



The Effect Arm Muscle Explosive Power and Self Confidence to Speed Of Service


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Abstract

This study is a small part of a large study, analysis of the path study aims to obtain information about the effects explosive power arm muscles and self confidence to speed of service. This study was conducted to the Tennis Club Padang athletes. The population number of 42 people, samples were taken by purposive sampling technique. Samples of this research are 30 male tennis athletes. The hypothesis testing explosive power arm muscles directly affect the speed of service 0.1592. Self Confident directly affect the speed of service 0.1211. Explosive power arm muscles directly affected to confidently 0.4303. The study concluded: 1) Explosive power arm muscles directly affect the Speed of service. Self Confident directly affect the Speed of service (2). Explosive power arm muscles directly affect to self-confidence (3).

Keywords: Explosive power arm muscles, Self Confidence and Speed of service

INTRODUCTION

Service What is expected by every tennis player is a service that is quite effective in an effort to produce numbers by falling the ball far from the reach of the opponent, so as to increase the number. The service performed is of course with a fairly strong shot, fast ball speed and leads to areas that are difficult to reach for the opponent, because a strong service shot and fast ball speed can have the effect of knocking out the opponent's mentality in the process of winning points.

Arm Muscles Explosive Power

Explosive power or explosive power is the ability to move which is very important to support the activities of every sport. Widiastuti "the ability of this power / explosive power will determine the result of good motion." Explosive power is the result of a combination of strength and speed. Tennis is a sport that relies on the ability of explosive power, namely, strong and sudden movements.

Explosive power (power) is one of the important biomotor components in tennis court. Tennis field requires explosive power, especially the explosive power of the arm muscles because

playing tennis requires explosive movements are the arm muscles.

The pursuit of good explosive power not only emphasizes the load (strength) but also on the speed shown in each activity such as jumping, hitting, throwing and explosive movements, therefore the ability to explode can only be achieved if it is given continuous training with continuous addition. continuously gradually.

Corbin "Explosive power is the ability to display or release power explosively or quickly". Explosive power can also be interpreted as the ability of a person's sports to overcome resistance with a high contraction rate. High contraction is the ability of strong and fast muscles to contract. The factors that affect the explosive power according to Irawadi: 1) muscle strength, 2) the speed of the associated muscle contraction (slow muscle fibers and fast muscle fibers), 3) the amount of load moved, 4) intra and extra muscle coordination, 5) muscle length at the time of contraction and 6) joint angle".

The factor that also affects the explosive power is the speed of muscle contraction, which is the type of white muscle fiber, then the speed of muscle contraction is also an important factor because the power is born when muscle strength is combined with speed.

In other words, the speed of movement is an indicator of the explosive power of the muscles. So to achieve the explosive power of the arm muscles with good extension movements, it takes the strength of the arm muscles that move the arm in extension combined with the speed, where the muscle that works to do the extension movement is the *Musculus Tricepbrachii*. *Musculus tricepbrachii*, originating in the tuberculum glenoidalis, the back side surface of the humeral head. Insertion into the olecranon and action of the forearm extension.

By knowing the dominant muscles in service, it will be possible to train them to improve their abilities. Exposure to the explosive power of the arm muscles above, it can be concluded that explosive power is the ability to direct the force quickly in a short time to provide the best momentum to the body or object in a fully explosive motion to achieve the desired goal.

Based on some of the opinions and explanations above, it can be concluded that the explosive power of the arm muscles is the ability of the arm muscles to direct force quickly in a short time to provide the most appropriate momentum for an object in a complete explosive movement in achieving the desired goal. Based on the conclusion from the understanding of the explosive power of the arm muscles, it is clear that the explosive power has an important function in carrying out the arm extension movement, in which the arm extension movement is the core movement in performing service. Apart from the power of the arm muscles, a psychological aspect that often affects athletes is the confidence factor.

Confidence

In the practice of sports psychology, often heard the phrase "If you can win a few games, self-confidence may come back again." Confidence is almost always regarded as something that happens in every athlete, not something that can be controlled. Victory or success in some races is considered the only real way to gain confidence. There is no doubt that winning and satisfying results have an impact on self-confidence, but don't ignore other strategies to pump up confidence when this feeling falls.

During a tennis match we often see players daring to hit or act decisively. His strokes were accurate, his movements were regular and well-coordinated, so he performed well and

convincingly during his play. However, many tennis players are able to hit the ball well during practice, but once they compete, the shots that were good are lost or invisible, and often make mistakes and eventually lose.

This situation is a picture of the player's confidence. Self-confidence is defined as a belief in the ability (ability) to complete the task. The higher confidence in a tennis player's abilities, usually the better his performance will be in competing. Trust To achieve maximum performance, athletes need to have self-confidence, because self-confidence has a significant correlation with improving athlete performance. In line with Zinnser who explained: "The peak performance is the direct correlation between high levels of self confidence and successful sporting performance".

This opinion is very reasonable because to achieve peak performance in sports there are many challenges and obstacles that come and go for the athlete. Then Lauster who emphasized: "Without self-confidence, many problems arise in a person.

Self-confidence is the main asset for an athlete to be able to progress, because the achievement of high achievements and breaking the athlete's own record must begin with believing that athletes can and can exceed the achievements they have ever achieved.

Weinberg and Gould explain: "Confidence as the belief that you can successfully perform desired behavior." The essence of self-confidence is the belief that athletes can display success according to the desired behavior.

Without having full self-confidence, athletes will not be able to achieve performance, because there is a mutual relationship between achievement motives and self-confidence. Self-concept can also be directed to generate confidence in themselves (self-confidence). Self-concept is a "process to lead to self-confidence and self-esteem self-esteem." Self-confidence can help a person to control himself in his life based on his abilities and believe that with his rational abilities he can do what he wants, plans and executes.

Cratty argues that athletes generally face tense situations more often than non-athletes, tension can cause anxiety and to overcome this requires confidence to be able to overcome the situation. Confidence creates a sense of security and this comes down to the attitude and behavior of the athlete, who appears calm, does not hesitate or hesitate, is not easily nervous and



assertive. Confidence is usually closely related to emotional security.

The more confident your trust in yourself, the more your emotional security will be. Self-perception is closely related to self-confidence. People who lack self-confidence usually perceive themselves to be inferior to their abilities, as a result they cannot achieve high achievement, then self-perception is also related to feelings of self-respect.

According to Syahrastani, self-confidence in sports is an attitude that is able to overcome all difficulties, changes, frustrations over failure, disturbances or emotional crises with full confidence in one's own abilities and confident that you can deal with all of these disturbances efficiently. If the confidence of a tennis athlete has grown, the athlete will give value (price) to the self-image that the athlete has felt.

Appreciation for his ability is based on his belief in his ability to complete certain tasks. Furthermore, this value or self-respect will reinforce the picture of physical and spiritual (mental) values that refer to the athlete himself. This has led to the growth of the athlete's self-concept in his capacity as a tennis athlete.

Confidence is a key element in achievement motivation. It is a major factor in the difference between high or low in achievement motivation. Thus, self-confidence is the driving force for a person to succeed and has a direct relationship with the peak performance of an athlete. Confidence also plays an important role in achieving optimal sports performance.

From the opinions of the experts above, what is meant by self-confidence in this study is formulated as follows, people's feelings of self-belief, ability to give self-esteem, ability to control themselves, ability to overcome situations or self-control, ability to realize self-esteem and ability to build images self in an effort to improve achievement.

If the athlete's self-confidence is good, the athlete in performing service techniques will be better and more efficient. Remember, serve requires concentration, confidence so that the body is not tense because the serve is the starting shot that determines whether or not the next step in the game is easy. Conversely, if an athlete lacks self-confidence, then the athlete in carrying out service techniques will not be maximal, feeling tense, service is out, involved at the net, is

not on target and is not powerful and even easily loses points.

Speed Of Service

Service has many types and ways of implementing it, and service is the first movement made in starting a tennis court game. . This is a stroke that is not affected by the opponent's stroke and the only stroke where the player has complete control over how the ball is hit. Meanwhile, according to Irawadi, service is a type of stroke in tennis which begins with bouncing the ball first before being hit. It can be concluded that service is the first movement made in a tennis court game which begins with bouncing the ball first before being hit and this stroke is a stroke that cannot be influenced by the opponent's stroke, as well as the only stroke where the player has full control of how the ball should be. beaten.

Initially service is only done to start the game, the ball is hit towards the target area with a stroke from below or a stroke from above which is considered correct. However, in 1912 an American tennis player, Maurice McLoughlon, showed how the serve can be a formidable weapon and inspired tennis players afterward to use it as the main attack stroke. As did the modern day tennis player John Isner exploding on a service shot, everyone in the crowd watched something dazzling happen. He delivered a service shot of almost 232 km per hour towards his opponent who was expecting a reaction fast enough to return the ball and effective service would be the key to victory. According to Brown "An effective serve is the key to victory.

The service speed that is meant here is an attempt to make a strong service shot, make the ball speed fast and control the direction of service in accordance with the objectives to be achieved, namely to make it difficult for the opponent to return the ball from service, lest the opponent guess and be able to know where The ball will fall in the service room, otherwise the server (who hits the service) must know how to make a service shot which makes it difficult for the service recipient to hit the ball again.

Psychologically, Serve should be seen as a means of making opponents play defensively. Hard service with very high speed and good direction has 75% of the number if it can do it regularly or is often referred to as "Ace", ie Serve that is so fast or forms such a sharp angle (or both), that the receiver cannot reach the ball. service that cannot be touched by the opponent's racket.

Arm muscle explosive power has a direct effect on speed of service

The explosive power in this study is a combination of strength and speed. Explosive power is one of the biomotor components which is very important in making various hard punches and fast. The power of the arm muscles is important in making a variety of strokes in tennis. The serve also requires the explosive power of the arm muscles can hit hard and targeted.

How much power explosive arm muscles a tennis athlete has, it will be able to determine how fast the ball speed after making a strong serviced stroke. When doing a service blow, the explosive power of the arm muscles will have an effect on creating the right momentum. The momentum referred to here is when the service movement is when the ball starts to be inflated, as soon as the racket is swung backwards then continued with a movement to reach the ball as high as possible to try to get the right impact momentum between the ball, racket and all muscle contractions.

This is where the momentum of the explosive power of the arm muscles is created, when the impact between the ball, racket and muscle contraction occurs simultaneously in the shortest possible time. To be able to do a strong service shot and produce a fast ball speed, a server is required to have the explosive power of the arm muscles.

A powerful and accurate service shot will be difficult in itself for the opponent in trying to touch and return the ball, because to be able to touch the ball at high speed a receiver must have a good reaction speed. This is where the advantage for an athlete who has good service shot strength. The service stroke can be used as a weapon to knock mentally and get points from your opponent.

Many Pro players who have good service strength always complete each set with the Tie Break process. The greater the explosive power of the arm muscles possessed by a tennis athlete, the greater the opportunity for the athlete to be able to produce maximum service strokes.

So in tennis, the explosive power of the arm muscles is needed in every stroke, one of which is the service shot, because both work together and are connected by the strength and speed of muscle contraction dynamically, explosively in a fast time so that the server can produce hits. good service. Thus it is assumed

that the explosive power of the arm muscles has a direct effect on the Speed of service.

Confidence has a direct effect on the strength of the service.

Building calm and confidence behind the baseline before doing service, can increase the likelihood that the service will be successful. Feelings of calm and steady self-confidence will have a positive effect on athletes, especially in keeping away from feelings of tension, anxiety and fear of failure. When self-confidence arises, a person will focus and become more relaxed in doing service.

Confidence is very important when doing service because it can make it easier for an athlete to get point by point from service hits. If the athlete's self-confidence is good, the athlete will do better in service. Conversely, if an athlete lacks self-confidence, then the athlete in performing service will not be maximal, involving at the net, not getting in and not having power and even easily losing points. Based on the information above, it is clear that high self-confidence will increase the success of athletes, especially when doing service. Thus, it is suspected that self-confidence has a direct effect on speed of service.

Arm muscle explosiveness has a direct effect on self-confidence

Service that has strength and accuracy will be an advantage in itself and difficulties for the opponent in trying to touch and return the ball, because to be able to touch the ball at high speed a receiver must have a good reaction speed When one has awareness of muscle explosive power.

The arm you have, indirectly it will build calm and confidence behind the line before serving, and it can increase the likelihood of a successful strong service lead. If an athlete already feels that he has good arm muscle explosive power, it can have a positive effect on him, namely extra confidence to be able to make a stronger service shot and be able to direct the fall of the ball as he wishes. Thus it can be assumed that the explosive power of the arm muscles has a direct effect on self-confidence.

METHOD

This study aims to determine and find scientifically accurate answers about whether or not there is a direct or indirect influence between the explosive power of the arm muscles and on self-confidence, and the explosive power of the



arm muscles and self-confidence on the service speed of tennis athletes.

Operationally and more specifically, this study aims to determine whether there is an influence and how much influence on:

1. Arm muscle explosive power (X1) has a direct effect on service speed (Y) in PTL tennis athletes, State University of Padang.
2. Self-confidence (X2) has a direct effect on service speed (Y) in PTL tennis athletes, State University of Padang.
3. Arm muscle explosive power (X1) has a direct effect on self-confidence (X2) in PTL tennis athletes, State University of Padang.

This research was conducted at the PTL UNP tennis court, Air Tawar Barat Village, Padang City, West Sumatra Province where the PTL UNP tennis club conducted training. The research time is divided into two stages, namely; the first phase of the research instrument trial in September 2019.

Population is a generalization area consisting of objects or subjects that have certain qualities and characteristics that are determined by the researcher for study and then draw conclusions. Meanwhile, Riduwan said that the population is an object or subject that is in an area and fulfills certain conditions related to research problems.

This definition implies that the population is the entire individual who will be the object of research. The population used in this study were all tennis athletes in Padang City, consisting of 42 athletes from juniors to seniors.

Sample

The sample is part of the population that has certain characteristics or conditions to be studied. Researchers have limitations in studying everything in the population due to limited funds, personnel and time, so researchers use the sampling technique using purposive sampling technique. Purposive sampling is a sampling technique with certain considerations. The sample of the research was the male and female athletes of PTL tennis in Padang City aged 15-21 years, totaling 30 people.

In order for the true value obtained as a result of the research so that it can be generalized to the existing population, it is necessary to observe various possibilities that may affect the results of the study, namely the

research sample must have the same characteristics, namely:

- a) The tennis athlete in the city of Padang is male
- b) Ages 15-21
- c) Can do a service blow and fill out a questionnaire confidently well
- d) Have a predefined training schedule, and train for more than 5 years
- e) All athletes studied have participated in various regional, national and international championships.

Data collection technique

In connection with the understanding of data collection techniques and the form of data to be collected, data collection techniques are an important step in research so that in this study techniques, tests and measurements are used.

Where to collect data, researchers use test and measurement techniques, the test is a measuring tool to obtain data or information. Data collection techniques using research instruments. The research instrument before being used to collect data must first be tested, in order to obtain validity and reliability. The data obtained in this study are the results of measuring the explosive power of the arm muscles, self-confidence and speed of service for tennis athletes.

Research Instruments

To collect research data used research instruments. The research instrument was pursued in several ways, namely (a) compiling variable indicators, (b) constructing instrument grids, (c) testing instruments, (d) testing the validity and reliability of the instruments.

Research instruments before being used to collect actual data, must first be tested in order to obtain validity and reliability. To get the validity and reliability of this instrument, it must be tested on several people who have characteristics or are identical to the population and research sample. Testing this instrument was carried out on 20 male tennis athletes in the city of Pariaman.

Instruments are tools that meet academic prerequisites so that they can be used to collect data. In the research field, the instrument is a data collection tool for research purposes. The research method used in this research is a quantitative approach, a survey method with

measurement and test techniques, while the analysis technique uses a path analysis approach, which is a technique for analyzing the cause and effect relationship that occurs in multiple regression if the independent variable affects the dependent variable simultaneously. live. Researchers have limitations in studying everything in the population due to limited funds, personnel and time, so researchers use the sampling technique using purposive sampling technique.

The instrument used in this research is StrengthArm muscle explosive power using the Throw Medicine Ball test, Confidence using a questionnaire and Speed of service using *Hewitt tennis achievement test*. The results of the validity of the confidence instrument showed that as many as 40 test items were declared valid and 5 test items were declared invalid with a reliability of 0.98. For the instrument of arm muscle explosive power used face validity instrument, namely the concept of research instruments that are standardized and structured. Meanwhile, Speed service is used *Hewitt tennis achievement test*.

RESULT AND DISCUSSION

Research result

The description of the data from the research results aims to provide an overview of the distribution of data distribution, both in the form of a measurement of the location of the frequency distribution. Prices are presented after being processed from raw data using descriptive statistical methods, namely the maximum value, minimum value, range, average, standard deviation and variance.

The summary of the results of statistical calculations is as follows:

Table 7. Summary of research results

Information	X2	X3	Y
Number of Samples (n)	30	30	30
amount	192	4950	1010
Maximum Value	7.5	189	40
Minimum Value	5	133	29
Range	2.5	56	11
Average (X)	6.4	165	33.67
Standard deviation (SD)	0.65	15.89	2.64
Variance (s ²)	0.43	252.62	6.99

Information :

X1: Explosive force of the arm muscles

X2: Confident

Y: Service speed

1. Speed of Service (Y)

Based on the research data regarding the speed of service (Y), the lowest score is 29, the highest score is 40, so that the range is obtained. From statistical calculations, the average value is obtained 33.67, the standard deviation (SD) of 2.64 and the variance of 6.99.

To provide an overview of the raw data service speed (Y), the frequency distribution can be arranged as follows: Of the 30 research samples, if the results of each respondent are compared with the average, it turns out that those who perform service speed (Y) above the average group are 4 people (13.3%), are below the average group of 10 people (33.3%), and 9 people (30.0%) were in the above average group.

The results of the research on the results of service speed (Y) can be displayed in the following histogram form:

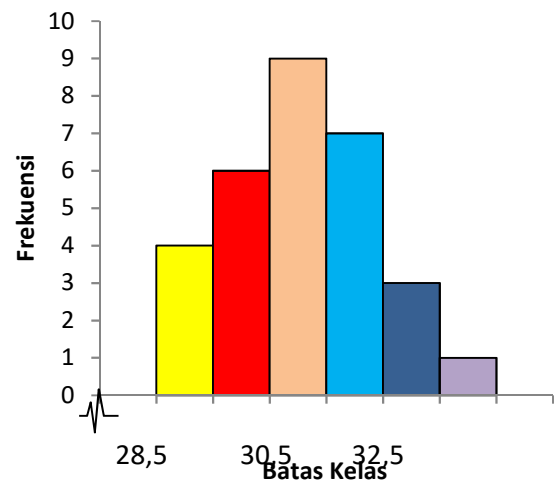


Figure 20. Histogram of service speed (Y)

2. Arm muscle explosive power (X1)

Based on the research data regarding the explosive power of the arm muscles (X2), the farthest throw is 7.5, the closest throw is 5.0, so the range is 2.5. From statistical calculations, it is obtained that the average value is 6.40, the standard deviation (SD) is 0.65 and the variance is 0.43.

To provide an overview of the raw data for arm muscle explosive power (X2), its frequency distribution can be arranged as follows. Of the 30 samples of the study, if the



results of each respondent were compared with the average, it turns out that those who get the fastest arm muscle explosive power (X2) in the group average of 14 people (46.7%), are below the group average as much as 7 people (23.3%), and 9 people (30.0%) were in the mean group.

The results of the research on the results of the arm muscle explosive power (X2) can be displayed in the following histogram form:

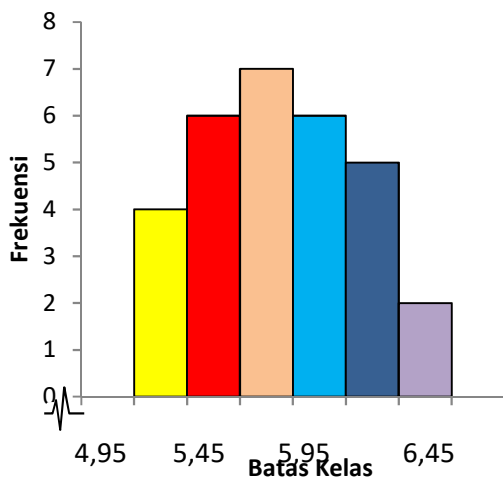


Figure 22. Histogram of arm muscle explosive power (X1)

3. Confidence (X2)

Based on the research data on self-confidence (X3), the lowest score was 133, the highest score was 189, so a range of 56 was obtained. From statistical calculations, it was obtained that the average value was 165, the standard deviation (SD) was 15.89 and the variance was 252.62.

Of the 30 research samples, if the results of each respondent are compared to the average, it turns out that those who get Confidence (X3) above the average group are 11 people (36.7%), are below the average group of 12 people (40.0%), and as many as 7 people (23.3%) were in the average group.

The results of research on the results of Confidence (X3) can be displayed in the form of the following histogram

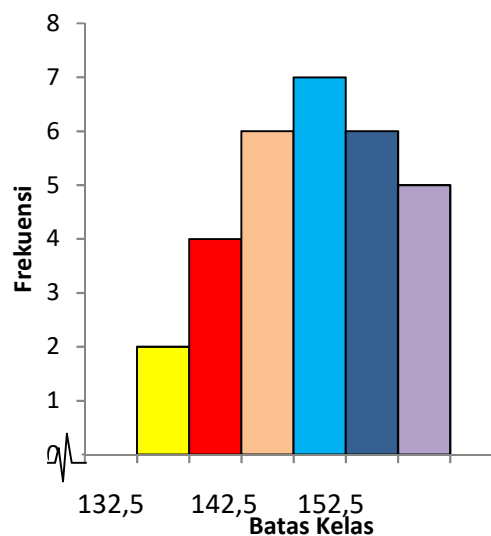


Figure 23. Confidence Histogram (X2)

Discussion

Based on the test results of all the hypotheses that have been carried out in the hypothesis testing section, it can be stated that:

First, the hypothesis is that there is a significant effect of arm muscle explosive power and self-confidence on Service speed. After testing the hypothesis together it is significant as well as when the individual test is also significant. Based on the results of individual hypothesis testing, it turns out that the explosive power of the arm muscles and self-confidence has a significant effect on PTL UNP tennis altet service speed. The structural equation of the path analysis results from the muscle explosive power of the arm and the confidence to the results Service speed are as follows: $Y = + 0.293\rho_1y + 0.348\rho_2y + 0.525 \epsilon_3$.

The influence of the variable variable explosive power of the arm muscles (X1) on Service speed (Y) has a direct effect of $0.2932x 100\% = 0.086$ or 8.6%. While the variable confidence (X2) Service speed (Y) has a direct effect of $0.3482 x 100\% = 0.121$ or 12.1%.

From the description above, it can be seen how much influence the variable explosive power of the arm muscles and confidence has on Service speed, for that there are other variables apart from the variable explosive power of the arm muscles and self-confidence which will influence the Service speed. Other variables that can affect Service speed among others, perform service punches effectively and efficiently in accordance with the following stages: body

position, contact points, flexibility, coordination movements and speed in achieving maximum service speed.

Second, the hypothesis is that there is a significant effect of the explosive power of the arm muscles on self-confidence after testing the hypothesis, it is proven that individually has a significant effect on self-confidence. tennis altet. The structural similarity of the path analysis results from self-confidence and arm muscle explosive power to self-confidence is $X^3 = 0.413\rho_{31} + 0.456\rho_{32} + 0.684\varepsilon_2$.

Explosive power of the arm muscles has a direct effect on self-confidence of $0.4562 \times 100\% = 0.208$ or 20.8%. From this description, it can be seen that the influence of the variable power of the arm muscles directly on self-confidence is the influence of other variables besides from the variable explosive power of the arm muscles. Other variables that can affect self-confidence include internal factors, including the athlete's nature, past experiences, goals and expectations. Meanwhile, external factors include available facilities, facilities and infrastructure, training programs and the environment.

From the results of the description above, we can see the results of research on the effect of arm muscle explosive power and self-confidence on Speed tennis altet service. These findings suggest, that to improve Service speed, a tennis athlete must have good arm muscle explosive power and confidence, of course, where the three of them have an influence in improving Speed tennis altet service.

CONCLUSION

Conclusions were drawn based on the research findings with exogenous variables consisting of arm muscle explosive power (X1) and self-confidence (X2). The endogenous variable consists of service strength (Y).

1. There is a positive influence between the explosive power of the arm muscles (X1) on the service speed (Y) of the PTL UNP tennis athletes.
2. There is a positive influence between self-confidence (X2) service speed (Y) on PTL UNP tennis athletes.
3. There is a positive influence between the explosive power of the arm muscles (X1) on self-confidence (X2) in PTL UNP athletes.

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