# RELATIONSHIP OF SPEED, REACTION AND CONCENTRATION TO THE ACHIEVEMENT OF PRECISION LANDING OF GLIDING ATHLETES DKI JAKARTA

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**Abstrak** The purpose of this study is to determine the relationship between reaction speed, concentration, and precision landing performance of DKI Jakarta gliding athletes. This study uses the quantitative method by survey technique method. Samples are 13 athletes of DKI Jakarta gliding. In order to get the data, the athlete was tested with reaction speed test, concentration test, and precision landing test. The technique of analyzing the data is correlation technique. The result of this study shown that the correlation between reaction speed, concentration, and precision landing performance is 40.3%, where the reaction speed has 38.3% correlation (strong correlation) to precision landing and concentration has 2.8% correlation to precision landing (weak correlation). So the conclusion is reaction speed has a strong correlation to precision landing while concentration has weak correlation to precision landing.

**Keywords :** Reaction speed, concentration, precision landing

**INTRODUCTION**

Gliding is an airsport that uses a glider as a plane. Glider is a sailplane that does not have an engine. To get airborne the glider that is flown by the athlete is towed by a plane that have an engine (tow plane), like Cessna or Husky, and when the altitude reaches 1.500 feet the glider will be released from the tow plane. Gliding is classified as an open skill sport. Open skill sport is defined as a sport where the stimulus comes from the biosphere, in the other word the athlete can’t predict where or when the stimulus will come (Sugiyanto, 2008). In gliding, there is so much unpredicted stimulus such as weather changes, wind direction changes, wind speed changes, turbulences, and many more. The hardest part is the athlete have to control the glider precisely all the time even when the stimulus comes, because if the glider does not fly precisely it could be dangerous. In Indonesian National Multi Event (PON) there are 2 competition numbers in gliding, that is duration flight and precision landing. Between those 2 competition numbers, precision landing need more precision skill from the athlete, because the precision landing number measures the level of landing precision carried out by the athlete, the more precise the landing is, the higher the points will be obtained by the athlete (PB FASI, 2013). It is hard to maintain the glider fly precisely while the stimulus comes, it needs a high level of reaction speed skill from the athlete to respond rapidly to the stimulus in order to maintain the glider fly precisely. Precision landing is affected by several factors. The first is the weather factor, the weather has an effect because changes in wind direction, wind speed, turbulence, updrafts, and downdrafts have an impact on the position and direction of the glider while flying (Thomas Knauff, 1990). The second factor that affects precision landing is glider control. Gliders are controlled using a joystick in the hands and rudder pedals on the feet (Thomas Knauff, 1980). The joystick and rudder pedal must be controlled with good reaction speed, so that the athlete can provide output control quickly and precisely so that the glider can fly with precision when facing stimulus (Thomas Knauff, 1980). Based on Thomas Knauff's opinion above, it can be said that glider athletes need good reaction speed in order to control the glider with precision every time. According to Nossek (1982), speed is divided into three types, namely sprint speed, reaction time and motor action speed. A gliding athlete only needs to have a good reaction time and does not need to have the ability to have good sprint speed and motor action speed, because when flying the athlete only sits in the cockpit. Reaction speed or reaction time is the speed in responding to a stimulus which is affected by the sensitivity of the nervous system, orientation ability, situation, and the acuity of the five senses (Nossek, 1982). According to Sukadiyanto (2010) reaction speed is a person's ability to respond to a stimulus in the shortest possible time. According to Suharno (1985) reaction speed is the ability of the athlete's organism to respond to a stimulus as quickly as possible in achieving the best possible result. From the opinion of experts regarding the definition of reaction speed, it can be understood that glider athletes do need a good reaction speed to be able to respond to stimulus when flying quickly and precisely, so that the level of precision of the glider when flying is maintained.

Nossek (1982) argues that the acuity of the five senses is one of the factors that affect a person's reaction rate. According to Thursan Hakim (2002), the acuity of a person's five senses is also related to his level of concentration, where someone who has a good level of sensory acuity has a good level of concentration. Therefore, it can be said that gliding athletes must also have a good level of concentration to be able to maximize their reaction speed abilities. According to Siswanto (2007), concentration is the ability to focus fully on the problem at hand. According to Aviana & Hidayah (2015) concentration is the concentration of attention in the process of behavior change in the form of assignments and the use of knowledge contained in various fields of study. To be able to achieve glorious achievements, it is not only affected by physical and technical factors, but psychological factors such as concentration also play an important role (Adisasmito, 2007). The concentration when flying precision landing is that the athlete must always focus on the target landing area to be aimed and must always focus on responding to the incoming stimulus so that the aircraft can always fly precisely.

From the search for previous journal data to become reference material, there is no journal that discusses precision landing or gliding. For reaction speed, there is a previous journal from the tennis sport entitled "The relationship between hand reaction speed and hand eye coordination on tennis court services for Cendrawasih University students" (Journal of applied sports science, Faculty of Sport Science, University of Cendrawasih, 2020). And for concentration, there is a previous journal from the archery sport entitled "The level of concentration on Belions futsal athletes" (Journal of sports and health science, Bandung Institute of Technology, 2019). Researchers conducted this study to determine the relationship between reaction speed and concentration on the precision landing achievement of gliding athletes.

**METHODS**

The research conducted was guided by the principles of correlational descriptive quantitative research. This study was conducted to examine the relationship between two variables, namely the relationship between reaction speed and concentration on the achievement of precision landing for gliding athletes in DKI Jakarta. Participants of this study were 13 athletes of the Jakarta gliding athletes. To get the reaction speed data, researcher used ruler drop test (Anindita et al. 2017) this test asks the participants to catch the ruler in one of their hand while the tester drop the ruler in uncertain time but around 10 seconds. The 0 number of the ruler placed near above the participant hand. The higher score will given if the hand of the participants catch the ruler close to the 0 number of the ruler and the maximum score is when the hand of the participants catch the ruler in 0 number of the ruler. To get concentration data, researcher used a concentration grid test (Harris & Harris, 1984) and Marten (1933); and Heinen (2011) to measure concentration. This test asks the participants to sort a number from 00 to 99 with a line in a 10x10 coloumn with random numbers on it. The participants only got 1 minute to do this test. The more correct line in the coloumn means the higher score. To get precision landing data, researcher ask the participants to do a precision landing flight just like in competition, and then researcher will count the precision score of each participants based on the calculation condition from PB FASI.

Instrument

The instruments that the researchers used for ruler drop test (Anindita et al. 2017) is a chair, table, ruler, stopwatch, paper, and pen. For concentration grid test (Harris & Harris, 1984) and Marten (1933); and Heinen (2011) researcher used a chair, table, pen, task paper, and stopwatch for instruments. The instruments for precision landing (PB FASI, 2013) test are glider, tow plane, airfield, tow rope, precision landing area, roll meter, paper, and pen. For data processing using SPSS 20.0 for windows

**RESULTS**

**Table 1.** Score results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Athletes Name** | **Reaction Speed Score** | **Concentration Score** | **Precision Landing Score**  **(1000)** |
| 1 | Adelya | 12,9 (Very Low) | 10 (Low) | 929,940 |
| 2 | Dadang | 8,1 (Very High) | 14 (Fair) | 978,652 |
| 3 | Darmansyah | 8,3 (Very High) | 12 (Low) | 973,978 |
| 4 | Dita | 7,07 (Very High) | 16 (High) | 974,294 |
| 5 | Iffan | 10,2 (Fair) | 11 (Very Low) | 939,129 |
| 6 | Monica | 7,2 (Very High) | 15 (Fair) | 951,813 |
| 7 | Rudi | 11,64 (Low) | 13 (Low) | 944,966 |
| 8 | Suprianto | 11,64 (Low) | 12 (Low) | 958,147 |
| 9 | Sutigno | 10,7 (Low) | 11 (Very Low) | 937,960 |
| 10 | Taqwa | 11,57 (Low) | 18 (Very High) | 939,131 |
| 11 | Utomo | 8,2 (Very High) | 17 (High) | 962,314 |
| 12 | Wahyu | 11 (Low) | 11 (Low) | 981,487 |
| 13 | Widy | 11,5 (Low) | 13 (Low) | 926,930 |

**Table 2.** Frequency Distribution of Reaction Speed of DKI Jakarta Gliding Athletes

|  |  |  |  |
| --- | --- | --- | --- |
| Interval | Category | Frequency | Percentage |
| 7,07 - 8,23 | Very High | 4 | 30,77 |
| 8,24 - 9,4 | High | 1 | 7,69 |
| 9,41 - 10,57 | Fair | 1 | 7,69 |
| 10,58 - 11,74 | Low | 6 | 46,15 |
| 11,75 - 12,91 | Very Low | 1 | 7,69 |
| Total |  | 13 | 100 |

Based on the table. 2, it is obtained that 4 athletes have a very high reaction speed score with the percentage of 30,77%, and then there is 7,69% or around 3 athletes that have high, fair, and very low score of reaction speed. And the rest with 46,15% or around 6 athletes that have low reaction speed

# Table 3.

# Frequency Distribution of Concentration of DKI Jakarta Gliding Athletes

|  |  |  |  |
| --- | --- | --- | --- |
| Interval | Category | Frequency | Percentage |
| 10 – 11 | Very Low | 4 | 30,77% |
| 12 – 13 | Low | 4 | 30,77% |
| 14 – 15 | Fair | 2 | 15,38% |
| 16 – 17 | High | 2 | 15,38% |
| 18 – 19 | Very High | 1 | 7,69% |
| Total |  | 13 | 100 |

Based on the table. 3, it is obtained that 8 athletes have very low and low level of concentration with percentage of 30,77%. There is 15,38% or around 2 athletes that have fair level of concentration, and 2 athletes that have high level of concentration. And the rest is 1 athlete that have very high level of concentration with percentage of 7,69%.

# Table 4.

# Frequency Distribution of Precision Landing of DKI Jakarta Gliding Athletes

|  |  |  |  |
| --- | --- | --- | --- |
| Interval | Category | Frequency | Percentage |
| 926,93 - 937,841 | Very Low | 2 | 15,38% |
| 937,842 - 948,753 | Low | 4 | 30,77% |
| 948,754 - 959,665 | Fair | 2 | 15,38% |
| 959,666 - 970,577 | High | 1 | 7,69% |
| 970,578 - 981,489 | Very High | 4 | 30,77% |
| Total | | 13 | 100 |

Based on the table. 4, it is obtained that 2 athletes have a very low level of precision landing with percentage of 15,38%. There is a percentage of 7,69% or 1 athlete that has a high level of precision landing. And the rest there are 8 athletes that 4 of them have low level of precision landing and 4 others have very high level of precision landing with the percentage of 30,77%.

Based on the calculation of the significance value that has been done, the significance value of reaction speed (X1) with precision landing (Y) is 0.024, which means that there is a significant correlation between the reaction speed variable and the precision landing variable. The calculated r value of the relationship between reaction speed (X1) and precision landing (Y) is 0.619, it can be concluded that there is a relationship or correlation between the variable reaction speed and precision landing. For the concentration variable (X2), the significance value is 0.588, which means that there is no significant correlation between the concentration variable and the precision landing variable. Based on the calculated r value, the relationship between concentration (X2) and precision landing (Y) is 0.533, it can be concluded that there is no relationship or correlation between the concentration variable and precision landing. For the calculation of the T test, the Sig value for the effect of reaction speed (X1) on precision landing (Y) is 0.031, so it can be concluded that the variable X1 is accepted, which means that there is an effect of X1 on Y. As for the concentration variable (X2), the Sig value of T test is 0.572, so it can be concluded that X2 is rejected, which means that there is no influence of X2 on Y. there is an effect of X1 and X2 simultaneously on Y. For the coefficient of determination, the reaction speed variable (X1) affects the precision landing variable (Y) by 38.3%. Then for the concentration variable (X2) it affects the precision landing variable (Y) by 2.8%. And overall, the reaction speed and concentration have an effect on precision landing by 40.3%.

**CONCLUSIONS**

Based on data analysis, the results of hypothesis testing showed a significance of 0.118. The significance level is greater than 0.05, thus it means that the relationship between reaction speed and concentration on the precision landing achievement of glider athletes in DKI Jakarta does not have a significant effect. In the other words, only reaction speed from the athlete that has a strong relationship to the precision landing achievement, while concentration does not. It could happened because it might took a different way to concentrate between doing a concentration grid test and doing a precision landing flight.

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