

# Analysis Of Down Passing Movement Using The Kinovea Application On Extracurricular Students Of State Junior High School 6 Percut Sei Tuan

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**Abstract.** The method combines quantitative methods and qualitative methods. This research method aims to aim to obtain data that is more comprehensive, valid, reliable, and objective. The combined method (mixed methods) combines quantitative and qualitative research with the number of athletes being 2 people as samples in this study. The data in this study used Kinovea software to make professional athletes as comparison athletes and to obtain motion analysis as an assessment of the correctness of motion. Based on the motion analysis carried out, the researcher makes assessment indicators to obtain data by making sections of the initial position, contact with the ball, and follow-up movements using five camera angles from the right, left, top, front and rear. The results of the kinovea software analysis for the prefix position are very good (15%), good (12%), moderate (4%) poor (4%), very poor (65%). the position of implementation in the categories is very good (37.5%), good (37.5%), moderate (6%), poor (6%), very poor (13%). the position of the category ending is very good (8%), good (23%), moderate (2%), less (2%), very less (65%). The results of the analysis using category prefix position experts are very good (16.66%), good (66.66%), poor (16.66%), very poor (65%). very good (5%), good (5%), poor (33%), very poor (57.%) categories. the position of the category ending is very good (0%), good (75%), less (25%), very less (0%).

**Keywords:** Analysis of Down Passing Motion, Volleyball

## 1 Introduction

According to Herdiansyah (2013; 230) analysis is an activity of thinking to break down a whole into components so that it can recognize the signs of components. From the description above, the authors conclude that analysis is an activity of seeing and investigating the movement

sequence of an object by comparing one treatment with another. In this case it is the treatment of passing under volleyball.

Volleyball is a sport played by children and adults, both women and men. The game of volleyball basically adheres to two principles, namely technique and psychology. The technical principle is that the player passes the ball with the waist up, back and forth into the air over the net so that he can get the ball away from the opponent's field as soon as possible to seek victory in a sporting manner. The psychological principle is to play happily and cooperate well (Suharno HP, 2004: 1-2).

According to Nuril Ahmadi (2007: 20) "in volleyball there are several basic techniques that must be mastered. The basic techniques in volleyball games consist of serving, passing under, passing over, blocking and smashing. Mastery of basic techniques is very important in order to play volleyball well. To master these basic techniques, it is necessary to practice basic techniques continuously and earnestly so that you can easily master volleyball techniques.

Regarding the expression regarding the importance of basic techniques in volleyball games, the researchers made repeated observations and observations on the extracurricular student athlete training sessions at SMPN 6 Percut Sei Tuan, especially libero since, the results of observations and observations of researchers found that in the process of athlete training extracurricular students SMPN 6 Percut Sei Tuan conducted exercises related to all the basic techniques of playing volleyball which consisted of serving, passing under, passing over, blocking, and smashing.

Kinovea is software that basically is needed by someone to measure something that cannot be seen by the foresight of the eye. This software is equipped with a camera. Kinovea can be used to slow down a movement and stop the movement, measuring length, angle of body segments, speed and acceleration of motion and time. This simulation can be done but not directly. The results of the recorded images can then be transferred to a computer, so that the recorded video images can be analyzed according to the wishes of the researcher.

Mechanics is a branch of science from the field of physics that studies the motion and changes in the shape of a material caused by mechanical disturbances called forces. Mechanics is the oldest of all branches of physics. Galileo is the founder of analysis and experimentation in the science of dynamics. Meanwhile Newton summarized the phenomena in dynamics in the laws of motion and gravity.

Biomechanics is a combination of the disciplines of applied mechanics and the sciences of biology and physiology. Biomechanics concerns the human body and almost all living things. In biomechanics the principles of mechanics are used in drafting, analyzing, designing and developing equipment and systems in biology and medicine. Movement biomechanics analysis can be carried out qualitatively and quantitatively (McGinnis, 2005:347). Quantitative analysis of motion performance or aspects is measured based on numbers or numbers, while qualitatively the appearance of movement is evaluated only based on the sight of the observer.

In terms of the biomechanics of the swinging movement of the arm during lower passing, it is more dominated by the strength of the arm muscles, while the muscles located at the base of the upper arm and forearm play an active role during the impact (meeting) between the proximal part of the arm and the ball where the arm is flexed with the help of the biceps brachii muscle. At the time of impact of the arm with the ball there is a momentum related to the speed and

mass of the object that is moving, if the arm when impacted by the ball moves quickly there will be an increase in momentum in the arm against the ball, so that in the downward passing movement, the momentum must be controlled by player. Because when passing down it releases a certain amount of momentum so that the ball can fly the right distance to arrive at the target.

In volleyball game, underhand passing is the simplest basic technique that should be perfectly mastered by volleyball players, but the treatment is not done haphazardly, there are movements that need to be adjusted and properly practiced so as to give perfect results.

In line with the above, an accurate explanation of the implementation of underpassing is needed. Information will be very accurate if it is obtained based on research. Analysis of the movement of the underpass will provide detailed information regarding the steps of each movement in the implementation of the underpass.

## **2 Method**

This type of research is mixed methods research, namely a method that combines quantitative methods and qualitative methods. This research method aims to aim to obtain data that is more comprehensive, valid, reliable, and objective. In the combined method (mixed methods) combines quantitative and qualitative research. Sometimes qualitative research is first followed by quantitative research, or vice versa. We first look at the characteristics of the data in the field. In the quantitative method, the nature of a single reality, classified, concrete, observable, measurable. Qualitative method: the nature of multiple reality, holistic, dynamic, construction results and understanding. Whereas in the combined method: the nature of multiple reality, can be classified, observed and the result of meaning construction.

## **3 Result**

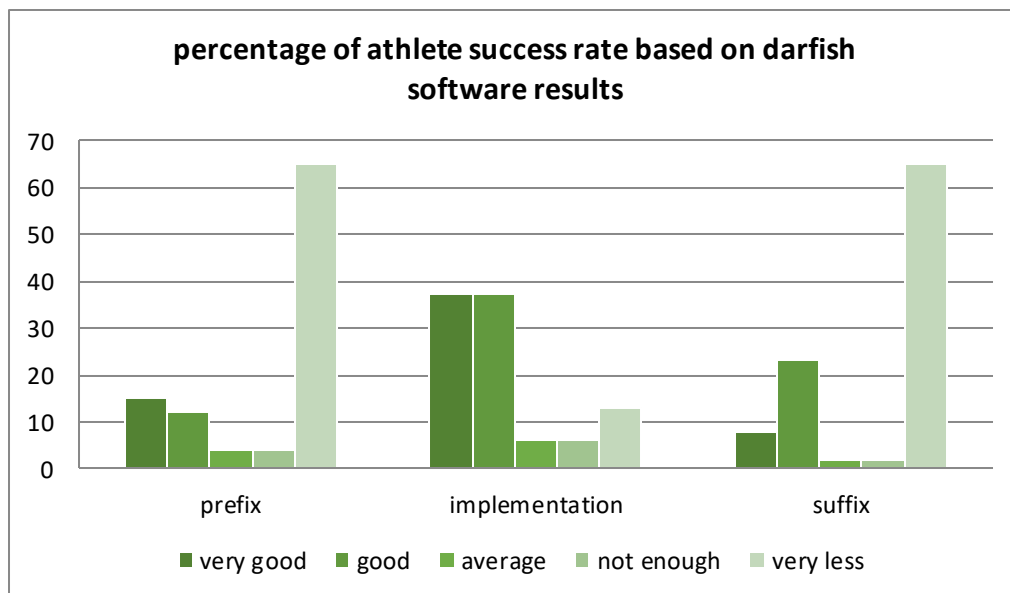
The conclusion from the expert assessment related to sample 2 can be concluded that sample 2 is already in the good category based on the expert's point of view regarding the stages carried out when carrying out underhand passing in volleyball games.

The conclusion results from all the data that has been analyzed using the Kinovea software, the researcher gets the results by making a percentage of the success rate in this study as follows: The percentage of success that has been analyzed using the Kinovea software at the initial position stage of the category is very good (15%), good (12%), moderate (4%) less (4%), very less (65%).

The conclusion from all the data that has been analyzed using the Kinovea software is that the results obtained by the researchers making the percentage of success rates in this study are as follows: The percentage of success that has been analyzed using the Kinovea software at the implementation stage of the category is very good (37.5%), good (37.5%), moderate (6%), less (6%), very less (13%).

The conclusion of all the data that has been analyzed using the Kinovea software is that the results obtained by the researcher making the percentage of success rates in this study are as follows: The percentage of success that has been analyzed using the Kinovea software at the

category ending position stage is very good (8%), good (23%) , moderate (2%), less (2%), very less (65%).

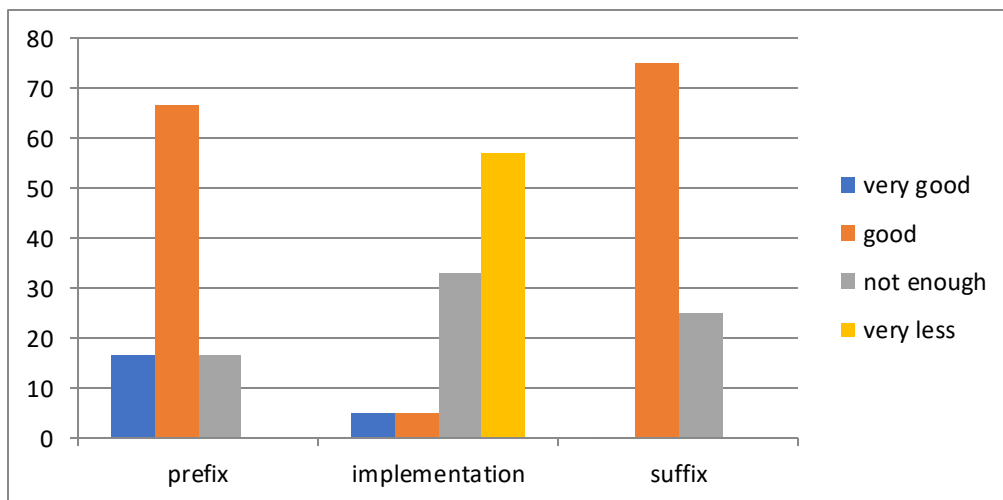


**Figure 1** Percentage of Athletes' Success Rate Based on the Results of the Kinovea Software

The conclusion from all the data that has been analyzed using experts, the researcher gets results by making a percentage of the success rate in this study as follows: The percentage of success that has been analyzed using experts at the prefix category position stage is very good (16.66%), good (66, 66%), less (16.66%), very less (65%).

The conclusion from all the data that has been analyzed using the Kinovea software is that the results obtained by the researcher making the percentage of success rates in this study are as follows: The percentage of success that has been analyzed using the Kinovea software at the implementation stage of the category is very good (5%), good (5%) , less (33%), very less (57,%).

The conclusion from all the data that has been analyzed using the Kinovea software is that the results obtained by the researcher making the percentage of success rates in this study are as follows: The percentage of success that has been analyzed using the Kinovea software at the stage of the category ending position is very good (0%), good (75%) , less (25%), very less (0%).



**Figure 2** Assessment Using Kinovea Software

Based on the data above, it can be concluded that the assessment using the Kinovea software obtained different results from the assessment carried out by experts, this was due to the limitations of experts using only sight. So the use of Kinovea software in assessing the correctness of motion is needed to cover the limitations of these experts.

#### 4 Conclusion

Based on the results of the research conducted and discussed in the previous chapter IV, it can be concluded as follows:

1. The results of the Kinovea software analysis show that the overall movement of the underpass technique based on the correctness of the motion is still in the very poor category.
2. The results of the expert assessment analysis show that the overall movement of the underpass technique based on the correctness of the movement is in the good category.

#### References

- [1] Barbara L. Viera, MS; Bonnie Jill Ferguson, MS. (1996). Bola Voli Tingkat Pemula. Jakarta: Dahara Prize Semarang
- [2] Dieter Beutelstahl. (1986). Belajar Bermain Bolavoli. Bandung: Pioner Jaya.
- [3] Irma Handayani. (2011). Peningkatan Kemampuan Pasing Bawah pada Atlet
- [4] McGinnis, Peter M. (2005). Biomechanics of Sport and Exercise (Second Edition)
- [5] Sugiyono. (2011). Metode Penelitian Kuantitatif, Kualitatif, dan R & D. Bandung: Alfabeta.