IJER Indonesian Journal of Educational Review
p-ISSN 2338-2019 | e-ISSN 2335-8407
Vol. 6, No. 2, December 2019, p 140-148

Available online at
http://pps.unj.ac.id/journal/ijer

# THE STUDY CORRELATION BETWEEN ARM MUSCLE EXPLOSIVE POWER, CORE STABILITY STRENGTH AND ACHIEVEMENT MOTIVATION WITH THE SPEED OF 60 METERS RUN

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**Abstract**

*The purpose of this research is to obtain information on the correlation of arm muscle explosive power, core stability strength and achievement motivation with running speed of 60 meters run. This research was conducted at college in Sport Science Faculty State University of Jakarta in April 2013. Total population 80 people, the sample is taken with purposive sampling technique. The sample of the research is 35 male students. The results of the research concluded:* (1). *Correlation between arm muscle explosive power with speed to run 60 meters at 0.699,* (2). *Correlation between core stability strength with speed to run 60 meters at 0.769,* (3). *The correlation between achievement motivation with the running speed of 60 meters at 0.652,* (4). *Correlation between arm muscle explosive power, core stability strength and running speed achievement motivation with 60 meters of 0.842.*

***Keywords :*** *speed running, arm muscle explosive power, core stability strength and motivation achievement*

Athletic courses are one of the compulsory motion subjects for students in the Faculty of Sport Science, Jakarta State University. The athletic lecture model at the Faculty of Sport Science, Jakarta State University is carried out face-to-face, structured and independent. Athletics is often called the mother of all sports (mother of sport). Syarifuddin and Muhadi, (1992/1993). One of the athletic numbers that must be learned and mastered is the run number. In mastering running, students must master one of them mastering techniques which are the ability to understand or know a specific set of movements or parts of sports movements in solving sports movement tasks and can use their knowledge. Sprint technique is defined as the ability of athletes to know or understand sprint running techniques and can use sprint running techniques properly.

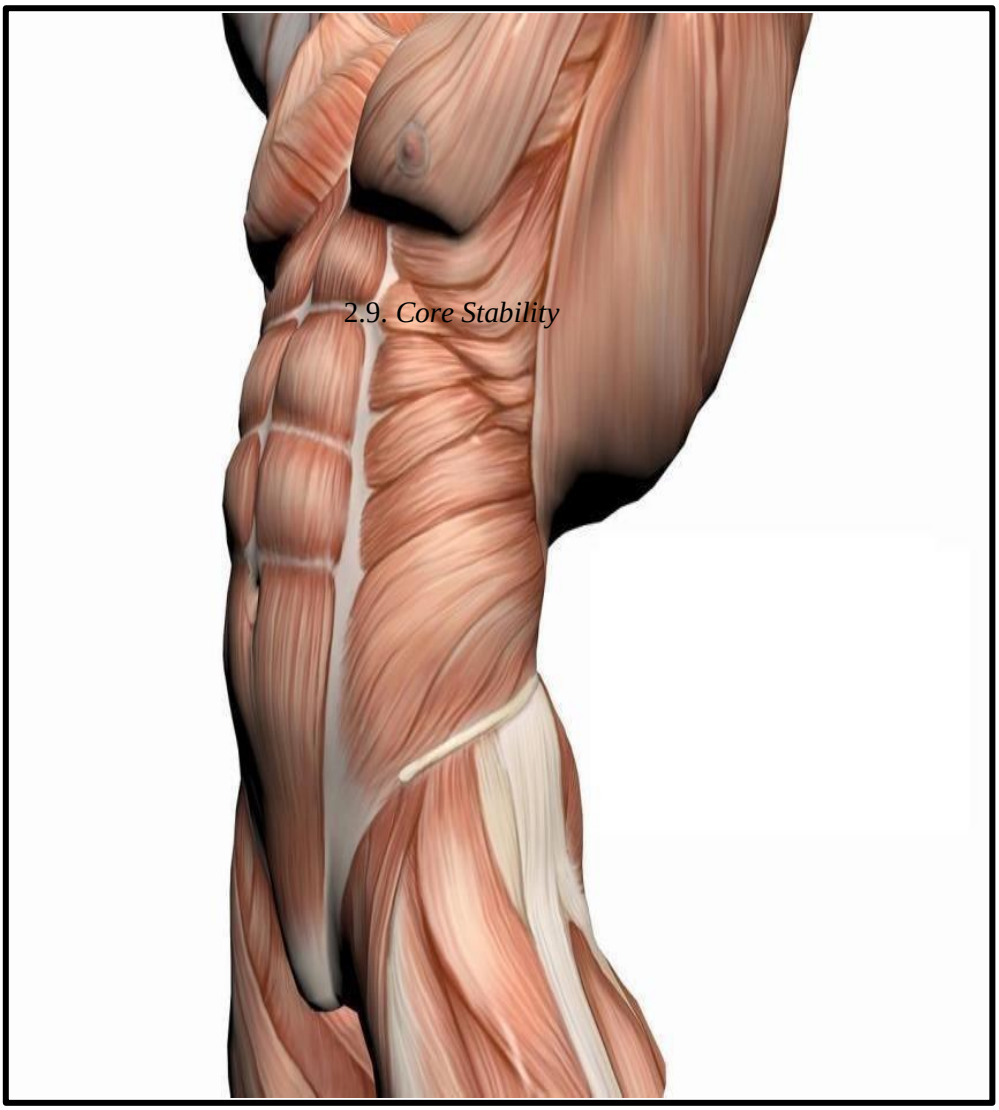
Furthermore Bompa (1983) says speed is the capacity to move or move an object quickly. Factors that influence speed include: (1) heredity, (2) reaction time, (3) ability to withstand external loads and (4) movement techniques. While the psychological aspect of improving fast running skills is achievement motivation to achieve the best time. Based on the background description of the problem, the researchers are very interested in examining the speed of running short distances, especially running 60 meters with the Hand Swing Explosion Power, Strength and Body Balance and achievement motivation in students of the Faculty of Sport Science, Jakarta State University. Sports can develop their potential and abilities so that what they do is useful for themselves, schools, nations and countries. One of the many sports that exists is athletics.

Athletics is a sport that has been carried out by humans since ancient Greece until now. Athletics is often called the mother of all sports (mother of sport). The elements of movement that exist in athletics are found in all sports such as; walk, run, jump, throw and decline. Based on the background of the problem above, the problem can be identified as follows: How is the relationship between explosive arms swinging, strength and balance of the body and achievement motivation

together with the 60 meter running speed of the 2013 State University of Jakarta Sport Faculty students. What factors are influences the running speed of 60 meters students of the Faculty of Sport Science Jakarta State University. Obtain empirical data on the relationship of arm swing arm strength, strength and balance and achievement motivation together with the 60 meter running speed of the 2013 Faculty of Sport Science students of the Jakarta State University. Producing a measuring tool in the selection of prospective athletes so that it can be used as a foundation for trainers in make an exercise program.

Speed is the ability of the body or part of the body to move very quickly with a measure of distance divided by time. Bompa said speed is the capacity to move or move an object quickly. Factors that affect speed include: (1) heredity, (2) reaction time, (3) ability to withstand external loads and (4) movement techniques. The training method must be able to improve the components that support running speed techniques and biomotor components such as; flexibility (flexibility), speed (speed), strength (strength), explosive power (power) and endurance (endurance). Zimmermann et al., 1989), Body Strength and Balance, Kirkendall (1988) explains that: "Physical condition is an indispensable prerequisite in an effort to improve one's athlete's performance and can even be said to be a basic necessity that cannot be delayed or bargained anymore" . Strength as the maximum amount of energy that can be done by a muscle or group of muscles in an effort. Harsono who stated that the speed is the components to perform similar movements in a row in the shortest possible time or the ability to travel the distance in the shortest possible time. Speed depends on several factors that influence it, namely; strength, reaction time and flexibility. Speed is the ability based on the mobility of the nervous system and muscles to make movements at a certain speed. Each track and field in a competition, requires different abilities but speed remains a major component.

A good sprinter has an innate ability (talent). To achieve further success only develop genetic factors. This requires the support of the family (parents) to look after and care for it to succeed later. Smith, (2011). Based on the understanding put forward by the experts above, it can be concluded that speed is one of the basic movements of a person in making short movements in an effort to travel distance and make a stimulatory reaction that he receives. The simpler term for speed is the ability to make sequential movements quickly. Masnun: "Bringing the body from one point to another to achieve maximum horizontal motion". Meanwhile, according to Arma Abdullah: "Short distance running is all types of running from start to finish carried out with maximum speed". Masnun, (1990), Body Strength and Balance. Kirkendall (1988) explains that: "Physical condition is an indispensable prerequisite in an effort to improve the performance of an athlete, it can even be said to be a basic necessity that cannot be postponed or bargained anymore." Strength is the maximum amount of energy that can be exercised by a muscle. or a group of muscles in an effort. Harsono (1993). Strength means the ability to expend maximum energy in one effort, the ability of strength means the occurrence of muscle contraction in humans, according to Thomas (2000) there are three types of human muscle contractions namely; static, concentric and eccentric. Exercising the functional muscles of the body is becoming popular among achievement sports and fitness as an effective way to build strong body foundation. Body training is a thought trend that is applied in training programs to prepare for physical fitness for living activities and also for physical activities.

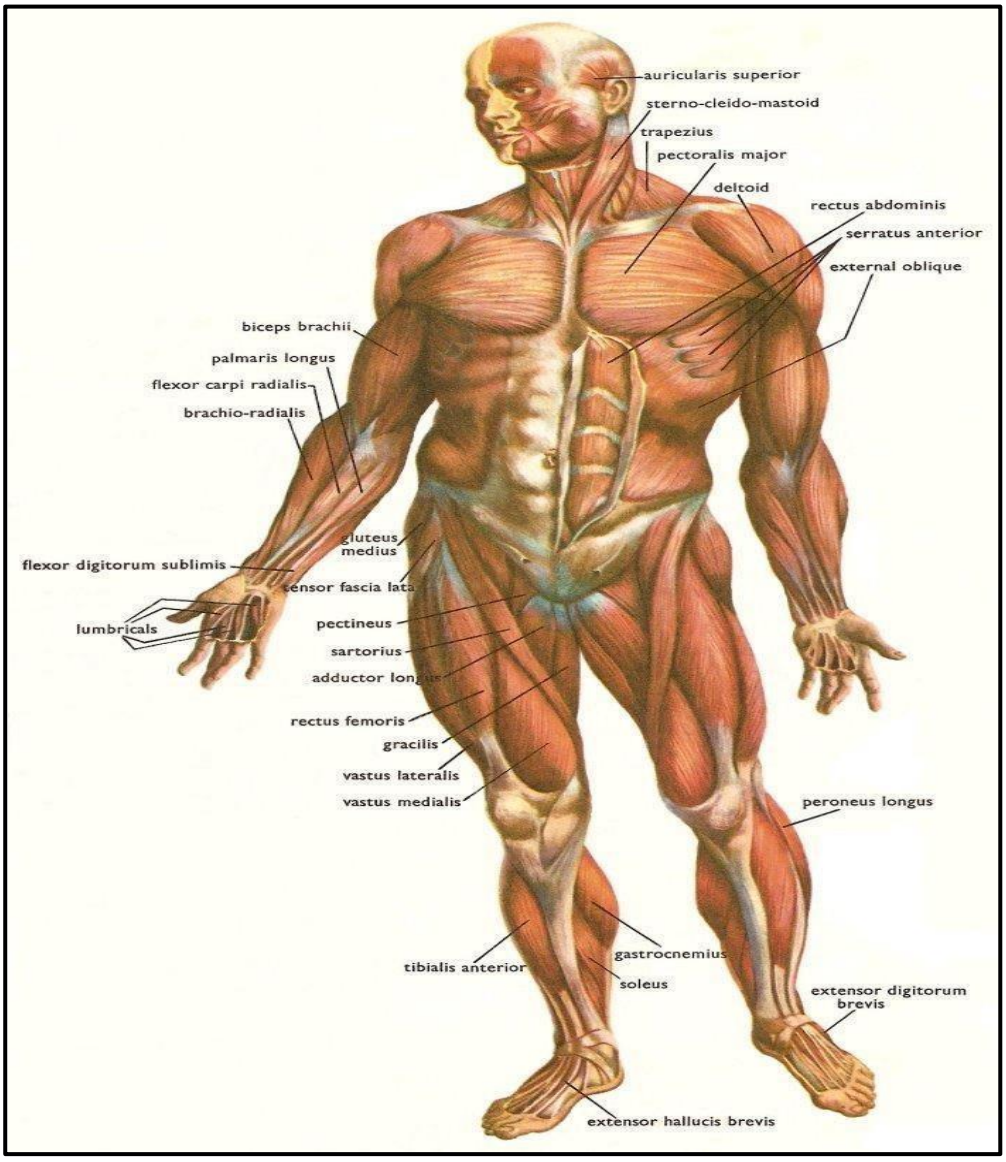


2.9. *Core Stability*

Sources: Matt Lawrence, Core Stability London: A&C Black Publisher Ltd, 2007

A strong body can control heavy pressure, as a cushion and at the same time protect the back of the body. The stability of the inner muscles greatly supports the balance of the body, certain postures and movements Lawarence (2007) ". Posture is the union of muscles and joints that play a role in helping bodily functions.

*The stabilising trunk muscle.* Matt Lawrence, Core Stability London: A&C Black Publisher Ltd, 2007




Exercising body strength is very supportive of a rehabilitation program (injury recovery), to prepare for better muscle conditions. "When all the muscles involved in carrying out an exercise program are assisted by hip and trunk muscles it will reduce the likelihood of injury, and can train again comfortably "muscle and joint therapist, one of the working group owners in New York, and Wharton Health expert staff in Flagstaff). Exercising body strength is not too difficult, it only takes about 15 minutes a few times a week. Jones even when there is no constant competition exercise three times a week to maintain his condition and status as a gawa runner the top American. "When my body strength reaches its peak," Jones said, "I can run more efficiently and maintain my condition. Based on the theory above, it can be concluded that body balance is the ability of a group of lumbar-pelvix-hip muscles in an effort to resist resistance maximally in a movement .

Human motivation or drive to act or behave which originates or comes from within a person is called internal or intrinsic motivation. Rusyan (1989) Internal motivation is motivation that comes from the human being himself. Loehr (1996), explains motivation is the energy that makes everthing work that motivation is the energy that drives any activity. Furthermore, Maslow (1990) explained that motivation functions as follows: 1) Activator that gives strength to someone to do a task. 2)

Determine the direction in the realization of a goal. 3) Prevent deviations from the path that must be taken in order to achieve goals. 4) Determine the actions that must be done in order to achieve the goal by ruling out acts that are not useful. Singer further cited by Setiyobroto (1989) asserted that motivation is an impetus for someone to achieve goals and always try to do something as well as possible. Some Singer approaches are grouped in forms: 1) Giving awards, 2) Punishment; 3) Threats; 4) Recognition.

Gagne (1997) states that: motivation determines what will be a reinforcer or motivator, motivation takes into account the orientation goals, motivation determines the amount of time spent and different activity activities and motivation helps consider differences in achievement in school. Purwanto (1990) divides motivation into two, first is intrinsic motivation, that is if the urge to act is the values contained within the object itself and secondly extrinsic motivation, that is, if to act is to come from outside himself. Thomas and Jere (1990) that there are two types of intrinsic motivational behavior, namely: first when someone feels happy but bored and then motivated to find stimuli and second involves mastering challenges or reducing differences: The most famous theory for measuring the results of this emphasis are the expectancy theory (expectancy theory) from Lefton (1997) which focuses on the need for achievement (need for achievement), which is a social need that directs people to work hard in their efforts to achieve glory and success and toeri achievement. David, et al., (1976) achievement motivation is motivation that is associated with competing quality standards, so that encourages or leads positive or negative oneself, a set of processes that support behavioral choices is what we call achievement motivation. Raymond (1997) Achievement motivation itself envy is the result of an interaction between a person's internal needs and external influences (obligations, expectations, previous circumstances, and placement goals) that show the behavior formed to achieve a goal. Quality standards of achievement motivation in students are largely determined by the culture / customs of each family or more precisely is the role of parents who will encourage a student to be able to perform certain tasks that arise from himself without help from others.

## METHOD

This research uses a quantitative approach with a survey method. The statistical technique is Relationship analysis that connects the independent variable with the dependent variable. The independent variable consists of 3 variables, namely: explosive power swing arm (X1), strength and balance of the body (X2), and achievement motivation (X3), while the dependent variable (Y) namely: running speed of 60 meters. The research was conducted at the Faculty of Sport Science, Jakarta State University and East Jakarta Rawamangun Sports Hall Athletics Stadium. Sampling was carried out using purposive sampling technique. The number of samples in this study were 35 people. Data collection in this study used test and measurement techniques. Analysis of research data was carried out with analytical techniques.

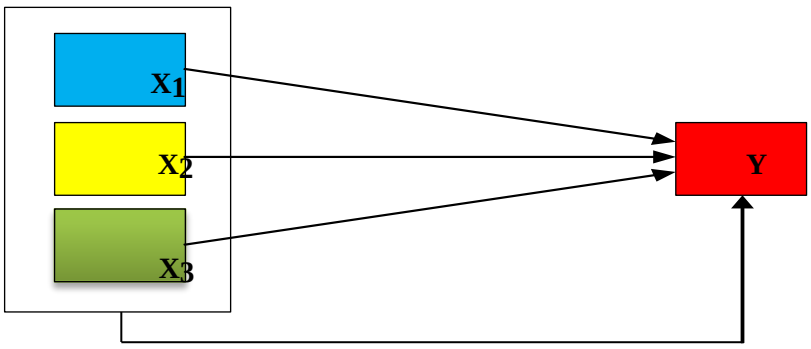



Figure.1. Design of Research

## RESULT

Based on the test results of the significance of the simple relationship coefficient obtained that the value of t-count> t-table at α = 0.01. This means that the research hypothesis states that there is a positive relationship between the explosive power swing arm with running speed of 60 meters. Jakarta State University Sport Science students can be accepted. Based on the test results of the significance of the simple relationship coefficient obtained that the value of t-count> t table at α = 0.01. This means that the research hypothesis which states that there is a positive relationship between strength and balance of the body with running speed of 60 meters students of the Faculty of Sport Science, State University of Jakarta can be accepted.

Based on the test results of the significance of the simple relationship coefficient obtained that the value of t-count> t table at α = 0.01. This means that the research hypothesis which states that there is a positive relationship between achievement motivation and 60 meter running speed of the students of the Faculty of Sport Science, Jakarta State University can be accepted. Based on the results of multiple regression testing $\hat{Y} = 0.219 + 0.324X1 + 0.384X2 + 0.288X3$, the Ry123 value of 0.842 is linear and very significant. This means that the level of closeness of the relationship between arm swing arm variable, body balance strength and achievement motivation simultaneously (simultaneous) with 60 meter running speed students of the Faculty of Sport Science, State University of Jakarta is very significant.

## DISCUSSION

### 1. 60-meter running speed for the students of the Faculty of Sports Science Jakarta State University (Y)

Based on the results of data analysis through the 2010 excel program, it was found that the 60 meter running speed variable of the Faculty of Sport Sciences students of Jakarta State University (Y) had an average value of 50.00 with a median (Me) = 49.14 and mode ( Mo) = 42.28. Data distribution was poured into the frequency distribution list with six classes with a minimum score of 33.13 and a maximum score of 69.19 so that the range of scores was 36.06 and the following results were obtained. Table 1 Distribution of frequency scores of 60 meters running speed of students Faculty of Sport Science, Jakarta State University.

| Interval Class | Frec. Absolut (n) | Frec. Relative (%) | Frec. Cumulatif (%) |
|---|---|---|---|
| 31,0 - 38,5 | 4 | 11,43 | 11,43 |
| 39,0 - 46,5 | 10 | 28,57 | 40,00 |
| 47,0 - 54,5 | 7 | 20,00 | 60,00 |
| 55,0 - 62,5 | 8 | 22,86 | 82,86 |
| 63,0 - 71,5 | 6 | 17,14 | 100,00 |
| **Total** | **35** | 100,00 | |

### 2. The explosive power swing arm of the students of the Faculty of Sport Science, Jakarta State University(X1).

Based on the results of data analysis through the excel 2010 program, it was found that the swing arm (X1) explosive power variable had an average value (Mean) of 50.00 with a median (Me) = 49.99 and mode (Mo) = 41.91. Data distribution is poured into the frequency distribution list with

six classes with a minimum score of 32.65 and a maximum score of 78.04 so that the range of scores is 45.39 and the following results are obtained. Table 2. Frequency distribution of swing arm explosive scores of students at the Faculty of Sport Science, Jakarta State University.

| Interval Class | Frec. Absolut (n) | Frec. Relatif (%) | Frec. Cumulatif (%) |
|---|---|---|---|
| 30,0 – 39,5 | 2 | 5,71 | 5,71 |
| 40,0 – 49,5 | 13 | 37,14 | 42,86 |
| 50,0 – 59,5 | 13 | 37,14 | 80,00 |
| 60,0 – 69,5 | 5 | 14,29 | 94,29 |
| 70,0 – 79,5 | 2 | 5,71 | 100,00 |
| Total | 35 | 100,00 | |

**3. Strength and balance of the student body of the Faculty of Sport Science, Jakarta State University (X2)**

Based on the results of data analysis through the 2010 excel program, it was found that the variable strength and body balance (X2) had an average value (Mean) of 50.00 with a median (Me) = 49.99 and mode (Mo) = 51.63. The data distribution is poured into the frequency distribution list with

| Interval Class | Frec. Absolut (n) | Frec. RelatiVve | Frec. Cumulatif (%) |
|---|---|---|---|
| 34,0 – 41,0 | 8 | 22,86 | 22,86 |
| 41,5 – 48,5 | 8 | 22,86 | 45,71 |
| 49,0 – 56,0 | 13 | 37,14 | 82,86 |
| 56,5 – 63,5 | 1 | 2,86 | 85,71 |
| 64,0 – 71,0 | 5 | 14,29 | 100,00 |
| **Total** | **35** | 100,00 | |

Table 3. Distribution of frequency scores for strength and balance of student bodies at the Faculty of Sport Science, Jakarta State University.

**4. Student achievement motivation in the Faculty of Sport Science, Jakarta State University (X3).**

Based on the results of data analysis through the 2010 excel program, it was found that the achievement motivation variable (X3) had an average value (Mean) of 50.00 with a median (Me) = 50.08 and mode (Mo) = 41.89. Data distribution is poured into the frequency distribution list with six classes with a minimum score of 30.98 and a maximum score of 81.45 so that the range of scores is 50.47 and the following results are obtained. Table .4. Frequency distribution of student achievement motivation scores. Faculty of Sport Science, Jakarta State University.

| Interval Class | Frec. Absolut (n) | Frec. Relatif (%) | Frec. Cumulatif (%) |
|---|---|---|---|
| 30,0 – 40,5 | 5 | 14,29 | 14,29 |
| 41,0 – 51,5 | 19 | 54,29 | 68,57 |
| 52,0 – 62,5 | 8 | 22,86 | 91,43 |
| 63,0 – 73,5 | 2 | 5,71 | 97,14 |
| 74,0 – 84,5 | 1 | 2,86 | 100,00 |
| Total | 35 | 100,00 | |

## CONCLUSION

Conclusions drawn based on research findings between the three independent variables, namely: explosive power swing arms, strength and balance of the body, and achievement motivation with the dependent variable namely: running speed of 60 meters. Based on data analysis and statistical calculations in the previous chapter, it can be concluded: The explosive power of the swing arm is positively correlated with 60 meters running speed. Strength and balance are positively correlated with 60 meters running speed. Achievement motivation has a positive correlation with running speed of 60 meters. The explosive power swing arms, strength and balance of the body and achievement motivation are positively correlated together with running speed of 60 meters.

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