Analysis Of Kinesthetic Perception And Archery Accuracy In Indonesian Archery Association Of Aceh Athletestoward Papua National Sports Week

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Abstract: *Archery isa sport that propel an arrow with a bow to the target. Archery is identical to arm muscle strength, it is very rare for people to see or practice kinesthetic perception (sense of motion) so that the accuracy of archery does not reach the maximum score. The research aims; (1) to describe the kinesthetic perceptions of Indonesian Archery Association of Aceh to the Papua National Sports Week, and (2) to describe the accuracy of archery of Indonesian Archery Association athlete in Aceh towards the Papua National Sports Week. This research uses a quantitative approach with descriptive research type. The sample in this study were all Indonesian Achery Association Aceh athletes toward Papua National Sports Weeks, totaling 8 people. Data were collected by means of; (1) peresthetic test, and (2) archery accuracy test. Technical analysis of perceptualesthetic data (angle of motion) using Phantom Software, Kinovea Software, and searching for archery accuracy by shooting 6 arrows. The results shows: (1) the average angle of upper and front hand position during archery is the following: (1) first sample, average front angle 3^0 and upper angle 62^0, (2) second sample, average front angle 30 and upper angle 50^0, (3) third sample, 20 front angle mean and upper angle 52^0, (4) fourth sample, 2^0 front angle and 56^0 upper angle, (5) fifth sample, 2^0 front angle and 56^0 upper angle, (6) sixth sample, average front angle 0^0 and upper angle 64^0, (7) seventh sample, average front angle -10 and upper angle 52^0, (8) sample eighth, average front angle 5^0 and upper angle 71^0, and (2) the average accuracy of archery when arching a distance of 30 meters values as follows, (1) the first sample, the average accuracy of archery got a value of 9, (2) the second sample, the average accuracy of archery got a value of 8, (3) the third sample, the average accuracy rate of archery got a value of 9, (4) the fourth sample, the average accuracy rate of archery got a value of 8, (5) the fifth sample a, the average accuracy rate of archery got a value of 9, (6) the sixth sample, the average accuracy rate of archery got a value of 10, (7) the seventh sample, the average accuracy rate of archery got a value of 8, (8) the eighth sample, average score the accuracy of archery got a value of 10.*

Keywords: *analysis, kinesthetic perception and archery accuracy*

I. Introduction

Indonesia is a developing country that is always trying to improve its achievements in the field of sports. Indonesia consists of several provinces, one of which is Aceh. Like other provinces, the Province of Aceh also made various efforts to advance sports, including conducting a Regional Training Center activity in order to prepare athletes to take part in multi-national events. Archery has become one of the favorite sports in Aceh in the past few years, sports enthusiasts have continued to grow and have touched all ages. This sporting activity is starting to look significant with the number of archery athletes and sports coaches today. With the development of archery and coaching continues to increase in each region shown by increasing archery sports achievements in several national and international competition events.

Archery is a sport that propel an arrow with a bow to the target (Lee, 2009: 341-350). Basically archery is a sport that requires a touch of the soul that is subtle, patience, tenacity, and mental endurance. In addition, there are also elements basic and absolute possessed by every archer namely body shape and structure, basic techniques, movement mechanisms, physical conditions and mental fitness, because these elements complement each other to achieve automation in archery skills. There are four aspects of training that need attention that is; (1) physical training (2) technical training (3) tactical training, and (4) mental training (Bompa, 1994: 12).

Continuous training by maintaining the principles of training will produce reliable archery athletes. The higher the athlete's ability to accept the training process, the higher the athlete's skill level in archery, so as to obtain a high score.

One of the goals of doing training is to achieve the excellent physical condition needed in every sport, including archery. Excellent physical condition is very supportive of one's success in a particular sport, including archery. But in reality, there are still many archers and coaches who do not pay attention to elements of conditions that affect archers in training and competition. An archer must have a good physical and adequate kinesthetic, to know the kinesthetic perception and accuracy needs to be done empirically research.

The term accuracy will certainly imagine the existence of a target or point that must be addressed or subject to a particular object. Accuracy is an important thing that must be possessed by every athlete. Palmizal (2011: 143), states that accuracy is the ability of the body or limbs to direct something according to the desired target. This means that when the body performs a movement such as archery, it certainly needs accuracy, because if it is not accurate then the result is certainly not as expected. The archer must be able to do the same thing and take the right actions with each arrow fired.

A successful archer is an archer who has consistent performance and results. If the archer uses the correct technique, he must be able to repeat his actions correctly in every shot. There are a few significant deviations in the placement of archery on target. To reach the highest point in archery, every shot must hit the middle or near the center of the target. Archers need to control their movements in each phase to influence the right target and release the arrow at an accurate point of view.

When archery, accuracy is the main factor that must be considered, then kinesthetic perception is also needed to get good accuracy. Kinesthetic perception is one component needed in archery. This is consistent with the opinions expressed by experts such as Desmita (2012: 118) argues that perception is a process of using knowledge already possessed to obtain and interpret the stimulus received by the human sensory system. Furthermore according to Wirasasmita (2013: 218), sport kinesthetic is the study of energy that creates motion and changes its position in a place for some reason when exercising. Meanwhile, according to Sefrina (2013: 34) kinesthetic gesture intelligence is intelligence related to the ability of gestures and motor skills of the body. All the factors outlined above are factors that can influence the athletes of the Indonesian Archery Association of Aceh in achieving achievement.

Based on the background above, the research is intended to describe the kinesthetic perception (angle of front and upper arm hand movements) and the accuracy of archery of the Indonesian Archery Association of Aceh towards the Papua National Sports Week.

II. Methodology

This research uses a quantitative approach with descriptive research type. The sample in this research were all athletes of the Indonesian Archery Association of Aceh towards the National Sports Week of Papua, amounting in 8 people. The instruments used in this research were canon cameras, gopro cameras, and archery accuracy scores. Measurement of kinesthetic perception (angle of motion) and archery accuracy scores of each athlete shot using a bow with the number of one adding six arrows and the process of shooting video angles of motion. The measured angle of motion is the angle of motion of the hand. The technique of analyzing the angle of motion of the hand uses the Phantom application and the Kinovea application.

III. Results

Based on the research process carried out by archery athletes in Aceh obtained data (1) angular movements of the hand movements, (2) and archery accuracy scores. Video observations were analyzed through the correct angle of motion, using *Phantom Software, Kinovea Software,* and archery accuracy scores. Raw data obtained from samples were then processed and backed up and presented to make it easier to read and analyze. The researcher process data to determine the average value average from Indonesian Archery Association of Aceh towards the Papua National Sports Week.

A. Angle of Hand Movement from Front and Up Position

The angles of motion in archery were divided into 2 stages: (1) the angle of the front hand movements, and (2) the angle of the upper hand movements. To facilitate the reader, the researcher formulate the features of the image as follows:

Figure 1. Angle of front hand movement

Figure 2. Angle of upper hand movement

In the picture above the angle of the front and upper hand movements at the time of archery of the Indonesian Archery Association of Aceh towards the Papua National Sports Week shows that, (1) the average angle of upper and front hand position during archery is the following: (1) first sample, average front angle 3^0 and upper angle 62^0, (2) second sample, average front angle 30 and upper angle 50^0, (3) third sample, 20 front angle mean and upper angle 52^0, (4) fourth sample, 2^0 front angle and 56^0 upper angle, (5) fifth sample, 2^0 front angle mean and 56^0 upper angle, (6) sixth sample, average front angle 0^0 and upper angle 64^0, (7) seventh sample, average front angle -10 and upper angle 52^0, (8) sample eighth, average front angle 5^0 and upper angle 71^0.

B. Archery Accuracy Analysis

Archery Test Sheets of the Indonesian Archery Association of Aceh towards the Papua National Sports Week.

NAME: M. FARHAN				RANGE 30 M				NAME: M. FARHAN				RANGE 30 M		
SESSION I				3/4 AP	6/8 AP	TOTAL		SESSION II				3/4 AP	6/8 AP	TOTAL
1	10	10	10	30				1	10	10	9	29		
2	9	9	7	25	55			2	9	9	8	26	55	
3	10	10	10	30		112		3	10	10	10	30		110
4	9	9	9	27	57			4	9	8	8	25	55	
5	10	10	10	30				5	10	9	9	28		
6	9	9	8	26	56			6	9	9	8	26	54	
7	10	10	10	30		113		7	10	10	9	29		108
8	9	9	9	27	57			8	9	9	7	25	54	
9	10	10	10	30				9	10	10	10	30		
10	10	9	9	28	58			10	9	9	8	26	56	
11	10	10	10	30		115		11	10	10	10	30		108
12	9	9	9	27	57			12	8	7	7	22	52	
TOTAL SCORE						340		TOTAL SCORE						326

Archery Accuracy Table

In the picture above the archery accuracy score when archery of the Indonesian Archery Association of Aceh towards the Papua National Sports Week shows that, (1) the first sample, the average archery accuracy score was 9,(2) the second sample, the average accuracy of archery got a value of 8, (3) the third sample, the average accuracy rate of archery got a value of 9, (4) the fourth sample, the average accuracy rate of archery got a value of 8, (5) the fifth sample a, the average accuracy rate of archery got a value of 9, (6) the sixth sample, the average accuracy rate of archery got a value of 10, (7) the seventh sample, the average accuracy rate of archery gets a value of 8, (8) the eighth sample, average score the accuracy of archery got a value of 10.

Based on the results of the analysis of the data described by the research, the results show that the angle of hand movement uses the Phantom application and the Kinovea application where this application was used to measure the angle of hand movement. The results of the angle of front hand movement was 0^0, and the angle of hand movements is a position on the corner analysis results 45^0.From the results of the analysis of the angle of the movement of the front position from the wrist to the shoulder to form an angle of 3^0 and the angle of the position of the movement from the wrist to the shoulder to form an angle of 59^0.

Referring to the standard in (Journal of Biomechanics Measurements in Archery, 2014-762) the subject was in a right and straight position for the line of attraction, the hand and elbow position must be parallel to the strength line, because the shoulder line distance and the force line are the shortest. This line was called a draw force line. The origin was at the elbow which acts as a reference point to determine the distance and angle from the elbow to the shoulder measured as 45°. Thus the results of the angle of the hand movement of the front position was good and the angle of the hand position of the upper position was not good. This means that the analysis of the angle of the first sample's hand movements in the front position was near the point of alignment and the upper position has not reached the 45 ° point. Which does not cause meaningful tipping and obtains a perfect shot score. 10. Discussion about the accuracy of archery based on the analysis of the accuracy of the archery results was good. Thus the results of data analysis archery accuracy scores have not yet reached the highest score. This means that the score of Aceh archery athletes does not get the maximum value.

IV.   Conclusions

Based on the results and discussion conducted by researchers regarding the analysis of kinesthetic perception and balance of the Indonesian Archery Association of Aceh towards the Papua National Sports Week, the following results were obtained: when archery angles the movements of the front and upper hand movements, the Acehnese athletes toward the National Sports Week Papua shows that,(1) first sample, average front angle 3^0 and upper angle 62^0, (2) second sample, average front angle 30 and upper angle 50^0, (3) third sample, 20 front angle mean and upper angle 52^0, (4) fourth sample, 2^0 front angle and 56^0 upper angle, (5) fifth sample, 2^0 front angle mean and 56^0 upper angle, (6) sixth sample, average front angle 0^0 and upper angle 64^0, (7) seventh sample, average front angle -10 and upper angle 52^0, (8) sample eighth, average front angle 5^0 and upper angle 71^0, and (2) the average accuracy of archery when arching a distance of 30 meters values as follows, (1) the first sample, the average accuracy of archery got a value of 9, (2) the second sample, the average accuracy of archery got a value of 8, (3) the third sample, the average accuracy rate of archery got a value of 9, (4) the fourth sample, the average accuracy rate of archery got a value of 8, (5) the fifth sample a, the average accuracy rate of archery got a value of 9, (6) the sixth sample, the average accuracy rate of archery got a value of 10, (7) the seventh sample, the average accuracy rate of archery gets a value of 8, (8) the eighth sample, average score the accuracy of archery got a value of 10.

Bibliography

[1].   Bompa, Tudor O. (1990). Motor Learning And Performance. Champaign: Human Kinetics Books.
[2].   Desmita. (2012). Psikologi Perkembangan Peserta Didik. Bandung: PT Remaja Rosdakarya.
[3].   Irfan, Muhammad. (2012). Fisioterapi Bagi Insan Stroke. Yogyakarta: Graha Ilmu.
[4].   Lee, K. H. (2009). Evaluation of Attention and Relaxation Levels of Archers in Shooting Process.
[5].   McKinney, W., & McKinney, M. (1997). Archery. London: Brown & Benchmark.
[6].   Mukaiyama, K., Suzuki, K., Miyazaki, T., & Sawada, H. (2011). Aerodynamic properties of an arrow: Influence of point shape on the boundary layer transition. Procedia Engineering, 13, 265-270.
[7].   Palmizal, A. (2011). Pengaruh metode latihan global terhadap akurasi ground stroke forehand dalam permainan tenis. Jurnal Media Ilmu Keolahragaan Indonesia.
[8].   Safrina, A. (2013). Deteksi Minat Bakat Anak. Yogyakarta: Media Presindo.
[9].   Strand, BN & Wilson, R.(1993). Assessing Sport Skills. Human Kinetik Publishers: Utah State University.
[10].   Tinazci, C. (2011). Shooting dynamics in archery: A multidimensional analysis from drawing to releasing in male archers.Procedia Engineering, 13, 290-296.
[11].   Wirasasmita, R. (2013). Ilmu Urai Olahraga I Analisis Kinetik pada Olahraga. Bandung: Alfa Beta.
[12].   Zulkifli Ahmad*, Zahari Taha, Hasnun Arif Hassan, Mohd Azrul Hisham, Nasrul Hadi Johari and Kumaran Kadirgama. (2014). BIOMECHANICS MEASUREMENTS IN ARCHERY , Journal of Mechanical Engineering and Sciences (JMES) ISSN (Print): 2289-4659; e-ISSN: 2231-8380; Volume 6, pp. 762-771, June. DOI: http://dx.doi.org/10.15282/jmes.6.2014.4.0074 . 762.