoga name	Variable	Movement Assessment Indicator				Score
			1	2	3	4	
1	Dragon Posture	flexibility					
2	Moon Posture						
3	Mountain Posture						
4	Water Posture						
5	Water Jogging						
6	Horse Jogging						
7	Duck Jogging						

The techniques used to analyze the data are descriptive qualitative analysis, quantitative and inferential statistics. The data collection and analysis in this study are as follows. First, the first evaluation is carried out at the model design stage by experts or experts. The initial evaluation is the first assessment from experts to determine whether the material follows the physical condition training objectives and whether the yoga practice model is right for the fighter before being tried out. The second evaluation was carried out at the small group trial stage. The evaluation is carried out through the results of the fighter's response to the yoga practice model. In this stage, it is carried out by the fighter about the easy yoga practice model to do and the fun yoga practice model to do. The result of the fighter's response to the yoga practice model that has been implemented is an evaluation of the model product improvement. The final evaluation stage was carried out in the large group field test. The results of the fighter's response to the yoga training model are the same as the questions in the previous evaluation stage, which will be used as a revision to improve the product results of the yoga practice model and can be implemented in clubs used for training.

3. RESULT AND DISCUSSION

Result

The first stage is needs analysis. Based on the needs analysis results carried out through the observation method, it was found that the training method was still classified as classic and remained consistent with the model used to train children. The training model that suits the child's development and the characteristics of the fighter causes the children to feel bored in training. The results of the interviews also found that trainers rarely carried out exercises using a culture-based training model. For physical condition training, the exercises used still use old methods such as running and strength conditioning or weight training.

The second stage is planning. At this stage, the initial draft of the model is developed up to the final model. Achievement of the target of the initial draft model was made using in-depth literacy and literature as well as the results of the needs analysis that had been carried out previously. In addition, even though this is an achievement target or a yoga practice model design ready to be validated by experts. The initial draft of the model is based on the principle of physical condition training and does not harm the child in carrying out the exercise. Yoga consists of 7 exercises developed, each with individual

movement steps. This training model consists of a dragon pose, moon pose, mountain pose, water pose, water jog, horse jog, duck jog, eagle pose, monkey, back pose, tiger pose, rabbit pose, horse pose, and butterfly posture. The yoga practice model that has been developed is the initial one made based on the results of initial research and theoretical studies to develop a good, easy, and suitable model. Furthermore, the Yoga Practice Model that was developed was tested by experts.

Evaluation and validation of the final draft of the yoga practice model for flexibility and anaerobic endurance were carried out by four experts. Yoga experts consist of 2 experts and obtained a percentage of 79%. Some of the input is that the yoga practice model needs to be arranged based on the type or type of posture according to its purpose. The expert's physical condition was assessed by one expert and obtained a percentage of 85% (good category). Some of the inputs given were that one training model was developed that was difficult to do for athletes, so it had to be deleted. Balinese cultural experts comprised one expert and obtained 81% (good category). The input is to insert what cultural elements can be included in each model. Expert trainers consist of 1 expert and obtained a percentage of 84% (good category). The input given is that the developed model must be prepared for the implementation of each posture so that the relationship between movement and training goals can be analyzed. Model experts consist of 1 expert and obtained a percentage of 85% (good category). The input given is to increase the flexibility of athletes. They can apply exercise models 1-7. Based on the input given, the model is revised to improve the productivity of the yoga practice model.

The small group trial was attended by 15 athletes at the BN Banyuning club. The schedule for the small group trial follows the schedule for implementing the exercise. This training activity is carried out following the prepared training program. Based on the results of the small group trials on the implementation of the exercises carried out in 3 meetings, the overall model developed obtained a percentage of 80.36%. The application of the yoga practice model in this small group trial is. First, the athlete obtains information on the training model delivered directly by the coach and researcher and immediately puts it into practice. Second, athletes apply each yoga exercise following the developed training postures. After that, the researcher made observations during the group trial and made notes on the field trial. Based on these observations, the success of the developed model can be seen.

Based on the results of observations and input from observers, the next step is to conduct field tests. Field trials were carried out on athletes totaling 65 athletes. Based on the large group trials, the average percentage was 82.83%. The results of field trials are the final foundation for improvements in new product refinement in the yoga practice model. The field test was intended to further test the level of effectiveness of the yoga practice model in increasing flexibility and anaerobic endurance. The model declared valid in the small group trial was tested again in the large group trial (field test) in the third evaluation stage. Testing is done by conducting experimental studies, namely analyzing the effectiveness of yoga practice models. The experiment was carried out by comparing the conditions before and after (before-after experiment) by applying the yoga practice model in practice. The field test was carried out three times with a greater number of athletes and more heterogeneous. The field test was carried out at the BN Banyuning club. The results of the research were analyzed descriptively. The results of descriptive data calculations can be presented in Table 2.

Table 2. Recapitulation of the covariable analysis results of the initial ability of Bakti Negara Banyuning athletes.

Analysis	Pre-test flexibility	*Post-tes* flexibility
N	50	50
Mean	12.94	15.88
Std. Deviasi	4.132	4.48
Minimum	5.00	8.00
Maximum	26	28.00
Varience	17.08	20.00

Based on Table 2, it is known that there was an increase in the average condition of flexibility before the yoga practice model was applied. It can be seen from the average value before applying the yoga practice model, namely the average flexibility of 12.94. There was an increase to 4 15.88 for flexibility. The normality test was carried out by Kolmogorov-Smirnov analysis. From the analysis results, it was found that the data were normally distributed with sig. >0.05. After the data is declared normal, the homogeneity test is next. From the homogeneity test, it was found that the value of Sig. > 0.05 means that the data obtained come from homogeneous data groups. After the prerequisite tests are met, the next test

is the Paired Samples T Test. The test is carried out by conducting experimental studies, namely analyzing the effectiveness of the yoga practice model. The experiment was carried out by comparing the conditions before and after (before-after experiment) by applying the yoga practice model in practice. The results of the Paired Samples T Test analysis are shown in Table 3.

Table 3. *Paired Samples Test*

	Paired Differences							
				95% *Confidence Interval of the Difference*				
	Mean	***Std. Deviation***	***Std. Error Mean***	***Lower***	***Upper***	***t***	***Df***	***Sig. (2-tailed)***
flexibility_*posttest* - flexibility_p*retest*	2.9400	4.5911	0.6493	1.63523	4.24477	4.528	49	0,000

Based on Table 3, the effectiveness test results using the t-test show differences in athletes' flexibility before and after applying the yoga training model. It can be seen from the results of the analysis that the t0 value is 4.528 with r = 0.00 <0.05. It means there is a significant difference in flexibility before and after the yoga, training model is applied to silat athletes at BN Banyuning.

Discussion

Based on the results of data analysis, it was found that the Yoga training model for athletes was very good and effective in practicing silat. It is shown by the significant differences in flexibility before and after the Yoga practice model was applied to fighters at BN Banyuning. So applying the yoga practice model is effective as a training program for fighters to increase flexibility. The results of this study indicate a positive effect of developing a yoga practice model on flexibility. The effective use of the yoga practice model is due to several factors. First, the yoga practice model developed is practical and efficient. The yoga practice model that is developed efficiently is inseparable from the development steps that are carried out. The development step provides an overview of what is needed and improves the performance of the pencak silat. Pencak silat is one of the martial arts sports that has developed organizationally (Hariyanti et al., 2016; Rosalina, 2018). Pencak silat is a performance or self-defence that can employ self-ability in fending attacks and attacking enemies with or without weapons (Cahyani, 2018; Sin & Ihsan, 2020; Sudirman et al., 2019). Pencak silat is not just self-defence in self-defence, but pencak silat can also teach about arts and traditions. Three aspects must be prepared to improve the performance of pencak silat: physical, technical, and mental (Hariyanti et al., 2016; Tama & Purwono, 2017). Pencak silat certainly requires good physical abilities and movement skills so that it is related to internal conditions such as anatomical structure, physiological function, and the nervous system (Halbatullah et al., 2019; Muhamad et al., 2019).

Second, the yoga practice model can increase flexibility. The yoga practice model has a significant impact on increasing the flexibility of athletes. The yoga practice model first allows athletes to develop mental and physical conditions. It is inseparable from the yoga movements that are developed. Yoga movements provide exercises to make the body more flexible. Flexibility is the joint's ability to move optimally (Kurniawan et al., 2018; Pangemanan et al., 2013). Flexibility is a person's ability to move freely, balanced, comfortably, and strongly in the maximum range of motion of joints, muscles, and ligaments (Halbatullah et al., 2019; Ibrahim et al., 2015). Flexibility can also be interpreted as a person's effectiveness in adapting to all activities with strong body stretching (Halbatullah et al., 2019; Hariyanti et al., 2016). Good flexibility allows one or several joints to move efficiently together and plays an important role in preventing injury and correcting poor posture (Pulcheria & Muliarta, 2016; Yaqin et al., 2019). This flexibility is not simply obtained but with some exercises and therapies that allow the joints to follow the movement as much as possible. So the athlete's flexibility can be developed by diligent training and a structured program. Regular yoga will enable joint activity to make maximum movements (Hoy et al., 2021; Yağlı & Ülger, 2012). The findings of previous studies also revealed that this flexibility has an important role in the movement needs of athletes (Hariyanti et al., 2016; Kurniawan et al., 2018). Other research findings also state that athletes with high flexibility can perform movements efficiently to prevent injury (Halbatullah et al., 2019; Ibrahim et al., 2015). It is why flexibility plays an important role in the function of all joints in a person's body.

Third, the yoga practice model can improve children's health. The yoga practice model has an important role in daily movement needs. The existence of a yoga practice model will positively impact flexibility because yoga activities are given not only to train one's body but also mentally, and yoga practice is not limited by age (Singh et al., 2015; Yaqin et al., 2019). Everyone can practice yoga, which has nothing to do with any religion. Yoga is an activity that unites the body and mind to balance and harmonize the body's physical and mental functions (Eusebio et al., 2022; Permatananda et al., 2020). Yoga exercises that have been developed provide optimal development of fine and gross motor aspects for children's development. Exercise is a systematic practice process done repeatedly by increasing the load or amount of work (Halbatullah et al., 2019; Winarni et al., 2020). This exercise will improve the athlete's performance in fitness, skill, and energy capacity, pay attention to educational aspects, and use a scientific approach. It is what causes the training activities to be carried out continuously, and through a systematic process of adding loads, the objectives of the training can be achieved optimally (Evenetus et al., 2019; Utomo et al., 2018). If carried out continuously, physical exercise will manifest an excellent and healthy physique to achieve the training goals optimally. The existence of Yoga is also able to maintain self-cleanliness, health, self-control, and control oneself from negative actions. Pranayama Yoga exercises for regulating breathing in and out of the lungs through the nostrils will also spread throughout the body and positively impact the body. The athlete can manage the oxygen the body needs by setting the perfect breath. It will certainly have an impact on anaerobic endurance. Based on this position, the existence of Yoga practice will positively impact children's health because it trains them physically and mentally.

4. CONCLUSION

The yoga practice model has met the validity, practicality, and effectiveness requirements. The results of small and large-group trials stated that the developed model could be applied and practiced by pencak silat athletes. The results of the model effectiveness test found significant differences in flexibility before and after the yoga practice model was applied to fighters at BN Banyuning. It was concluded that the yoga practice model proved effective in increasing flexibility in pencak silat athletes.

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