

Analysis of Back Groups Take-Off In South Kalimantan Diving Athletes

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ABSTRACT

Diving is a sport that resembles aerial acrobatics above the surface of the water. Diving is usually done from a springboard Diving consists of a jump that starts from a take-off or bounce step, then enters the water. This research aims to find out about beautiful jumping movements when taking off National Games (PON) for South Kalimantan athletes. This study uses descriptive evaluative research methods. The population in this study was South Kalimantan diving athletes who took part in PON activities totalling 5 people the sample used in this research used the Purposive Sampling method and based on men's platform were 2 people participating in PON activities. The results of the research show that the beautiful diving skills in taking off in the diving athletes participating in the South Kalimantan National Sports Week fall into the "less" criteria.

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INTRODUCTION

Aquatics is a branch of sport that is done entirely in water. Aquatics sports consist of swimming, synchronized swimming, diving, water polo, and open swimming. One of the branches of aquatics is diving. Diving was first discovered in Europe and began to become a competitive sport in England in 1905. Diving is a branch of sport that resembles aerial acrobatics on the surface of the water. Diving is usually done from a springboard. Diving consists of jumps that start from the take-off or bounce step, then enter the water, learned by everyone and what is needed to learn diving techniques is a strong will, courage (not afraid), and of course, being able to swim. (Widodo, 2016) The correct technique is often overlooked due to a lack of concentration in doing the jumping movement. The correct movement technique through the mechanical aspect will minimize accidents in doing diving movements. Analyzing an athlete's movements is needed to correct movements that are considered less effective, so that athletes will

periodically improve their movements to be more mechanically correct, according to Karnadi, "a jump is said to be beautiful if the start is good, the push is good, the body position in the air is good according to the jump number and enters the water perpendicularly without making a loud sound and the distance into the water is between ½-1 meter and the end of the diving board." (Karnadi, 2018).

South Kalimantan is an area that is identical to water so children's habits since childhood have indeed enjoyed doing somersaults when playing in the river with various movements. From this habit, there is the potential to become a diving athlete. (Indah, et al., 2023). The increasing interest of residents from the riverbanks to become diving athletes has received support from the government for the sustainability of diving coaching programs. (Indah, et al., 2023)

Based on the habits of residents and their interest in becoming diving athletes, it is considered that the results of the research and discussion above require an early sports coaching pattern that is carried out systematically, in stages and sustainably. Where the achievements of the diving sport have continued to decline starting in 2000 and diving athletes, especially juniors in South Kalimantan Province, have not been able to compete with diving athletes from other regions. Another reality is also seen in the National Sports Week Pre-Qualification, which can only qualify senior athletes. (Indah, et al., 2020)

Based on this, diving is highly recommended to be trained at an early age because it requires good body flexibility, the formation of body flexibility can be formed well through training at an early age. Children who have good flexibility can make maximum movements that can be done by a joint flexibly with maximum bending movements, kissing the knees, being able to sit with open legs, and being able to flex perfectly. (Indah, et al., 2023)

The results of the participation of diving athletes from South Kalimantan in the PON activities held in the provinces of Aceh and North Sumatra showed less than optimal results in the men's tower number, diving athletes from South Kalimantan only ranked 6th and 7th. Judging from the jury's assessment, the tower category for male athletes received a score of 57.00 for athletes ranked 2, 47.00 for athletes ranked 1 and 27.00 for athletes ranked 3 with group 205 C, while for group 203 B, each athlete received a score of 27.60 for athletes A and for athletes B received a score of 25.30.

Based on initial observations through interviews with several PON Diving athletes as informants in this study, they explained that they found it difficult to do the take-off movement, especially in the Backward Group Jump, which is a jump that is done backwards. The five athletes said that on average their obstacle was taking the take-off for the Backward Group. This study is a reflection of previous research conducted by Eka Purnama Indah, et al. (2019) Where the results of the study explain one of the techniques for completing the jump. Indonesian diving athletes have weaknesses in this technique, so entry movement training is needed to improve the ability of the entry technique, and the results of the study can conclude that the entry movement training model is effective in improving the ability of the entry technique in diving sports.

METHODS

The research method used is the descriptive evaluative method. Sugiyono explains that the descriptive research method is a research method intended to investigate conditions, circumstances, or other things (Sugiyono, 2022)

The descriptive evaluative research method that evaluation research is the design and procedure for evaluating data in collecting and analyzing data systematically to determine the value and meaning of educational practice. (Nazir, 2013) Based on this explanation, it can be concluded that the descriptive evaluative method is a research method used to obtain data in the descriptive form and analyze it systematically to carry out evaluations based on the descriptive data.

The instrument used in this study was a video analysis of performing beautiful diving movements, then the instrument for documentation was personal notes used by the researcher when documenting the analysis of beautiful diving movements.

Data validation is through the following four stages: (1) preparing a plan (plan), (2) taking action (act), (3) conducting observations (observe), (4) conducting reflection (reflect). Data collection in qualitative research uses data collection carried out in natural conditions, primary data sources, and data collection techniques are more on participant observation, interviews, and documentation, to analyze diving movements, researchers use observation methods as data collection methods and observation sheets in the form of video analysis results carried out by licensed judges as data collection tools. The population in this study were diving athletes from South Kalimantan who participated in PON activities as many as 5 people and the sample used in this study was no more than 100 people, so the sampling technique with the Total Sample method or purposive sampling is a sampling technique where the number of samples is the same as the population. (Nazir, 2013) Based on the number of the research population, the sample used was athletes who participated in the PON men's tower number totalling 2 people.

Data analysis activities in this study Data analysis used in this study is the analysis of the diving skills of group I angle based on the stages of the jumping movement. The steps taken in the analysis are:

1. Creating a value distribution table.
2. Creating a score of observation results with existing score provisions.
3. Adding the scores obtained
4. Entering the score into the formula.

RESULTS AND DISCUSSION

Result

The data presented is based on observations of the analysis of the backward diving skills of the research subjects, namely as follows:

Table 1.
 Research Results

Description	Athlete A		Average	%	Athlete B		Average	%
	Jury 1	Jury 2			Jury 1	Jury 2		
Take-off must be done boldly and confidently and continued without undue delay.	2	2	-	-	2	1½	-0,3	-25%
That was a good kickstart and push.	1	1	-	-	½	1	0,5	50%
Jumping also requires good body balance.	½	1	0,5	50%	½	½	-	-
After jumping off the tower and reaching the highest point, the body prepares to perform acrobatic movements in the air.	½	1	0,5	50%	½	½	-	-
Score	4	5	1		3,5	3,5	0,8	
Average	1	1,25			0,875	0,875		
Accumulated Score	9				7			
Criteria	Enough	Good			Enough	Enough		

In the assessment table, the total score for each phase and the total score of the athletes being assessed can be obtained, as follows:

1. $100\% = \frac{100\%}{100} \times 2 = 2$
2. $75\% = \frac{75\%}{100} \times 2 = 1,5$
3. $50\% = \frac{50\%}{100} \times 2 = 1$
4. $25\% = \frac{25\%}{100} \times 2 = 0,5$
5. $0\% = \frac{0\%}{100} \times 2 = 0$

Based on the table above for the research subject of the male individual tower athlete PON Athlete A in each phase experienced an increase of 1 point with a score of 5 included in the good category. While Athlete B in each phase has not increased by the same score of 3.5 with a sufficient category.

The data presented is based on observations of the analysis of diving skills from the research subject, namely when doing the jump position (Take Off).

Analysis of the mechanics of jumping motion

- a. Flexion of the knee that occurs creates momentum and the stronger the thrust given, the higher the jump, Newton's third law of action: reaction.
- b. The explosive power of the muscles associated with flexion and extension of the knee (during the jump) affects the height of the jumper and the elevation angle when jumping, which is 108.7 when flexing both knees and 106.5 at the hips.
- c. The rotation of the hands increases the thrust on the diving board.
- d. The end of the board is the position where the greatest momentum is obtained, and the highest level of elasticity on the diving board is at the end of the board, so the most effective jump is done at the end of the board.
- e. To produce a high jump, the support when jumping must be strong and the horizontal distance is reduced.

- f. The centre of gravity is evenly distributed on both feet, when jumping the body is in a stable state, good coordination of movement, and a good position when jumping determines the height of the jump.

Discussion

The results of the study of two athletes in the men's tower number PON showed that the diving movement criteria for athletes participating in the South Kalimantan PON were included in the "less" criteria, where athlete A got a score of 206.95 in 6th place, and athlete B got a score of 202.25 in 7th place. These results are less than optimal results from the two South Kalimantan athletes.

Meanwhile, based on the results of the other three athletes in the men's tower number PON, they got a score of 338.60 in 1st place, which is in the very good category, for rank 2 they got a score of 322.80 in the very good category and rank 3 got a score of 219.60, which is in the good category.

Factors that influence movement in diving include body movement factors consisting of muscles, bones, and joints, all three are interrelated and are the main factors for performing each movement. Straight motion and rotational motion are used in performing diving skill movements. The principle of equilibrium, one of which is from a still position to moving, is used when doing a running start in diving movement skills. Maintaining balance and equilibrium when moving, foot support to maintain body balance when moving.

Starting Position (Initial Attitude)

Namely the initial position of a series of beautiful jumping movements performed by athletes to place both feet and also determine the height of the jump which is influenced by the explosive power of the muscles when jumping and the rotation of the athlete's hands in his efforts to jump. The initial position carried out by the subject is from a still position and ready to take a step forward. The main purpose of the hand rotation is to provide support for the correct body position and to add height to the jump before jumping. The initial position is the beginning of maintaining balance. The body is always in a state of balance as long as the projection of the body's centre of gravity falls on its support plane. (Taufik, 2010) The angle that occurs when taking the initial step, the knee flexes is 134.7 degrees. The movement that occurs at the start is when the ankle is about to start plantar flexion and when stepping dorsi flexion, knee flexion and extension when walking and elbow extension to maintain body balance.

Approach Position

Diving can be done in several jumping positions, including straight jumps and reverse jumps.

a. Straight Dive

Straight jumps can be done in the following ways: (1) Standing with the body facing the water. (2) The movement begins by swinging the arms backwards, then pushing the legs up and jumping forwards. (3) During the jump, the jumper's body must not bend at the knees or thighs. (4) The arms must be straight and the fingertips must point as sharply as possible.

b. Reverse Dive

The reverse jump can be done in the following way. (1) Stand with your body facing the water. (2) The movement begins by swinging your arms back, then pushing your legs up and jumping forward. (3) When jumping forward, the legs are lifted so that finally the jumper will enter the water with his back facing the pool and facing the opposite position from the starting position. At this stage, possible errors in this reverse jump include a leaning or uneven start, bent arms, less straight and smooth hand extensions, and incorrect head movements during the movement.

Take Off (Jumping Position)

This stage aims to provide the body in a floating position, the leg jump movement with great muscle explosive power and strong hand rotation will provide a high jump. The body remains balanced to perform the next movement. The height obtained when jumping is determined at the time of the jump stage, the height is very necessary and needs to be considered for the type of jump.

Indik Karnadi et al (2008:5.13) explained that a diving board with a height of 1 meter can bounce upwards more than 1 meter. Jumping at an angle position requires a height that allows for angular movements at the highest point, but on the other hand, the height of the jump is not specified in the competition rules for how high the jumper is allowed to jump. (Karnadi, 2018)

Based on an interview with a diving coach from South Kalimantan, he explained that there is no limit to the height, but the lower the jumper jumps and completes the jump movement, which is meant by a high difficulty factor, the higher the score he will get. The height is lacking due to lack of balance, position during the jump, poor coordination of movement, and lack of strength in moving. The Fina Diving Manual book explains that when the jumper reaches maximum height, it affects good jumping technique in each jump number taken. (FINA, 2015)

The jump stage has a big influence, if at this stage the balance is not maintained it will result in a jump that is not on track, this is related to straight motion. Straight motion is motion in a straight line, from the first point to another point, in this study the subject's balance is always maintained, in doing the jump the foot support is narrowed to obtain maximum jump. (Soeharsono, 2015). The jump stage is related to Newton's third law, namely if an object has an influence (force) on another object, it also influences the first object. Both influences are the same size, in opposite directions, and work in a straight line. The process of both feet hitting the diving board will produce an upward thrust according to the force given when hitting the board down according to Newton's third law. The angle that occurs when jumping at the knee is 108.7 degrees and at the hip 106.5 degrees.

Flight (Hovering Position)

In this movement the body is in the air and in doing beautiful jumping movements, the hands work as balancing components, the hips and legs as factors in doing angular movements. This stage is influenced by the movement of the jump, when jumping the

sample makes an angle of 108.7 at the knee and 106.5 at the hip, and the result of the jump makes the sample float and can complete the movement performed. The ankles when in the air are in a state of plantar flexion, when the body is at its highest point and the direction of movement goes down due to the earth's gravity, the body forms an angle of 70.3 degrees then tapers to 27.7 degrees. The body will then prepare for the movement into the water. Potential energy is energy stored in the body due to the position of the body, which is the ability to perform work. (Waluyo, 2018)

The subjects in this study when jumping up released kinetic energy, when the subjects in this study reached the highest point they had potential energy that was directly proportional to their height. Potential energy is important for all swinging activities, with the body's potential energy increasing its speed during the downswing.

Entry (Water Entry)

In this movement, the body is in a straight vertical position and the hands enter the water first when entering the water, the correct movement will cause minimal water splashes, this is due to the straight body position so that the movement of the hands that fall into the water first aims to minimize water splashes. The smaller the force is given, the smaller the water splashes will be, as stated by Musyafari Waluyo (2018:90) who stated that the emergence of waves is caused by the presence of a force that is relatively large from the drag force. (Waluyo, 2018)

CONCLUSION

The results of the analysis of diving movement skills in taking take-offs in diving athletes participating in the South Kalimantan PON showed that two athletes fell into the "less" criteria, with the assessment reviewed from 1 phase, namely Take Off.

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