

# The Eight-Weeks Physical Exercise Program In Maintaining Power On Taekwondo Athletes In The Competition Period

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**Abstract**—The aimed of this research is to observe and discover the influence of the speed and power Taekwondo training program in maintaining physical performance ahead of the main competition. This research applies two research methods, the qualitative and quantitative. The subjects of the research are 7 athletes from the Taekwondo team of the PON DIY 2016. The qualitative data are obtained by controlled observation method; meaning that the observation was done during the training process and the intervention was given to maximize the exercise. Meanwhile, the quantitative data are obtained from the result of the evaluations that have been done three times using physical tests. The method used is the quasi-experiment which consists of the pre-test, control-test, and post-test. To measure the change in the speed and power performance of the athletes, repeated measurement and Excel were used. The result of the research shows that 1) the program materials and the implementation of competition period training with 2 macro designs are arranged, 2) the method applied are (1) Interval training (semi sparing, sparing target, sparing box, pacing dodge) training intensity 85-90% DN max (2) drilling the Taekwondo motion pattern with rubber load, (3) weight training Three In One Principle circuit method with the intensity of 85=90% RM low volume and the performance of power and speed are able to be maintained during the competition period. **Conclusion**, from the results of the eight-weeks physical exercise program, the power performance and speed of the taekwondo athletes can be maintained

**Keywords**— *Exercise program, Power Taekwondo, Competition Period*

## I. INTRODUCTION

Exercise is an ongoing process that is arranged systematically using proper training rules. The scope in coaching suggests that exercise programs are essential and must be known by achievement sports trainers. The achievement in sports can be obtained if it was done by a good precise planning. The quality of exercise planning in each period can be designed according to needs and it has to be no overlap between one exercise and the other. The achievement

sports exercises include physical exercise, motion patterns, and tactical and mental. These four things are important components and it becomes the goal of an exercise and can be developed to the maximum extent possible to achieve peak sports performance.

The achievement sports exercises are done to face both multi-events and single-event sports competitions that require an exercise plan. Exercise planning includes general, special, pre-competition, competition, and transition periods. Each period has different specifications and objectives whether it is in general period or competition. However, all of them must be mutually supportive and be done continuously to reach the main goal, sports achievement. Many activities related to sports coaching that have often been done are enough to help trainers carry out their duties as coaches in fostering the athletes.

Exercise program in the form of education and practice, seminar or upgrading, has been done in many ways, one of them is discussing the exercise program. The exercise program that usually been discussed is in the form of common practice. It sometimes does not reach the core of a more detailed exercise program, let alone the focused program. In addition, many kinds of training only emphasize the exercise or exercise methods to improve physical abilities, motion patterns, and tactics and mentality. It creates a gap on the important things that have to be discussed deeply, which is the maintenance of physical aspects. Physical maintenance during the competition period is very important and need to be discussed in detail, while on the other hand, the motion pattern ability and tactics should be improved and matured. Exercise program during competition period should become the main topic in every talk about training programs because it should be able to combine physical exercise with motion pattern and tactics without decreasing the existing physical ability. Besides, the competition period is usually short and the athletes will directly face the main competition.

Periodization is the process of dividing one-year plan into smaller training periods which aims to provide convenience in

arranging more manageable parts and to ensure achievement in the important matches in the year, [1] Exercise periodization is a description of material phrasing, loads, targets, and training methods that must be done so that peak performance can be achieved in the right time, [10]. Periodization is often only a name that given for the placement of training periods which be arranged in a progressive format so that it will provide optimal performance when needed, [8]. It is a form of “indexing” or developing an objective analysis method to measure training loads and determine whether it meets the athletes’ need or not. Thus, the training period is an annual plan which then divided into several periods: general periods, special periods, pre-competition, competition, and transition. It contains materials, loads, goals, and training methods which then used to bring the athletes to reach their peak performance at the right time.

Peak performance in a match is very little observed and understood because of its complexity. It cannot be created in a short time because it is a continuous cumulative process, [1]. Psychological peaks that often seen from the point of view of performance are interpreted as a state of being ready to act with a big feeling and enthusiasm. This is an objective and subjective condition of athletes to face the main competition, [1]. The objective aspect of the peak performance includes the certainty of the nervous system to adjust quickly and effectively to the obstacles and challenges in the match. While the subjective aspects are defined as the athletes’ self-confidence, motivation level, and motoric and biological synergic perception. The important sign of peaking is the ability of the athlete to overcome various types of pressure that occurred before, as well as during and after the game. It means that in peak condition, we hope that the athletes can overcome their weaknesses that have been resolved before in training. This situation requires a model of training that has been suited with the condition of a real match, so, psychologically, the athletes will be accustomed to dealing with the condition in the real match. Peaking is a special training condition characterized by high capacity adjustment of the nervous system, compatibility of the motoric and biological system, high motivation, ability to cope with pressure, ability to accept the risks occur in the game, and high confidence, [1].

The decision of the best timing in the competition period for speed and power in Taekwondo has not been confirmed yet, whether it should be done in a low or high percentage. Even experts say that it depends on the competition system and the sport respectively. The coaches will direct and arrange an adequate training program for a period of between 1 - 2,5 months. The nerve cells capacity will be maintained optimally for 7-10 days. Therefore, the coach must be able to design a training for 1-2.5 months and maintain conditions at 7-10 days before the match so athletes will still at the peak conditions, Ozolin 1971 in [1].

The competition period is the end of a training plan before going to the main competition. After the competition period, an athlete will immediately face the main objective of the training; to compete. It should be understood that in the competition period, the training objectives are not to increase the physical components but to maintain the abilities that the athletes already have. Special treatments are needed to maintain power after the pre-competition period. The training program in this

period is still very poorly explained and delivered to the trainers in the training, education, seminars, and upgrading that are held in the regional and national levels. Many regional and national level trainers still have a low understanding. It can be seen from a number of questions asked in the seminar such as how the training program in the competition period is? what are be the benchmark for preparing the exercise? and how are the processes? etc. In addition, the majority of trainers cannot explain their training programs if they were asked to present one when handling athletes.

Designing an athlete to win means having to prepare an exercise program. With the training program, the progress of the athlete being trained can be monitored. If the development of athletes can be monitored well, it can be said that the achievements they obtained are because of the design contained in the exercise program. If the training program has been implemented by Taekwondo trainers, the ability differences between one athlete to another will not be too far away.

The problem is that the training objectives in each period vary. The general period prioritizes anatomical adaptation and enhances basic physical components such as general strength, aerobic endurance, whole body speed, and flexibility. Special preparations emphasize more in maximizing the ability of specific organs and energy systems that are important in the game, while pre-training competitions still improve the physical ability but are already combined with Taekwondo's motion patterns. Exercises in the competition period should be specific and similar to the matches. The similarities and specifications can be seen in terms of working time, movement patterns and situation, but must be able to maintain the power which already owned. This decisive condition in the competition period is the focus of the preparation of the power Taekwondo training program.

The findings from the book that discuss the training program and the presence of surveys and observations to the 54 Taekwondo trainers in The Special Region of Yogyakarta who have trained Dojang (club), even had brought the Taekwondo DIY Team to the national level, indicating the need for guidelines that explain about how to develop an exercise program to maintain power during the competition period. In addition, from a number of direct observations in the field, many trainers still provide more on general physical training at the time before the match. Moreover, the evidence that the training is still general can be seen from the training schedule which is still carried out in the field rather than indoors. However, the practice in general, actually is not a problem as long as it is done more than once a week. The interviews and direct observations in the field became a reference as to why the preparation of the speed and power Taekwondo training program for the competition period needs to be developed. It is indeed an important need that has to be fulfilled as a physical trainer in Taekwondo.

## II. METHOD

### A. Research Methods

The goal of this research was to compile materials for speed and power Taekwondo training program during the competition

period, to arrange the methods and models of speed and power Taekwondo training in the competition period, and to measure the achievement of the speed and power Taekwondo training program in the competition period. This study used mixed methods approaches namely quantitative (quasi-experiment) approach and qualitative approach (guided observation and interview). Mixed research is a research approach that combines qualitative research and quantitative research [3]. Another says that the mixed method is a study that combines quantitative methods and qualitative methods to be used together in a research activity so that comprehensive, valid, reliable and objective data is obtained. In the process, this research used controlled observation techniques. It was used by researchers without involving emotions or feelings with the target being studied. Controlled observation means that the subjects that will be observed are selected and the conditions that exist in the room or place of activity are controlled by the researcher, [11]. This technique is possible to be used in the process of Taekwondo training for elite athletes because the condition of the athlete has been trained and does not need to be given too much input which will interfere the training process. However, certain interventions must still be given for the sake of the training quality of the 7 Taekwondo athletes.

The data collection was carried out by conducting physical tests during the competition period. To avoid errors in the data collection, the researcher was assisted by experts to ensure the data obtained was valid. This study aimed to determine the ability of the biomotor components which are required in Taekwondo sport during the competition period; It includes anaerobic endurance, speed, strength, power, agility, and flexibility. The instruments used for each biomotor component are as follows: 1)) Speed using a 30-meter sprint, and 2) Power using Margaria Kalamen..

### III. RESULT AND DISCUSSION

#### A. The Competition Period

The competition period is a phase where the training process approaches the main competition. It means that in this period, physical, technique, tactics, and mentality exercise must be able to be packaged into one training process with real match adaptation. "Perfecting all the training factors means giving strengthening training to athletes in order to improve their abilities and, at the same time, make them able to compete successfully in the main competition or other competitions" [1]. According to Ozolin 1971 [1] The general objectives of the competition period are as follows: 1) Continue improving biomotor and psychological abilities according to the specificity of the sport, 2) Refining and finalizing techniques, 3) Improving performance to the highest level, 4) Enhancing tactical manoeuvres and gaining competitive experience, and 5) Maintain general physical preparation.

#### B. Speed in The Competition Period

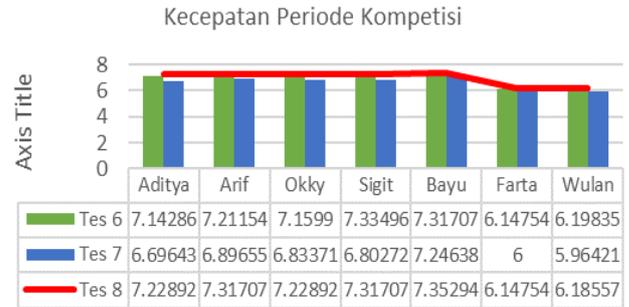


Figure 1. Speed diagram in the competition period  
Description: the lower the number and the graph, the better.

Speed is an important component of Kyorugy Taekwondo because the nature of this match is attacking each other to get points in order to win the match. Maintaining speed is very important because improving it is very difficult. Therefore, the components of it must be trained with a lot of frequency. Taekwondo sports which dominant in power and speed, maximum intensity (especially with special training) is used around 14 or 15 days before the competition and the load will be reduced in 5 to 7 days before. Throughout two weeks of tapering, the high-intensity exercises which are carried out every three days at a volume of 50 percent changed to 60 percent lower than usual. Rest intervals are also considered and adjusted to the athlete's condition to avoid fatigue accumulation before the competition [2].

Speed is always given with the maximum intensity because without maximum effort, the speed performance will not be good. Speed training in this competition period uses sequenced-kick form, 2-3 kicks designed like when attacking or countering or combination of both. In each speed exercise, the athletes do 20 sets, the total can be 20x2 or 20x3 depending on the combination of the exercise in one session. For example, check milo chagi + dolyo chagi + delol chigi (one set) x 20. The athletes should use speed in the process of kicking, but they are not given a signal, but up to the athletes themselves to adjust to their respective recovery. The coach only emphasizes on the quality of movement and speed. A day before the main competition starts can be used for rest or giving a neuromuscular potential session with either strength training or certain exercises such as short acceleration or quick-but-short kicks on a safe target, [2]. The intensity is increased and decreased using break time between reps and sets.

**C. Leg Power in The Competition Period**

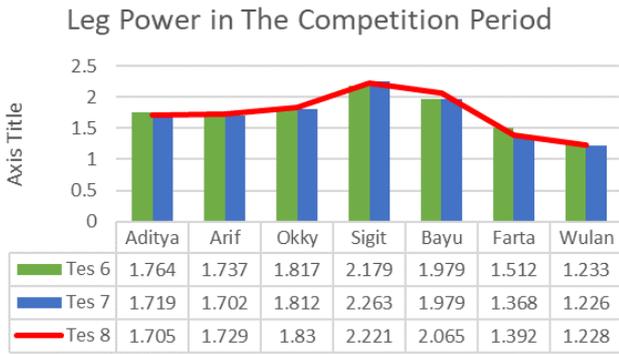


Figure 2. Leg Power Diagram in The Competition Period  
 Note: the higher the graph and the number, the better.

Power is a physical component as a result of the multiplication of strength and speed. In PON DIY Taekwondo athletes, the leg power could be maintained in the performance of the competition period, even increased well although the improvement was not significant. Stopping the loading exercise will reduce the performance of the strength, power, and speed of an athlete and worse, it could decrease the skill, [9]. Several studies show that certain strength training programs can increase the athlete's maximum strength and power production, reduce the injury, and contribute to fasten the recovery of injuries by minimizing the number of training sessions and competitions. The opinions of these experts strengthen the fact that power is very necessary for Taekwondo sport. The Training plan can be done and can create good athlete's physical performances if the training on the competition periods is not intended to improve but rather to maintain. However, the intensity of endurance training must still be high, seen by DN 85-90% from the maximum DN, but the form of training must be adjusted to the technique and match situation. Not only that, the loading practice uses 90% intensity of RM and was done in 1 to 3 repetitions for 3 sets using the Three In One Principles system, while the physical training volume is adjusted to the demands on the matches. However, because Taekwondo athletes are determined by body weight, 1 month ahead of the game is the final deadline where the athlete's weight should not exceed the limit. In addition, a 24-hour break should be given when doing the final test or evaluation so that the results could be maximum. The whole point is that power training in the competition period must be adjusted according to the number, time, type of motion, round, and real match situation.

The competition period is divided into pre-competition and competition, each of these periods has different specifications, both in terms of objectives and training methods. Another angle of periodic division is the preparation, competition phase, the main objective of the Competitive period is the realization of the athlete's potential built during the preparation period. Competitive periods are traditionally divided into 'initial competition' (or pre-competitive) and 'major competition' [5].

Other opinions mention situations such as professional training require the incorporation of general and specific fitness with skills designed in special training. Weeks 1 to 4 is the right time for the combination. Functions of skills and tactics will be needed later, such as during weeks 5 and 6 (before the tournament takes place) [5]. Further, there is something to consider when discussing the period of competition, because various sports differ in the amount of competition, participation of athletes, then differences will also come in periodic patterns. For example, endurance sports such as marathons or long-distance running, will limit the participation of athletes for several competitions in one year / season, and that will be different from other sports

Physical preparation must still be maintained, especially the basic physical dominant in certain sports. Throughout the period of competition the physical achievements achieved by the athlete must be maintained as constant support for further factors of further training and of course for the main competition. The total amount of physical preparation planned in the exercise, 90% must be a direct action from the exercise, while the 10% is a form of active rest. The competition period must always pay attention to "training and competing demands in competition, in sports it can vary dramatically depending on the quality of the opponent, the number of days between games, and the location of the match " [4].

One year of training will arrive at one important thing when strength, skill, speed, endurance, and tactics all need to be done together at the right time. The final preparation for competition is to require an understanding of both the art and science of the physiological changes that occur and the skills to manage the psychological and emotional condition of an athlete because they experience a heavy year near the culmination of an exercise [7].

**IV. CONCLUSION**

From the results of power taekwondo training exercises, it obtained results as follows: Composed the material consists of speed and power Taekwondo training programs namely Speed approach to the Taekwondo motion pattern, leg power using weight training Three in One Principles. The methods used in the speed and power Taekwondo training program in the competition period was circuit, drill, and semi sparing adjusted to the form and purpose of the exercise. The evaluation results from the test showed that the performance of speed and power in Taekwondo can be maintained in the competition period

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