LEG MUSCLE POWER VOLLEYBALL ATHLETE

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Abstract
In the sport of volleyball, aspects of physical conditioning are needed, one of which is leg muscle power. The leg muscle power possessed by volleyball athletes will support volleyball athletes to make movements in volleyball games. This study aims to describe leg muscle power from volleyball junior athletes in PBV Pasundan. The research method used is descriptive with research subjects 23 junior athletes. The instrument used to collect data is by doing a vertical jump test. The data analysis technique uses SPSS for windows 9.0. The results of data analysis obtained the average vertical jump of PBV. Pasundan athletes 58 cm. With the lowest value 46 cm and the highest value 83 cm. Based on the results of the leg muscle power data that have been analyzed, it shows that there are still many junior athletes whose leg muscle power is low, so there must be training for more intensive leg muscle power so that the leg muscle power of junior athletes in PBV. Pasundan can increase.

Keyword:
Leg muscle power, Volleyball, Weight training, Vertical jump

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Introduction

In the sport of volleyball, aspects of physical conditioning are needed, one of which is leg muscle power. The leg muscle power possessed by volleyball athletes will support volleyball athletes to make movements in volleyball games. "While spiking & blocking a player has to jump vertically in order to make contact with the ball from maximum height". Leg muscle power is the ability of a person to exert maximum strength and speed to overcome resistance or load (Zemková et al., 2017). Another opinion (Bompa & Haff, 2019) "Power is the result of two abilities; maximum speed and strength in the shortest possible time". Based on both opinions, high jumping can be achieved by doing exercises related to power or explosive power. And then it was explain by (Suresh & Perinbaraj, 2016) "explosive power (muscular power) is a person's ability to use the maximum strength that is deployed in the shortest possible time". Power is a combination of strength and speed or the maximum exertion of muscle force with maximum speed, strong and fast abilities are needed, especially for actions that require maximum power capabilities such as smashing movements (Wirth et al., 2016). Based on the results of observations of the volleyball game of Pasundan junior athletes, it

shows that the quality of the smash that is done is still weak. Therefore, researchers identified to evaluate based on leg muscle power in Pasundan junior athletes. which later the results will provide advice on what exercises should be given to increase the muscle power of the junior pasundan athletes' limbs. Volleyball players, if they have good power legs, it will be more effective and efficient in performing techniques, especially smash and block. (Challoumas & Artemiou, 2018)

Methods

Participant
The participant in the research is pasundan junior athlete. Participants in this study were Pasundan junior athletes with age category 16 – 19 years old

Population & Sample
The research method used is descriptive with research subjects 23 junior athletes. Sampling is determined by taking athletes who pass the selection test at the time of acceptance of new pasundan athletes.

Instrument
The instrument used in this research is the vertical jump test without prefix. Participants are given two chances then the best result is taken.

Procedure
Data collection in this study was carried out during the selection test for athletes Pasundan in 2021. As for the tests carried out by the Pasundan volleyball club looking at the height and leg muscle power of the participants after getting data from each participant, a selection was made to see the basic techniques in volleyball. such as bottom passing, top passing, serve, block and smash by looking at the participants while playing 6 vs 6 volleyball. The tool used to measure the participants' leg muscle power is a vertical jump board. Each participant in the study was given two opportunities to take the test. From the two tests, the best data is taken. First, participants were given time to do stretching to reduce the risk of injury when doing activities. After stretching, the participants are lined up to be orderly. then the first test is to measure the height, then measure the reach without jumping and the third test the reach by jumping. Before doing the jump test, participants touch the chalk so that when they touch the test board there is a mark of the reach they have achieved.

Measure Height
The procedure for taking the height test is that participants do not use footwear. then participants stand straight with their backs against the wall.

Measure reach without jump

The step in the reach test without jumping is that the participant stands next to the wall with one arm straight up and the body is against the wall and of course the participant is not wearing footwear.

Vertical jump test

The step for doing the vertical jump test is that the participant touches the chalk so that when someone touches the test board there is a sign of the range result.

Data Analysis

The data analysis technique use SPSS for windows 9.0. The results of data analysis obtained the average vertical jump of PBV. Pasundan athletes 58 cm. With the lowest value 46 cm and the highest value 83 cm.

Table Test.

no	NAMA	TINGGI BADAN	JANGKAUAN TANPA LONCAT	JANGKAUAN LOMPAT	TINGGI LOMPATAN
1	EGA DIMAS SAPUTRA	173	225	272	47
2	RISCO KERISNA PUTRA	169	222	279	57
3	M. ZARRAR RAKSYA	168	221	280	59
4	DEJAINDRA FAWWAZ	161	215	270	55
5	FAZLI ADITYA NUGRAHA	169	224	274	50
6	MAHARDIKA PANGESTU	172	228	282	54
7	RIDWANSYAH	166	217	267	50
8	KIKI AGUSTIRA	169	221	273	52
9	ARI RAMADAN	166	218	273	55
10	M RAPIQ	177	232	285	53
11	RAFFA NAUFAL	169	220	277	57
12	RAIHAN R ATTORIF	169	221	286	65
13	ARPI PEBRIAN	176	229	287	58
14	SAHRIL AWAL N	176	227	296	69
15	M RAFI REFUJI	177	230	291	61

16	ARGI RANDIKA	179	232	297	65
17	ALFAN DELFARA	177	225	308	83
18	PAJAR PAMUNGKAS	178	231	304	73
19	CAHYANA TRI	180	233	279	46
20	CAESAR NOVAL	181	235	285	50
21	CELVIN PARDAMEANS	181	236	292	56
22	NABIL M HIDAYAT	182	238	300	62
23	ANJAY F RAHAYU	183	238	301	63

From the table test, that's can describe body height, range without jump, jump/leg muscle power and jump result minus initial range.

Result

Table Result.

AVERAGE				58.26086957
MAX				83
MIN				46

And then from table result we can see about average, highest value and lowest value of leg muscle power of pasundan junior athlete. The results of data analysis obtained the average vertical jump of PBV. Pasundan athletes 58 cm from 23 athlete. With the lowest value 46 cm and the highest value 83 cm. From 23 Pasundan junior athletes there are 13 people who have leg muscle power below the average. And there are 9 Pasundan junior athletes who have leg muscle power above the average Pasundan junior athlete. and there is 1 athlete who has leg muscle power just above average. Based on the results of the leg muscle power data that have been analyzed, it shows that there are still many junior athletes whose leg muscle power is low, so there must be training for more intensive leg muscle power so that the leg muscle power of junior athletes in PBV. Pasundan can increase. Then for athletes whose leg muscle power is right on average, they can participate in joint training with those whose leg muscle power ability is low but the dose can be slightly increased. while for athletes whose leg muscle power is above average, they can be given more training, or those with above average leg muscle power can be given technical training or strategies for playing volleyball.

Discussion

Research result from (Tomić et al., n.d.) "reflection is measured with Abalakov test and for the generation 1991 there was an average of 59,09 cm, and for the generation of 1995 it was 63,09 cm". And then when we compare the average results in the Sargent test the sample with the standards reflections provided by (Briggs, 2013) we can see that in the group the average is between 41 and 50 cm. The best result of 69.5 cm is in a group of very good results 61 to 70 cm and is located on the border with excellent results starting from 70 cm. According to the norms of (Sudarov et al., 2007), this is an excellent result. By comparing the results of the research conducted by the researchers with some of the studies above, the researcher can conclude that the leg muscle power of the junior pasundan volleyball athletes is in the low category.

So by looking at the data that describes the leg muscle power athlete in Pasundan volleyball, there must be training that is devoted to training leg muscle power. as for the discussion of a study submitted by (Zemková et al., 2017) It has been established that activation of the stretch-shortening cycle during countermovement (CM) weight exercises, enhances power production in the concentric phase when compared to lifting from a resting position. A primary finding of the present study highlights that such enhancement of power differs between jumps and squats, the magnitude of which depends on the demands on the utilization of elastic energy in athletic performance. The potentiating effect is more elevated during jumps than squats in both high jumpers and volleyball players, whereas for rock & roll performers it is the opposite. There was no significant difference in the enhancement of power in the concentric phase of jumping and squatting due to CM in either hockey players or karate competitors. Differences in the ability to utilize elastic energy during jumps and squats was also evident between acrobatic rock & roll competitors compared to those in dance, as well as between volleyball players performing on either a hard court or the beach, and between those who play different positions. These differences can be ascribed to the specific adaptations resulting from the preferred exercise modes utilized for plyometric and/or resistance training. Even taking into account the significant differences in the countermovement potentiation of power during jumps and squats in athletes of different specializations, the method based on the difference in power in the concentric phase of exercise with and without CM (expressed as delta power) has the greatest pote ntial to estimate the ability to utilize elastic energy. However, one must be aware that the differences in delta power may be due not only to higher power during CM jumps or squats, but also attributed to the lower power during concentric-only jumps or squats, and vice versa. These between-group and within-group differences in power enhancement must be taken into account when considering the functional assessment of an athlete´s performance. Selection of the appropriate exercise is vital when evaluating the athlete´s capability to utilize elastic energy.

Conclusion

From the results of this study, we can draw the conclusion that Pasundan junior athletes have low leg muscle power. leg muscle power can be said to be low when the data from the vertical jump test is below 50 cm. Then the leg muscle power can be said to be excellent when the data from the vertical jump test results are approximately 70 cm.

Acknowledgement

Thank you very much to the thesis supervisor, with whose guidance I was able to complete this research well. Hopefully this research can be useful for many people and especially pasundan clubs. and I don't forget to thank the management and coaches of the Pasundan volleyball club for allowing me to collect data during the selection of the 2021 Pasundan junior athletes. I don't forget to say thank you to the selection committee who helped in collecting this research data and I don't forget to say thank you and congratulations to the selected athletes of the 2021 Pasundan. I hope to be able to participate in the training at the Pasundan Club in earnest so that in the future we will be able to achieve the highest achievement for each individual. Amen.

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