

Performance of PPOP weightlifter athletes at the 15th national students championship 2019

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Abstract:

DKI Jakarta Student Sports Training Centre (PPOP) is a training camp for DKI Jakarta Student Athletes, who are preparing for the National Student Sports Week (POPNAS). PPOP will contribute the athletes for Jakarta Contingent for POPNAS and the goal is to be a general champion. The weightlifter coach targeted one gold medal from women weightlifter of PPOP but the results were 2 silver and 2 bronze in the National Student Sports Week (POPNAS) XV/2019. The focus of this study is to evaluate the weightlifting skills of these athletes which are the snatch and clean and jerk profile. In this study, a descriptive quantitative documentation study method was used. The population of this study was 12 PPOP weightlifters. Research variables include weightlifting skills, i.e., snatch and clean and jerk techniques. The purpose of this study was to determine the profile of PPOP athletes and their weightlifting skills in DKI Jakarta who were preparing for POPNAS XV/2019. The data obtained from techniques analysis are as follows. The weightlifting skill mean data of male athletes are 177 kg with standard deviation of 21.2 kg; the weightlifting skill mean data of female athletes are 132 kg with standard deviation of 17.2 kg. The above mentioned data show that the weightlifting skill of 40% of male athletes was in the good category but the weightlifting skill of only 28.6% of female athletes was in the same category. We concluded that the men and women weightlifter skill not enough to fulfil the target of gold medal in 15th POPNAS 2019.

Key Words: Student Athlete, PPOP DKI Jakarta, Snatch Technique, Clean and Jerk Technique

Introduction

Weightlifting are sports that rely on strength to lift as much weight as possible (Mampanini et al., 2016). Weightlifting is a sport that relies on strength to lift weights that are made of iron and covered with rubber (Syampurma, 2020). Weightlifters must have good physical and mental condition because a weightlifting competition requires physical activity, muscle strength and endurance to try to lift weights that are as heavy as possible; thus, weightlifters must have a good level of strength in achieving optimal performance. It is not easy to talk about sports achievements. There will be achievements if there is good cooperation between the government and all levels of human sport society as well as the elements that support the highest achievement. To attain achievements in sports, it is necessary to participate in competitions and events that are held by sports institutions in Indonesia and abroad. One of the competitions that is often held is the National Student Sports Week (POPNAS).

POPNAS is the highest and most prestigious student sports event at the national level. POPNAS is expected to generate momentum in spurring the enthusiasm of Indonesian students to excel in sports and can make the Indonesian nation proud at the Asean School Games (ASG) event. POPNAS is a National Student Athlete Competition, which is held every 2 years during odd years. POPNAS is the main objective of the implementation of the Student Athlete Development Program in every province in Indonesia, one of which is DKI Jakarta. DKI Jakarta has a cantered forum for the development of student athletes, which is known as Student Sports Training Centre (PPOP). In 2019, PPOP fostered 20 sports based on the sports that were competed in POPNAS, and one of the sports that was fostered was weightlifting. Weightlifting is a strength sport with speed and training methodology; it involves the performance in snatch as well as clean and jerk (Woods, 2019). In another journal of weightlifting is the snatch and clean and jerk movements (Soriano et al., 2019). During a competition, weightlifters have 3 chances of snatching followed by 3 chances of clean and jerk attempts. The heaviest snatch and clean and jerk results are added up to get the total value (Chiu & Schilling, 2005).

Because weightlifting is a strength sport, a previous study in Riau Province examined the characteristics of weightlifting based on gender; it was determined that 70% of male athletes dominated weightlifting (Mampanini et al., 2016). This is less relevant to PPOP, which has 7 female athletes and 5 male athletes. Another study examined anthropometric profiles to identify children's talents that are in accordance with the needs of certain sports from a young age to allow continuing training and have better chance of developing optimal talents (Opstoel et al., 2015). A previous study on the profile of Turkish weightlifters who were preparing for 2019

World and European Championships showed that personal characteristics, training background and medals obtained were correlated with handgrip strength (Erdađı, 2020). Another study on the weightlifting profile of junior athletes at Olympic Reserve School #2 in Moscow analysed the basic response and control of biomechanical bar on the position of the clean and jerk technique. Clean and the transitional phase when flipping (dive and drive off the chest/jerk) is the shortest phase; after mastering the clean and jerk technique, an athlete will be a very good competitor (Shalmanov & Skotnikov, 2020). Another study on athlete profiles also discussed the physical and physiological conditions of elite karate athletes (Chaabene et al., 2012). In general, weightlifting and its derivatives are considered specific for sports because they involve large muscle mass, multijoint movements, and relatively high movement speeds (Comfort & McMahon, 2015). Many previous studies on athlete profiles correlate, compare and identify effects of physical condition, physiology, and nutrition on athlete performance in snatch and clean and jerk force techniques, weightlifting skills or skills in other sports. However, there are no studies on Jakarta City Student Sports Training Centre (PPOP) weightlifting skill profiles during the preparation for POPNAS XV/2019.

Thus, the aim of this study is to discuss the weightlifting skill profile of male and female PPOP athletes based on the total value obtained from the value of force technique or snatch skill and the value of force technique or clean and jerk skills. The data are obtained from the results of the 2019 weightlifting skills test, which is similar to a match during which each athlete has 3 opportunities to snatch and 3 opportunities to clean and jerk; then, the highest results for each force technique are added up to obtain the total value; then, these values are analysed with descriptive analysis to determine which percentage of athletes has weightlifting skill profiles in the very good, good, moderate, poor and very poor categories.

Materials and methods

The population in this study included weightlifters from the 2019 Student Sports Training Centre who were preparing to participate in POPNAS XV/2019. There were 12 PPOP weightlifters, consisting of 5 male athletes and 7 female athletes, who had different snatch and clean and jerk forces. In this study, the sampling technique used total sampling, i.e., sample of 12 PPOP weightlifters. The research instruments for weightlifting skills were the snatch skill test and the clean and jerk skill test. The research method used in this research is descriptive with a quantitative approach. In descriptive research, the researcher does not change, add, or manipulate the object or area of the study but only presents the obtained data. The data analysis used descriptive statistics in the form of the percentage of weightlifting skills at the 2019 Student Sports Training Centre.

Results

Table 1 shows the skills profile of PPOP weightlifters who were preparing for POPNAS XV/2019.
 Table 1. Skills profile of male weightlifters preparing for POPNAS XV/2019

N	Minimum	Maximum	Mean	Std. Deviation
5	144	210	177	21.2

Table 2. Percentages of skills profile of male athlete preparing for POPNAS XV/2019

Range	Category	Frequency	Percentage (%)
210	Excellent	0	0
209	Good	2	40
188	Average	1	20
167	Below average	2	40
144	Bad	0	0

Table 3. Skill profile of female athletes preparing for POPNAS XV/2019

N	Minimum	Maximum	Mean	Std. Deviation
7	105	159	132	17.2

Table 4. Percentages of skills profile of female athletes preparing for POPNAS XV/2019

Range	Category	Frequency	Percentage (%)
159	Excellent	0	0
158	Good	2	28.6
141	Average	2	28.6
123	Below average	3	42.9
105	Bad	0	0.0

Tables 1 and 2 show that the skills of PPOP male athletes were in a relatively good category. In contrast, Tables 3 and 4 show that the skills of PPOP female athletes were in a relatively below average category. Based on the determined skills profiles, it is clear that athlete's performance during sports competition will be adversely affected.

Out of 5 studied male athletes, 2 of them (40%) were in good category, 2 of them (40%) were in below average category, and 1 (20%) was in average category. Out of 7 studied female athletes, only 2 (28.6%) were in good category, 2 (28.6%) were in average category, and the remaining 3 athletes (42.9%) were in below average category. Their skills profile will definitely affect their performances during competition in POPNAS XV/2019. Their snatch and clean and jerk lifting result will be combined, and whoever gets the best final marks will be declared the winner.

The results of snatch technique are shown in Table 5. It is determined that among PPOP male athletes, 2 out of 5 (40%) were in good category, 1 (20%) was in average category, and the rest of them (40%) were in below average category. This result was similar to their clean and jerk technique result. Tables 6 and 8 summarize the results.

Table 5. Skills profile of snatch technique of male weightlifters preparing for POPNAS XV/2019

N	Minimum	Maximum	Mean	Std. Deviation
5	62.2	92.2	77.2	9.9

Table 6. Percentages of snatch skill of male athletes preparing for POPNAS XV/2019

Range	Category	Frequency	Percentage (%)
92.2	Excellent	0	0
92.1	Good	2	40
82.2	Average	1	20
72.2	Below average	2	40
62.2	Bad	0	0

Table 7. Skills profile of clean and jerk technique of male weightlifters preparing for POPNAS XV/2019

N	Minimum	Maximum	Mean	Std. Deviation
5	82	118	100	11.5

Table 8. Percentages of clean and jerk skill of male athletes preparing for POPNAS XV/2019

Range	Category	Frequency	Percentage (%)
118	Excellent	0	0
117	Good	2	40
106	Average	1	20
94	Below average	2	40
82	Bad	0	0

The results of study on snatch technique are shown in Table 10. The analysis of PPOP female athletes showed that 2 out of 7 (28.6%) were in good category, 3 (42.9%) were in average category, 1 (14.3%) was in poor category, and 1 (14.3%) was in below average category. The analysis of clean and jerk technique showed that 2 (28.6%) were in good category, 2 (28.6%) were in average category, and the rest (42.9%) were in below average category. These results are summarized in Tables 10 and 12.

Table 9. Skills profile of snatch technique of female weightlifters preparing for POPNAS XV/2019

N	Minimum	Maximum	Mean	Std. Deviation
7	46.1	71.1	58.6	8.3

Table 10. Percentages of snatch skill of female athletes preparing for POPNAS XV/2019

Range	Category	Frequency	Percentage (%)
71.1	Excellent	0	0
71.0	Good	2	28.6
62.7	Average	3	42.9
54.4	Below average	1	14.3
46.1	Bad	1	14.3

Table 11. Skills profile of clean and jerk technique of female weightlifters preparing for POPNAS XV/2019

N	Minimum	Maximum	Mean	Std. Deviation
7	59.4	87.4	73.4	9.3

Table 12. Percentages of clean and jerk skill of female athletes preparing for POPNAS XV/2019

Range	Category	Frequency	Percentage (%)
87.4	Excellent	0	0.0
87.3	Good	2	28.6
78.1	Average	2	28.6
68.8	Below Average	3	42.9
59.4	Bad	0	0.0

Discussion

This study can be further improved by adding new variables such as the time of training at the Student Sports Training Center; there are many weightlifters who will train at PPOP for 6 months, 1 year, 1.5 years, 2 years and 3 years from 2021 to POPNAS in 2023; with age, this training will advance athletes' weightlifting skills into the categories of very good, good, moderate, lacking, and very poor.

Technique is essential in weightlifting. No strength work is done until there is clear understanding and progress in technique (Byrd et al., 2003). The objective of weightlifting is to move the barbell from the ground to the location of the lift (Rahma & Maisa'a Abid Ali, 2018). In both events (i.e., snatch and clean and jerk), the barbell movement starts from the floor and is completed with the barbell in an overhead locked position with a moment of stability in this final position (Rummells, 2016). Travis et al., (2018) suggest that athletes with less competition experience, particularly female athletes, should primarily focus on weightlifting technique before shifting the training emphasis towards maximum strength (Travis et al., 2018). Based on expert opinion, weightlifters should learn good force techniques before improving their physical strength. Athletes with good technique will easily improve their abilities in barbell force. In addition, this approach allows to minimize injuries that may occur during the training process.

For weight lifters and weightlifting athletes, large muscle mass is the main capital in competition; while for bodybuilding athletes, weight lifting is used to form a beautiful and muscular body (Mampanini et al., 2016). The movements of weightlifting (i.e., jerk and snatch) generate force to move the barbell off the ground for successful operation (Rahma & Maisa'a Abid Ali, 2018). Weightlifting success depends on how much weight the athlete can lift (1RM) and not on how much power the athlete can produce; however, the importance of power production has been reported to be essential in weightlifting (Javier Flores et al., 2017). Therefore, one of the goals of weightlifters is to move an external object (i.e., the mass of the barbell) as quickly as possible because the success of lifting weights depends on the force applied to the barbell.

To increase the amount of weight an athlete can lift (1RM), the coach must create a gradual training program based on the characteristics of each athlete because abilities of each athlete (both male and female) are different. The developed exercise program must be precise and in accordance with the goals of weightlifting. Knowing the ability of athletes during the preparation for POPNAS 2019, coaches have benchmarks when making training programs that will be targeted in the next match.

In addition, coaches must monitor and assess athletes' abilities on a regular basis. The training program can be made more difficult if the athlete shows an improvement. However, excessive training will not result in an increase in athlete's abilities. Athletes who experience fatigue or injury should not be forced to participate in training or competitions. In weightlifting, as in any sport, monitoring and assessing athlete's ability to recover and adapt is vital to ensure that athlete is prepared for competition (Hornsby et al., 2017). Weightlifting performance considerably depends upon athlete's leg and hip strength, which are important for generating large ground reaction forces in a short period of time (Stone et al., 2000;(Travis et al., 2018). Maximal strength sets the upper functional limit of the musculoskeletal system and is important for relatively slow movement tasks, while explosive strength is more important for tasks where available time to develop force is limited (Harbili, 2015).

Conclusions

Based on the obtained results, it can be concluded that the Student Sports Training Centre provides opportunities for DKI Jakarta student athletes to train in an integrated manner to improve their sports skills to become better and more accomplished. In this study, the focus is on weightlifting performance. The obtained results indicate that the profile of weightlifting skills of PPOP male athletes during the preparation for POPNAS XV/2019 is as follows. The weightlifting skills of 40% of male athletes out of 5 athletes are in good category compared to the weightlifting skills of female athletes with a percentage of 28.6% out of 7 athletes. Thus, PPOP female athletes require further training to improve their snatch and clean and jerk technique because the total value of weightlifting depends on the results of the snatch and clean and jerk techniques. However, this study

focused only on the weightlifting skill variable and prove that the result not good enough to fulfil the gold medal target for 15th POPNAS 2019. Future research needs to include other variables (e.g., time of training at PPOP) to determine whether there is significant difference between athletes who trained for 6 months, 1 year, 1.5 years, 2 years, and 3 years when preparing for POPNAS XVI in 2023.

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