Body Posture Analysis Of Putting Speed And Kicking At Karate Pplp/Pplpd Athletes Associated Aceh Dispora

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Abstract
Qualified athletes are the key to optimal peak performance. If a sport wants good performance, the recruitment and determination of athletes is an aspect that must be considered, one of which is body posture. Therefore, this study is interesting to conduct research. The purpose of this study was to determine the effect of body posture on the speed of punches and kicks in karate athletes. The method used in this research is descriptive analysis method. The instruments used are body posture tests using an anthropometer, speed of punches and kicks using accelerometer and force plate sensors. The research data were then analyzed according to the research design. The results showed that there was an effect of body posture on the speed of the stroke on the aspect of height, this can be seen from the results of research data from the MR and MRF samples. The same result also shows the effect of body posture on kick speed, this can be seen from the results of research data from the US, RR and RIG samples. From the results of this analysis, it can be concluded that the results of the analysis in this study have an effect of body posture on the aspect of height having an average of 164 cm and an average arm length of 68 cm on the speed of the stroke by using the accelerometer sensor and force plate which is 3.5 m / s. The same result also shows the effect of body posture on kick speed, this can be seen from the results of research data from the US, RR and RIG samples. From the results of this analysis, it can be concluded that the results of the analysis in this study have an effect of body posture on the aspect of height having an average of 164 cm and an average arm length of 68 cm on the speed of the stroke by using the accelerometer sensor and force plate which is 3.5 m / s. The same result also shows the effect of body posture on kick speed, this can be seen from the results of research data from the US, RR and RIG samples. From the results of this analysis, it can be concluded that the results of the analysis in this study have the effect of body posture on the aspect of height having an average of 164 cm and an average arm length of 68 cm on the speed of the stroke using the accelerometer sensor and force plate which is 3.5 m/ s.The results of the analysis in this study show that the effect of body posture on the aspect of height has an average of 164 cm and an average leg length of 87 cm on kick speed using the accelerometer sensor and force plate which is 11.46 m/s.
Keywords: body posture, punch speed, kick speed;

I. Preliminary

Sport is an activity to improve physical fitness, maintain a healthy body, and even make entertainment for certain groups and at the same time to achieve achievements. In the principle of coaching achievement sports, there are several disciplinary factors that must be considered by sports stakeholders, ranging from philosophy, psychology, nutrition, physiology, biomechanics to anatomy factors, and of course there are many other supporting factors in the success of athletes achieving optimal performance.

According to Arief (2007:4) "Asian people develop self-defense as a way of life, and they learn about life and wisdom. There are many streams that make martial arts diverse. From here, martial arts developed as an achievement sport.In accordance with the Law on the National Sports System (2005) Article 1 paragraph 3 states that: The national sports system is all aspects of sports that are interrelated in a planned, systematic, integrated, and sustainable manner as a single unit which includes regulation, education, training, management, coaching, development, and supervision to achieve national sports goals

Karate is one of the sport's achievements which is a priority in Indonesia. Karate is one of the leading sports in Indonesia, this can be seen from the medal ranking achieved by Indonesia in the Sea Games and Asian Games. According to Wahid (2007:9) Karate techniques are divided into three main parts, namely: kihon, kata, and kumite. According to Matsuzaki (2006:15) kata and kumite are included in the category that is contested. The process towards a brilliant achievement, the coaches in the sport of karate also have obstacles to achieve achievements. One of the obstacles to achieving high achievement is the difficulty of finding talented athletes. Talent itself is one of the supporting factors that are very supportive and needed in achieving sports achievements.

Identification of talent in adolescents can be done by testing motor skills, physiology, and physical tests (body posture) as a selection instrument for talented adolescent athletes in sports (Winarno, 2006: 60). Bompa (1990:334) also suggests several main criteria in identifying talent, namely: health, biomotor quality, heredity, sports facilities and climate, availability of experts. The Aceh Youth and Sports Service itself has also become one of the leading sports for medals in the national event. It is proven that the karateka fostered by PPLP and PPLPD have made Aceh famous at the national level, even making Indonesia famous internationally, such as: Asmaul Husna, Khairul Bahri and Farinanta Marsella. However, in the last three years, achievements in karate have decreased. This is crucial and must be considered.

According to research that has been conducted in California (USA) from 1930-1950 (in Puji & Nesya, 2019), height is one of the supporting factors in karate, especially in the kumite category. The taller a person is, the farther the reach is to make it easier and get points. The size of the legs that are longer than the togok will affect the range of kicks, the longer the legs, the farther the movement will slide forward when attacking. Furthermore, a long arm span is also needed in karate, because long arms will affect the range of strokes. The longer the arm span, the farther the resulting range.

According to Furqon (2002: 6), the characteristics or basic components of biomotor in talented athletes have distinctive properties according to certain treatments, such as innate qualities from birth, having a good body posture or higher in accordance with the sport they are interested in, physical and mental health. healthy mentality, good basic movement skills such as strength, speed, agility, endurance, coordination and explosive power, and so on.

II. Research Procedure

This study uses a quantitative descriptive approach with this type of analysis. Descriptive research is research that provides a more detailed description of a symptom based on existing data, presents data, analyzes and interprets (Narkubo & Achmadi, 2003: 193). Quantitative data obtained through the presentation of measurement results related to the analysis of body posture, Kizami-Gyaku Tsuki punch speed, Mawashi Geri kick speed.

The population in this study were PPLPD karate athletes assisted by the Aceh Youth and Sports Service as many as 7 athletes. The sample is the smallest part of the population or that represents the population. In accordance with Arikunto's opinion, S (2010: 184) said "Total sampling is a sampling technique that is carried out because the entire population is sampled".

Data collection techniques are an important part of the research process. The data collected in this study is data obtained directly from the object of research, namely the PPLP and PPLPD karate athletes assisted by the Aceh Youth and Sports Office. Body Posture Test, Kizami-Gyaku Tsuki's Punch Speed Test and Mawashi Geri's Kick Speed Test.

III. Research Results And Discussion

Based on the research design that has been made by the researcher, three research data are obtained, for each variable, namely: body posture, punches and kicks. The data in this study were obtained through an anthropometer measuring instrument to measure body posture, an accelerometer sensor to measure acceleration,

and a force plate to measure pressure or strength. This research was conducted on karate athletes assisted by the Aceh Youth and Sports Service, amounting to 7 people.

Furthermore, the acceleration data obtained from the accelerometer sensor will be analyzed using a statistical formula, namely the Trapezoidal Rule. Trapezoidal Rule is an instrument used to calculate the value of velocity (V) which is the derivative (integral) of the acceleration data (Z) and the difference between the end and beginning of each stage. After the results of the velocity values are obtained, they are integrated again using the same formula, namely the Trapezoidal Rule to determine the displacement/distance value (S) by entering the velocity value. Meanwhile, the Speed Power (SP) value is the strength value (Force) multiplied by the speed (V), and the Force (F) value is obtained through the force plate test tool.

A. Analysiss Body posture Against Punch Speed

The results of the overall body posture analysis sample data on the speed of the stroke can be seen in the following table:

Table 4.15 Overall Data of Athletes on Aspect of Stroke

N O	INITIALS	*BODY POSTURE*				BLOW				Speed Power (Kg.m/s)	FASTEST MOTION
		TB (cm)	BB (kg)	PL (cm)	Time (s)	Z (m/s^2)	V (m/s)	S (m)	F (N)		
1	**US**	**167**	**52.2**	**72**	**0.04**	**276.30**	**5.73**	**0.21**	**123.30**	**71.98**	**Beginning**
2	MFR	168	48.6	68	0.02	56.74	0.68	0.02	812.59	56.23	Beginning
3	**MR**	**172**	**83.9**	**70**	**0.02**	**82.04**	**1.91**	**0.07**	**579.68**	**112.63**	**Beginning**
4	NS	163	49.5	67	0.02	109.61	2.33	0.08	345.81	82.11	Beginning
5	**NIA**	**155**	**48.5**	**62**	**0.06**	**198.31**	**2.72**	**0.15**	**96.72**	**26.84**	**Middle**
6	RIG	158	53.4	69	0.02	186.11	5.55	0.20	69.00	39.03	Beginning
7	**RR**	**167**	**49.1**	**68**	**0.06**	**176.66**	**3.61**	**0.18**	**36.32**	**13.37**	**middle**

Based on the discussion of the value of the influence of body posture on the speed of the stroke from 7 samples, it can be seen from the results of this study that there were 3 athletes from 7 samples, each of which had 2 aspects of the influence of body posture on the speed of the stroke seen from the aspect of height and arm length. the influence of aspects of body weight in this analytical study. While the other 4 samples do not seem to have any effect because even though the speed value looks good, it is not supported by good body posture. As for the description of each sample that has the following effects (1) AS has a height of 167 cm and an arm length of 72 cm is able to make the fastest stroke at a time of 0.04 with an acceleration value (Z) of 276.30 m/s^2 after being integrated it has a speed of 5. 73 m/s which occurs in stage 2 of 6 stages of displacement with a distance of 0.21 meters and the vibration force (F) generated is 123.30 newtons, this data shows that the US sample has an influence between body posture on the speed of the stroke, the data can be seen that the US has two From three aspects of body posture that are measured, namely body height and arm length that have an effect. (2) MR has a height of 172 cm and an arm length of 70 cm is able to make the fastest stroke at a time of 0.02 with an acceleration value (Z) of 82.04 m/s^2 after being integrated, it has a speed (V) of 1.91 m/s with a distance of 0.07 meters and The vibration force (F) generated is 579.68 newtons, this data shows that the MR sample has an influence between body posture and stroke speed. From these data, it can be seen that MR has two of the three aspects of body posture measured, namely height and arm length that have an effect. (3) For the NS female category, it can be said to have a high body posture with a height of 163 cm and an arm length of 67 cm capable of making the fastest stroke at a time of 0.02 with an acceleration value (Z) of 109.61 m/s^2 after being integrated, it has a speed of (Z) 109.61 m/s^2. V) 2.33 m/s with a distance of 0.08 meters and the vibration force (F) generated is 345.81 newtons, this data shows that the NS sample has an influence between body posture on the speed of the stroke, the data can be seen that the NS has two of the three aspects of body posture measured namely height and arm length that give effect.

B. Analysis of Body Posture on Kick Speed

The results of the overall body posture analysis sample data on kick speed can be seen in the following table:

Table 4.16 Overall Sample Data on the Kick Aspect

NO	INITIALS	BODY POSTURE			KICK					Speed Power (Kg.m/s)	FASTEST MOTION
		TB (cm)	BB (kg)	PT (cm)	Time (s)	Z (m/s²)	V (m/s)	S (m)	F (N)		
1	**US**	**167**	**52.2**	**89**	**0.10**	**53.57**	**1.12**	**0.06**	**159.66**	**18.21**	**End**
2	MFR	168	48.6	85	0.02	69.84	1.41	0.05	138.90	19.98	Beginning
3	**MR**	**172**	**83.9**	**94**	**0.02**	**163.44**	**3.06**	**0.11**	**174.82**	**54.49**	**Beginning**
4	NS	163	49.5	86	0.04	130.49	2.31	0.09	32.12	7.57	Beginning
5	**NIA**	**155**	**48.5**	**84**	**0.08**	**102.65**	**1.96**	**0.12**	**152.62**	**30.55**	**Middle**
6	RIG	158	53.4	82	0.08	39.80	0.61	0.04	199.12	12.43	Middle
7	**RR**	**167**	**49.1**	**89**	**0.02**	**15.03**	**0.99**	**0.04**	**156.39**	**15.77**	**Beginning**

Based on the discussion of the value of the influence of body posture on kick speed from 7 samples, it can be seen from the results of this study that there are 4 of 7 samples, each of which has 2 aspects of the influence of body posture on kick speed seen from the aspect of height and leg length. the influence of aspects of body weight in this analytical study. While the remaining 3 samples do not show any effect, even though the speed value looks good but it is not supported by good body posture. The description of each sample that has the following effects (1) AS has a height of 167 cm and a leg length of 89 cm and is able to make the fastest kick at 0.10 time with an acceleration value (Z) of 53.57 m/s² after being integrated, it has a speed of 1.12 m/s with distance0.06meters and the vibration force (F) generated is 159.66 newtons and the resulting speed power is 18.21 Kg kg.m/s, this data shows that the US sample has an influence between body posture on kick speed, the data can be seen that the US has two of the following: Three aspects of body posture were measured, namely body height and leg length. (2) MR has a height of 172 cm and a leg length of 94 cm and is able to make the fastest kick at a time of 0.02 with an acceleration value (Z) of 163.44 m/s² after being integrated, it has a speed (V) 3.06 m/s with a distance of 0.11 meters and a vibration force (F) generated is 174.82 newtons and the resulting speed power is 54.49 kg.m/s, this data shows that the MR sample has an influence between body posture on kick speed, From these data, it can be seen that MR has two of the three aspects of body posture measured, namely body height and leg length. (3) For the NS female category, it can be said to have a high body posture with a height of 163 cm and a leg length of 86 cm, capable of doing the fastest kick at 0.04 time with an acceleration value (Z) of 130.49 m/s after being integrated, it has a speed (V) 2.31 m/s with a distance of 0.09 meters and the vibration force (F) generated is 32.12 newtons and the resulting speed power is 7.57 kg.m/s, this data shows that the NS sample has an influence between body posture on kick speed, these data it can be seen that NS has two of the three aspects of body posture that are measured, namely body height and limb length that have an effect. (4) RR which has a height of 167 cm and a leg length of 89 cm is able to take a kick at a time of 0.02 with an acceleration value (Z) of 15.03 m/s² after being integrated, it has a speed (V) of 0.99 m/s with a distance of 0.04 meters and vibration The force (F) generated is 156.39 newtons and the resulting speed power is 15.77, this data shows that the RR sample has an influence between body posture on kick speed, the data can be seen that RR has two of the three aspects of body posture measured, namely height and the length of the affected limb. Among the four samples above, AS is a sample that has a fairly good movement, at a kick speed AS can make the fastest movement at the end of the movement,

Furthermore, the description of each sample that does not have a significant effect on the body posture test on kick speed is as follows: (1) MFR has a height of 168 cm and a leg length of 85 cm capable of kicking at a time of 0.02 with an acceleration value (Z) 69.84 m/s2 after being integrated, it has a kick speed (V) of 1.41 m/s with a distance of 0.05 meters and a vibration force (F) generated by 138.90 newtons, it can be concluded that the data from the MFR sample does not show such a high kick speed. good. (2) NIA has a height of 155 cm and a leg length of 84 cm with an acceleration value (Z) of 102.65 m/s² after being integrated, it has a kick speed (V) of 1.96 m/s with a distance of 0.12 meters and the vibration force (F) generated is equal to152.62 newton, it can be concluded that the data from the NIA sample, although it has a good kick speed value, is not supported by good posture either. (3) RIG has a height of 158 cm and a Leg length of 82 cm with an acceleration value (Z) of 39.80 m/s² after being integrated, it has a kick speed (V) of 0.61 m/s with a distance of 0.04 meters and a vibration force (F) which generated by 199.12 newtons, it can be concluded that the data from the RIG sample does not show such good kick speed results.

IV. Discussion

From the results of Body Posture Analysis on Stroke Speed, each sample that does not have a significant effect on body posture tests on stroke speed is as follows: (1) MFR has a body height of 168 cm and an arm length of 68 cm with an acceleration value (Z) of 56.74 m/s2 after being integrated, it has a speed (V) of 0.68 m/s stroke with a distance of 0.02 meters and the vibration force (F) generated is 812.59 newtons.

It can be concluded that the data from the MFR sample does not show the results of such a good punch speed. (2) NIA has a height of 155 cm and an arm length of 62 cm with an acceleration value (Z) of 198.31 m/s^2 after being integrated, it has a speed (V) of 2.72 m/s with a distance of 0.15 meters and the vibration force (F) generated is equal to 96.72 newtons, it can be concluded that the data from the NIA sample, although it has a good punch speed value, is not supported by good posture either. (3) RIG has a height of 158 cm and an arm length of 69 cm with an acceleration value (Z) of 186.11 m/s^2 after being integrated, it has a speed (V) of 5.55 m/s with a distance of 0.11 meters and the vibration force (F) generated is equal to 69.00 newtons, it can be concluded that the data from the RIG sample, the same as the previous sample although it has a good punch speed value but is not supported by good posture either. (4) RR has a height of 167 cm and an arm length of 68 cm with an acceleration value (Z) of 176.66 m/s^2 after being integrated, it has a speed (V) of 3.61 m/s with a distance of 0.18 meters and the vibration force (F) generated is equal to 36.32 newtons, it can be concluded that the data from the RR sample is also the same as the previous sample, although it has a good stroke speed value but is not supported by good posture either.

Furthermore, the results of the study on Body Posture Analysis on Kick Speed from each sample that did not have a significant effect on body posture tests on kick speed were as follows: (1) MFR has a body height of 168 cm and a leg length of 85 cm capable of kicking at any given time. 0.02 with an acceleration value (Z) of 69.84 m/s^2 after being integrated, it has a kick speed (V) of 1.41 m/s with a distance of 0.05 meters and the vibration force (F) generated is 138.90 newtons, it can be concluded that the data from the MFR sample does not show the results of kick speed that is so good. (2) NIA has a height of 155 cm and a leg length of 84 cm with an acceleration value (Z) of 102.65 m/s^2 after being integrated, it has a kick speed (V) of 1.96 m/s with a distance of 0.152.62 newton, it can be concluded that the data from the NIA sample, although it has a good kick speed value, is not supported by good posture either. (3) RIG has a height of 158 cm and a Leg length of 82 cm with an acceleration value (Z) of 39.80 m/s2 after being integrated, it has a kick speed (V) of 0.61 m/s with a distance of 0.04 meters and a vibration force (F) which generated by 199.12 newtons, it can be concluded that the data from the RIG sample does not show such good kick speed results.

V. Conclusion

Based on the results of research that has been carried out by the author regarding the analysis of the speed of punches and kicks in the karate athletes fostered by DISPORA Aceh, they are as follows:

1. The results of the analysis in this study show that the effect of body posture on the aspect of height has an average of 164 cm and an average arm length of 68 cm on the speed of the stroke using the accelerometer sensor and force plate which is 3.5 m/s.

2. The results of the analysis in this study show that the effect of body posture on the aspect of height has an average of 164 cm and an average leg length of 87 cm on kick speed using the accelerometer sensor and force plate which is 11.46 m/s.

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