

Vo2max Athletes Performance of Yogyakarta Special Region in Pre PON 2019

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Abstract: Knowing and always controlling the physical condition of athletes is very important in the process of focusing on sports achievement training, because it is important for a coach to make an exercise program and know the strengths or weaknesses of athletes in facing the matches. Therefore, periodic physical tests need to be carried out by the parent organization and coach so that athlete's physical condition is as good as it is expected during the competition. This research is an observational study using a test. The data were obtained by performing an aerobic endurance test using the Multy Stage method conducted in the KONI DIY (Yogyakarta National Sport Committee) for all 2019 pre-PON Puslatda athletes at level I and level II. The test results are used as the data to be analyzed to give an idea of the athlete's true state. The results suggested that athlete's VO₂max from all sport events were below the national or international targets specified. From the data obtained, there was an average of 6-36 cc / kg bw / minute, and it varied from each sport obtained by the initial test. It can be finally concluded that athletes in DIY Puslatda in this case were lacking endurance and they were declared unable to compete in the actual match.

1 INTRODUCTION

The biggest multi-sport event in this country is the National Sports Week which will be held in Papua in 2020. This inter-provincial sports competition is a 4-year agenda that has always been a difficult and important work for sports organizations, in this case KONI Province (national sport committee). In anticipation of this multi events activity, a huge financial need, energy and mind are poured out in the face of these agendas. Regional prestige is one of the reasons why PON event is very prestigious. Besides, achievements also become the key factor. Being a winner in PON is something that is coveted and sought after by athletes, coaches and administrators, because of its prestige and rewards.

Becoming a champion is certainly not something easy, it takes hard work and tenacity to undergo the training process. Long precision in doing exercises requires perseverance and support both in terms of morale, material and proper training planning. Through the long process of the training the trainer must also be able to control, improve and finally apply everything that has been done during the training in the actual match. Becoming a champion is

not easy. All exercises must be programmed and controlled by the coach, so that changes in the athlete can be known.

The process of continuous training is something that must be done by athletes and coaches to achieve goals, namely peak performance. Continuous exercise must be done but what we cannot miss is evaluating the results of the exercise. Evaluation is very important because we know the condition of the athlete. After undergoing a training process, one that needs to be controlled at all times is the physical condition of the athletes.

The physical condition of athletes in the pre-competition of DIY 2019 PON needs special attention, because the status of the physical condition is primarily an important factor which must be increased and maintained so as not to decrease specifically the VO₂max, because if VO₂Max is good, athletes will be able to quickly recover. Maximum oxygen absorption or consumption (VO₂max) means a person's maximum capacity for aerobic work. These are products of cardiac output (CO) and differences in arteriovenous oxygen (AV-O₂) during fatigue, and it is also used as the standard size for one's aerobic fitness. This refers to the maximum amount of oxygen that a typical individual

can use more than one minute during intense and maximum effort (Ltd., 2017).

The physical condition of athletes must be at national standards if they want to be succeed at the national level, even though achievement is not merely dependent on the physical problem. Besides, there are techniques, tactics, and mental and even non-technical factors needed to be controlled too. Achievement is indeed not easy to achieve, but we can at least physically try so that Puslatda Pra PON DIY athletes can be above the average athlete of potential opponents in the 2019 Pre PON.

Joint training, monitoring and evaluation are ways to help the trainer to control the athlete's physical condition. If you finish doing joint exercises, you will see the physical condition of the athlete, especially in terms of endurance, strength, and flexibility, so the coach will get meaningful input about the athlete, so that it can be improved. Because of the importance of controlling the physical condition of Puslatda athletes in Pre PON 2019, especially aerobic endurance, it is necessary to know the VO2Max performance of the athletes from now on, so that they can reach peak performance.

Sports activities carried out by a person always have different goals and objectives, including: health, recreation, and achievement. For this reason, the training load for each activity also differs according to the desired goals and objectives. The aim of the exercise in general is to help sports coaches to be able to apply and have conceptual abilities to help reveal the potential of sportsmen to achieve optimal performance. Meanwhile, the target of training is to improve the ability and readiness of the athlete in achieving optimal performance (Tirtawirya D, 2017).

Determination of training load is adjusted to the initial test and the objectives to be achieved. It is because without the initial test, a trainer will find it difficult to determine the portion of the exercise that will be given to the athletes. For this reason, individual principles must be strictly implemented in determining the training load. In setting the training load, there are 4 things that need to be considered, so that success can be achieved, namely intensity, volume, recovery and intervals (Sukadiyanto, 2010). Paying attention to these 4 means that an exercise program will be monitored for the high and low quality of the exercise, because we can understand if playing these 4 components means controlling the intensity of the exercise

Physical exercise that is done regularly, programmed, and measured properly will produce physiological changes that lead to changes in the body's ability to produce better energy. Very

important that training programs are systematic and well-organized to induce superior adaptation of the main functions of the body (Bompa, 2015).

The general preparation period is the beginning of a series of training program in a periodization as revealed by Dan Gordon, so that the training program in the general period must be completed in a timely manner to achieve the desired goals. General preparation that is not on time and inaccurate will disrupt the period and eventually will make the training time longer. If the training becomes longer than targeted, of course it will disrupt the training process, especially during the competition period. The lack of emphasis on athlete conditioning during this initial period can lead to poor quality work in the competition period (Gordon, 2009).

Like the component of endurance, during the general preparation period VO2max must be fulfilled according to the needs of the sport. If endurance in this case (VO2max) does not meet what is required by the sport rules, then athletes will experience difficulties when entering the next period. Increasing endurance is important for sports such as games, martial arts and measurements, if endurance is sufficient then the next training process will be easier.

The general preparation period is usually given a longer time than the other periods. This means that this period was prepared to achieve enough VO2 max targets to face the actual match. In this general period, the focus of endurance exercises is emphasized more on a large volume, so that the intensity was still not so high, and even tended to be low. Endurance training in the general period is still comprehensive, because the goal is to increase fitness.

The general preparation period is usually given a longer time than the other period, it means that in this period, it was prepared to achieve enough VO2 max target to face the real match. This general period focuses on the endurance exercises of a large volume, so that the intensity was still not so high, and even tended to be low. The endurance training in this general period is still comprehensive, because the goal is to increase the energy fitness. A good cardio respiration means increasing lung volume, left ventricular wall hypertrophy, left ventricular volume to increase stroke volume and, as a result, facilitating the delivery of oxygenated blood to the working muscles, decreasing heart rate, increase capillary density, increase lactate threshold so that athletes can perform at a higher level of oxygen consumption, and increase VO2 max in order to increase aerobic capacity for longer training and faster recovery ability when competing (Bompa, 2015).

2 RESEARCH METHOD

This research belongs to descriptive research. Descriptive research is a study that is intended to gather information about the status of a phenomenon that exists, namely the state of symptoms according to what they were at the time of the study (Arikunto, S, 2005). Document analysis research (content analysis) is research conducted on images, sounds, writing, or other forms of recording, (Arikunto S, 2005). With this content analysis, researchers work objectively and systematically to describe the content of communication materials through a qualitative approach.

The samples used were athletes at pre-PON training in the Special Region of Yogyakarta with 19 sport events. The VO2Max test uses a multistage followed by 77 athletes. The test was then compared to the national standard VO2Max in each sport.

Data retrieval techniques used is tests and data analysis is performed with descriptive analysis which is a description of the research subjects based on variable data obtained from the subjects studied. It does not intend to test, but only describes "as is" about a variable, symptom or condition (Arikunto S, 2005). In analyzing the data, researchers used Qualitative Descriptive Analysis, which is non-statistical method in the form of a percentage.

3 RESULT

Based on the results of the tests carried out by DIY KONI team using the Multi Stage, VO2max results were less encouraging for athletes at Puslatda Pra DIY PON 2019. The details can be seen in the bar graph below.

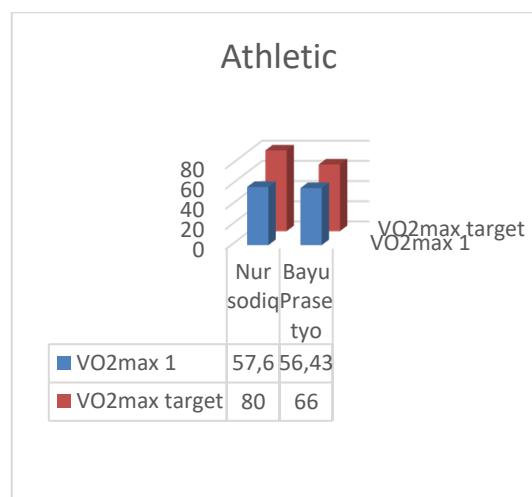


Figure 1: Athletic.

In the athletic sport, Nur Sodik, who will compete in the 5,000 kilometers and 10 kilometers run, still has to work hard to increase VO2max to 80 cc / kg / minute. His current state was only 57.6 cc / kg / minute. Meanwhile Bayu Prasetyo who climbed on the fast road also needed to increase VO2max, because he is still unable to reach 66 cc / kg bw / minute.

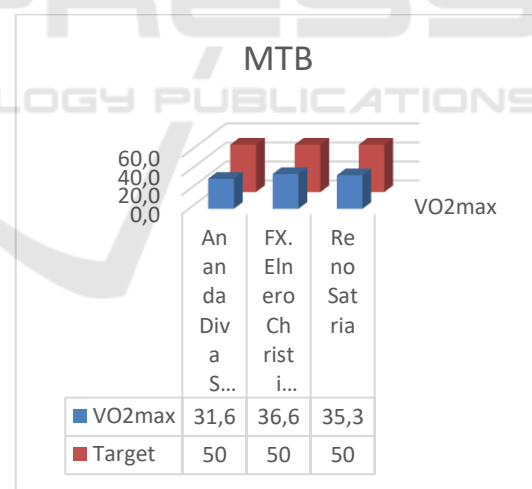


Figure 2: MTB.

In the MTB bike, athletes also need to increase VO2max, this time the test of the three athletes is still far enough to achieve ideal performance. Anandan Diva scored 31.6 cc / kg bw / minute, while Elx Fner Christian Indi Saputra got 36.6 cc / kg bw / minute. Lastly, Reno Satria scored 35.5 cc / kg bw / minute, while the target is 50 cc / kg kg / minute

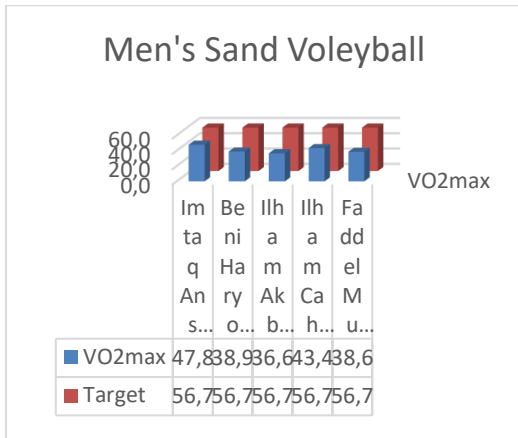


Figure 3: Men's Sand Volleyball.

Male sand volleyball also needs to increase VO2max, if you look at the chart above the achievements of the athletes vary, but still not reach 56.7 cc / kg / minute.

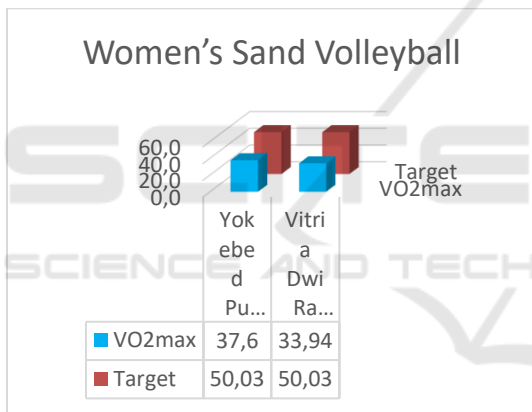


Figure 4: Women's Sand Volleyball.

Not much different from male athletes, female athletes have also not been able to come close to the ideal national athletes VO2max.

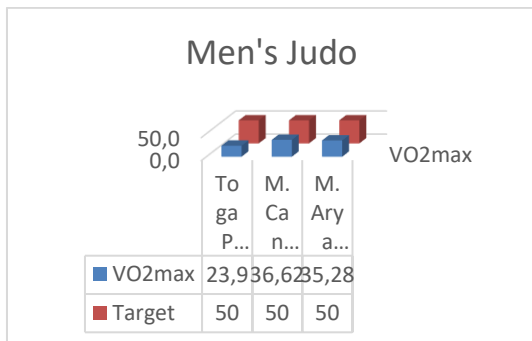


Figure 5: Judo.

The judo sports branch is the same, the athlete's VO2max condition is quite low compared to the target set of 50 cc / kg / minute.

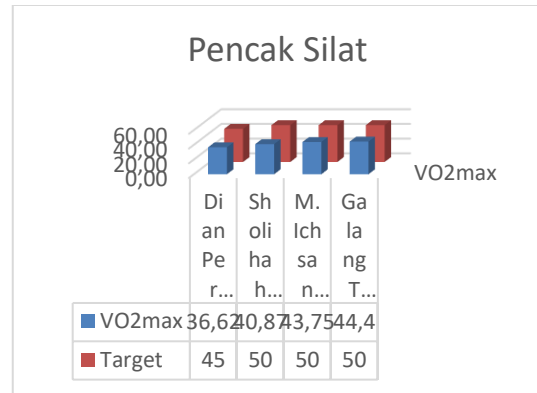


Figure 6: Pencak Silat.

Pencak silat martial arts have also not been able to reach the targeted VO2max, if you look at the chart above, you need to practice intensively to increase up to 45 cc / kg bw / minute, for 50 cc / kg bw / minute for boys.

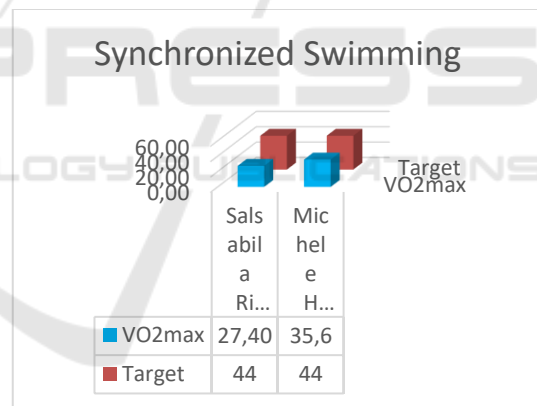


Figure 7: Synchronized Swimming.

Synchronized swimming is also not much different from other sports, it is ultimately necessary to increase VO2max to reach 44 cc / kg bw / minute.

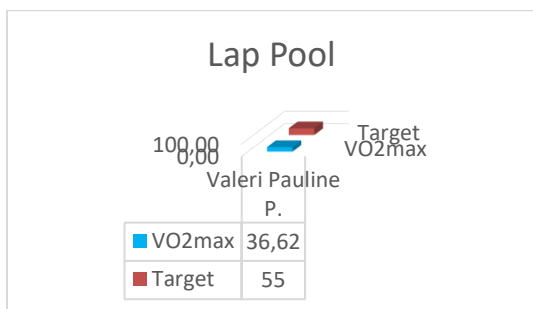


Figure 8: Lap Pool.

There is only one person on the lap pool, namely Valeria Pauline, but her VO2max has also not been able to reach the target set at 55 cc / kg bw / minute.

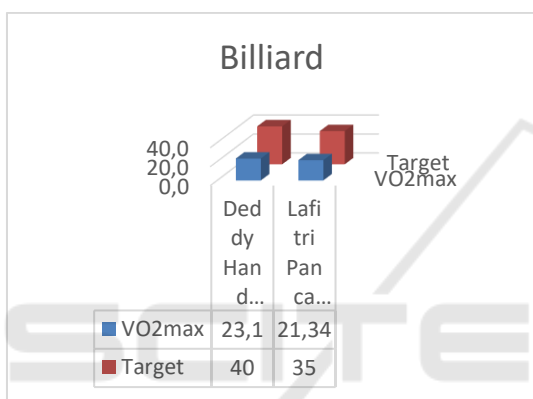


Figure 9: Billiard.

Billiard also shows the same results and is still far from the national athlete's ideal of 35 cc / kg bw / minute, for female and 40 cc / kg bw / minute, for male athletes

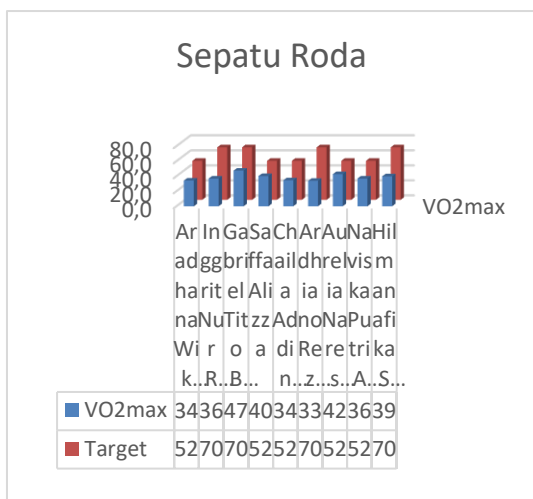


Figure 10: Roller Skating.

Roller skating athletes need to work hard to pursue a considerable VO2max deficit, so they must be more focused on pursuing the set target, which is 52 cc / kg bw / minute for the 70 cc / kg bw / minute for male athlete.

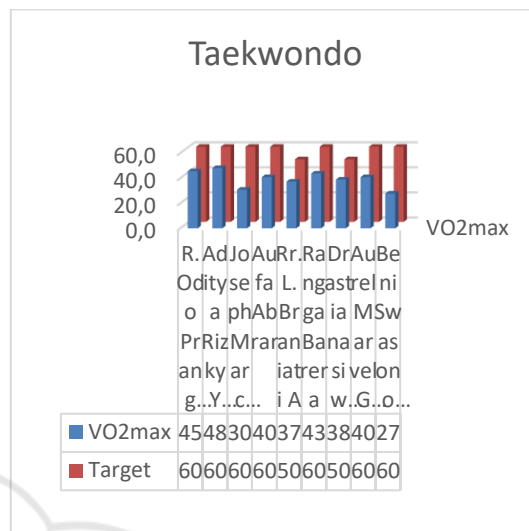


Figure 11: Taekwondo.

Taekwondo is the same, the athletes need to work harder to achieve VO2max for women 50 cc / kg bw / minute and for men 60 cc / kg bw / minute.

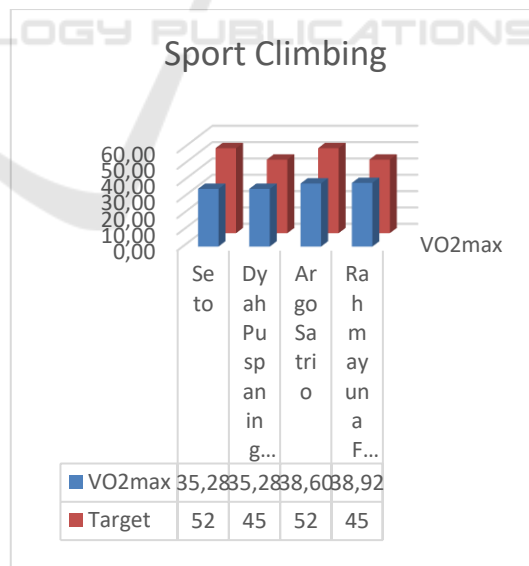


Figure 12: Sport Climbing.

Rock climbing also needs to be improved and the athlete have to work harder to increase their VO2max

which is 45 cc / kg bw / minute for women and 52 cc / kg bw / minute for men.

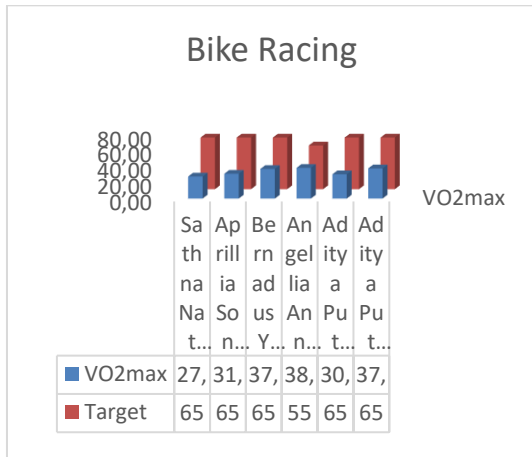


Figure 13: Bike Racing.

Looking at the graph above it seems very far if they are called bicycle racing athletes, the gap between target set with the test results is far enough, so it is necessary to pursue VO2max up to 55 cc / kg bw / minute for the 65 cc / kg bw / minute for men.

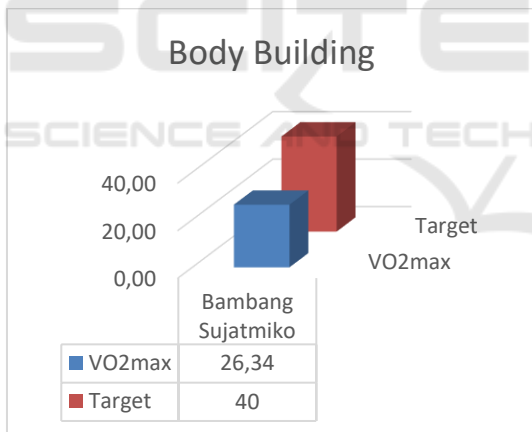


Figure 14: Body Building.

Bodybuilding is a sport that does not require high VO2max, but still needs to have adequate fitness, so it is necessary to increase VO2max to 40 cc / kg bw / minute.

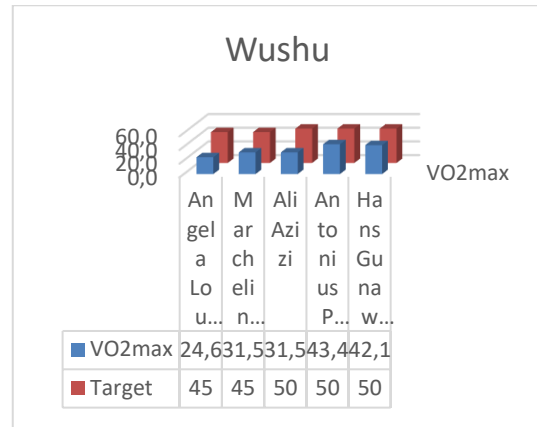


Figure 15: Wushu.

Wushu is also the same as other martial arts, unable to meet the VO2max target of up to 45 cc / kg bw / minute for white 50 cc / kg bw / minute for men.

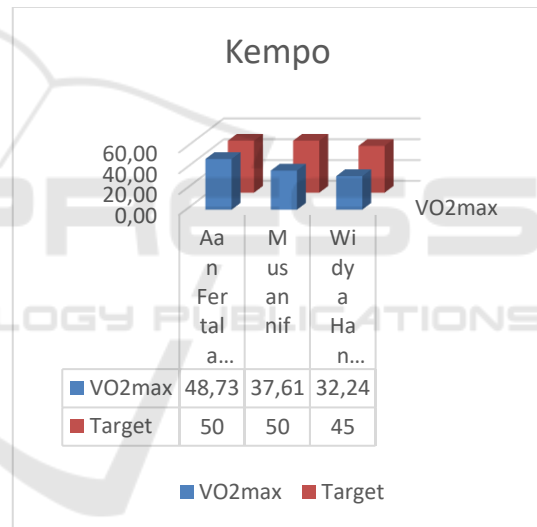


Figure 16: Kempo.

Similar with other martial arts, Kempo needs to work hard to pursue the VO2max target, for women 45 cc / kg bb / minute and for men 50 cc / kg bw / minute.

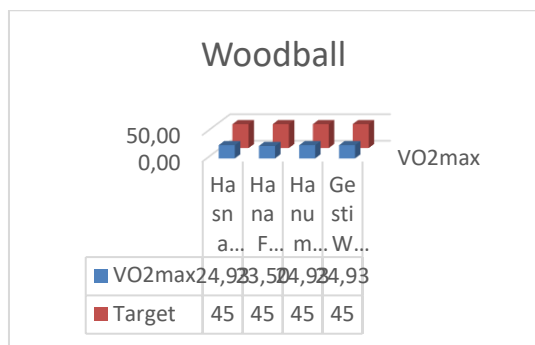


Figure 17: Woodball.

Woodball sports do not move with running but the match time is long, so VO2max is included in the standard 45 cc / kg bw / minute target.

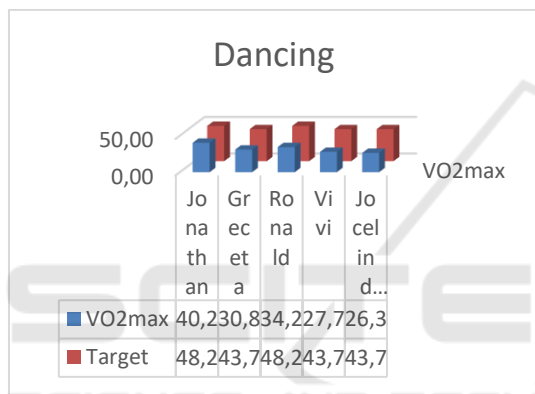


Figure 18: Dancing.

Dancing also needs to increase VO2max to 43.7 cc / kg bw / minute for women and 48.2 cc / kg bw / minute for men.

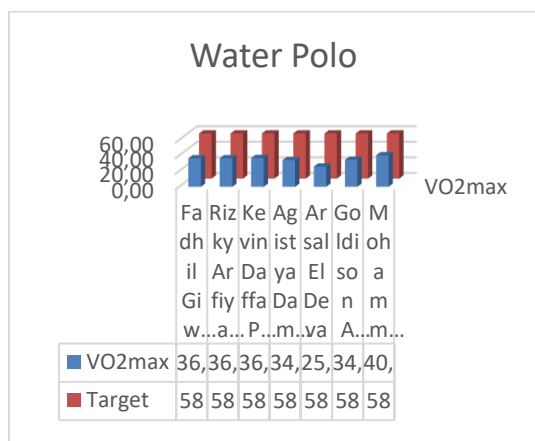


Figure 19: Water Polo.

This team sport requires high VO2max, because playing in water, of course the obstacles are more difficult, therefore athletes need to increase their VO2max to 58 cc / kg bw / minute.

4 DISCUSSION

In the study of the performance of physical conditions, in this case, the VO2max is indeed not yet to be said to be encouraging, this maybe because the tests were carried out at the beginning of the Puslatda. However, it does not matter when. If seen from the results of the multi stage test and existing national targets or standards, it can be said that the athletes before entering training center do not maintain their aerobic endurance. It can be seen from the results that are quite far from the targets set in all sports, but because this is an initial evaluation, the coach needs to work hard to improve.

There are no sports events that meet the targets of both men and women athletes, this is a great homework for trainers and administrators of KONI DIY. Reflecting on this one component, of course, DIY Puslatda athletes at the time of the test were not eligible to compete at the national level, meaning that if at that time there were sports that participated in national championships and were unsuccessful, then that would be understandable. However, three months after the test, of course, the coach must be able to reach the targeted performance, and about three months the athlete can be said as ready to compete in real terms, if seen in terms of endurance.

This inadequate physical condition must be overcome by providing general endurance training. It is because if in the process of improving, it would be better if it had not been mixed with technical movements, because what was feared would later be a hindrance in meeting the volume of targeted training. Achieving high VO2max means that athletes have enough stock, meaning that people with good aerobic endurance will recover faster from fatigue. If an athlete is able to recover quickly, then he will be able to do matches with better conditions, of course, technique, tactics and mentality will be equally helpful in completing the task.

5 CONCLUSIONS

Based on data analysis, it can be concluded that: The performance of athletes in Puslatda DIY in this case

is still poor in terms of their endurance and athletes are declared unable to do a real match.

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