



# ISPHE 2018

INTERNATIONAL SEMINAR ON PUBLIC HEALTH AND EDUCATION

## PROCEEDINGS

Wellbeing Promotion and Technologies:  
Health, Physical Activity and Medicine

Semarang, May 8-9, 2018  
**The Wujil Resort and Conventions**  
Semarang Central Java, Indonesia



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**ISPHE 2018  
THE 4<sup>th</sup> INTERNATIONAL SEMINAR ON  
PUBLIC HEALTH AND EDUCATION  
“Wellbeing Promotion and Technologies: Health, Physical Activity  
and Medicine”**



**The Wujil Resort and Conventions,  
Semarang, May 8-9, 2018**

**FACULTY OF SPORTS SCIENCE  
UNIVERSITAS NEGERI SEMARANG**

**PROCEEDINGS OF ISPHE 2018 (THE 4<sup>th</sup> INTERNATIONAL SEMINAR ON PUBLIC HEALTH AND EDUCATION)**

**“Wellbeing Promotion and Technologies: Health, Physical Activity and Medicine”**

The Wujil Resort and Conventions, Semarang, May 8-9, 2018

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## PREFACE

The 4th International Seminar on Public Health Education (ISPHE 2018) was held on The Wujil Resorts and Conventions, Semarang, Indonesia on May 8-9 2018 by the Faculty of Sports Science Universitas Negeri Semarang. The 328 scientific participants, 163 of whom were students, had many fruitful discussions and exchanges that contributed to the success of the conference. The 251 abstracts including poster session that were presented on the first two days formed the heart of the conference and provided ample opportunity for discussion. The abstracts were split almost equally between the four main conference areas, i.e.; Interdisciplinary Health and Medicine, Physiology, Kinesiology and Psychology of Wellness, Public Health Policies and Practices, and Health Promotion and Physical Education.

Of the total number of presented abstracts, 16 of these are included in this proceedings volume. Other publication options are 3 respectable scientific journals and one national proceedings. The review procedure was thoroughly done by two blind reviewers have reviewed each paper from the participant. There were 4 plenary lectures covering the different areas of the conference: Prof. Chia-Hua Kuo. Ph.D. (Dean of Research and Development University of Taipei, Taiwan) talked about the latest research on nutrition and food metabolism, Dr. Toru Okuwaki (Japan Institute of Sports Sciences) for sports development in Japan, Dr. Mahenderan Appukutty (Head of Postgraduate Studies UiTM, Malaysia) for nutritional science of early childhood and last are Dr. Sugeng Eko Irianto (WHO Representative of the Republic of Indonesia) and Prof. Dr. dr. Oktia Woro Kasmini Handayani, M.Kes (Universitas Negeri Semarang, Indonesia) on health and nutrition status in Indonesia.

Generous support for the conference was provided by the Indonesian Public Health Association (IAKMI) and some prominent Indonesia universities in health education and sport (Malang State University, Gorontalo State University, and Manado State University). The next ISPHE will take place in Semarang in 2020, and the ones after that will be in Malang in 2022 and Gorontalo in 2024. Given the rapidity with which science is advancing in all of the areas covered by ISPHE, we expect that these future ISPHE conferences will be as stimulating as this most recent one was, as indicated by the contributions presented in this proceedings volume.

Semarang, May 9, 2018  
Chairperson,  
Rudatin Windraswara, M.Sc

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# Physical and Performance Condition of Field Hockey Athlete in East Java

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**Abstract-**The purpose of this study is to analyze the results of hockey long term development program for athlete in East Java. The method used is the CIPP evaluation model (context, input, process, and product). The subjects were male athletes from 5 regional members of the provincial hockey board in East Java. The results showed that the physical condition of the vital capacity (Vo2max) aspect is in the poor category, the speed aspect is in the average category, and the speed endurance aspect is in the poor category. On the technical side, it showed that on the aspect of dribble speed is in average category, agility dribble aspect is in average category, and for shoot accuracy aspect is in poor category. The conclusion of the research result is that the coaching product achievement at the level of physical condition is still lacking, and on the basic technique of playing hockey is adequate. The suggestion of the conclusion is that the coach needs to improve their competence in order to perform athlete recruitment, compile and run an exercise program, as well as promote and degrade. It also, the need to make the try out program and competitions for athletes.

**Keyword-** *physical, performance, skills, hockey*

## INTRODUCTION

The Long Term Athlete Development Program (LTAD) is a gradual training model ranging from sports literacy to compete for winning [5]. Hockey is an invasive sport played by two opposing teams of 11 players using sticks and balls to score against goal [12]. One indicator of achievement for athletes is the level of physical condition and good skills [2]. As a sport game, hockey requires an excellent level of physical condition [3]. Hockey as an intermittent sport is performed with high-intensity physical

performance either when controlling the ball or not [15]. These physical conditions include strength, agility, and aerobic fitness [11], particularly in endurance [18] as well as technical skills [1].

The achievement of Hockey East Java Province at the national level in the last 17 years (2000-2017) is not good. They have never been ranked in the top three nationally. Such facts require an analysis of the physical condition and technical skills of the athlete. Therefore, this study was conducted to analyze the profile of physical condition and skill of hockey athletes from area in East Java Province.

The purpose of this study is to analyze the results of long-term athlete development program in East Java. Especially on the aspects of physical condition and playing skills of hockey athletes. With the analysis results both are expected and the coach can determine the correct program to improve the achievement at the national level.

## MATERIALS AND METHODS

In this study used qualitative methods to explore the meaning of a fact that occurred [8]. Subjects were male and female athletes of 71 people from five cities with the top three in the previous provincial championship (Porprov). The five cities are Surabaya, Sidoarjo, Tulungagung, Banyuwangi, and Gresik. The data collected are athlete aerobic capacity (VO2Max), speed endurance, and speed for physical aspects [19]. Data on hockey playing skills are speed dribbling, dribbling agility, and shooting accuracy [13, 14]. The research instrument used is field test. Data were analyzed using flow models from Miles and Huberman.

**RESULTS AND DISCUSSION**

The results of research for aspects of physical conditions are presented in the following figure.

The data from figure 1 shows that all male athletes (100%) had poor VO2max result. The data shows that none of the athletes have a good VO2max. This is certainly very unfortunate because aerobic vital capacity is very important in the game hockey.

The data from figure 2 shows that all female athletes (100%) have poor VO2max result. As a result of male athletes, it also shows that the female VO2max athlete's results are still weak.

Male Athletes's Lung Capacity Test Results (VO2max)

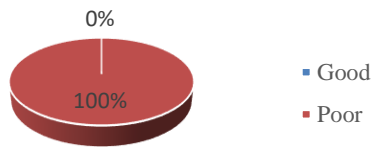


Fig. 1. VO2max result for male athlete

Female Athletes's Lung Capacity Test Results (VO2max)

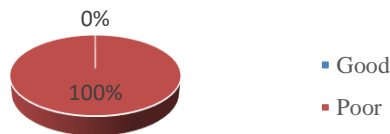


Fig. 2. VO2max result for female athlete

Results of Male Athletes's Speed Tests

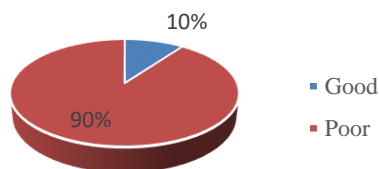


Fig. 3. Speed test result for male athlete

Results of Female Athletes's Speed Tests

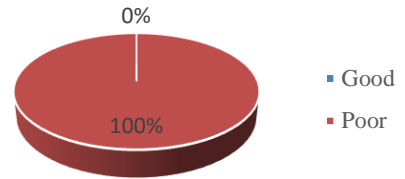


Figure 4. Speed test result for female athlete

Results of Male Athletes's Speed Endurance Test

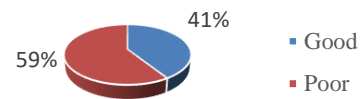


Fig. 5. Speed endurance test result for male athlete

Results of Female Athletes's Speed Endurance Test

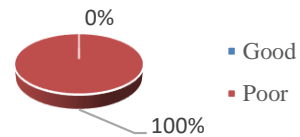


Fig. 6. Speed endurance tests result for female athlete

Speed Dribble Test Results in Male Athletes

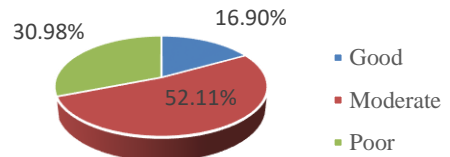


Fig. 7. Speed dribble test result for male athlete

Figure 3 shows that 90% of athletes have poor speed and 10% have good speed.

Figure 4 shows that all female athletes (100%) have poor speed levels.

Figure 5 shows that 59% of male athletes have poor endurance speeds and only 41 percent have good endurance speeds.

Figure 6 shows that all female athletes (100%) have poor endurance speed levels.



Figure 7 shows 30.98% of athletes have a category of poor speed dribble, 52.11% of athletes have average categories, and 16.90% of athletes have a good category.

Figure 8 shows 31.37% of female athletes have speed dribbles in the poor category, 13.73% have average category, and 54.90% have good category.

Figure 9 shows that 23.94% of athletes have agility dribbles in the poor category, 59.15% have average category, and 16.9% have good category.

Figure 10 shows as many as 33.33% of female athletes have agility dribble level with poor category, 9.80% have average category, and 56.86% have good category.

Figure 11 shows that as many as 91.55% of athletes have shoot accuracy with poor category, 8.45% have average category, and none at all (0%) have good category.

Figure 12 shows that 96.10% of female athletes have accuracy shoot with poor category, 3.90% have average category, and none (0%) female athletes who have good category.

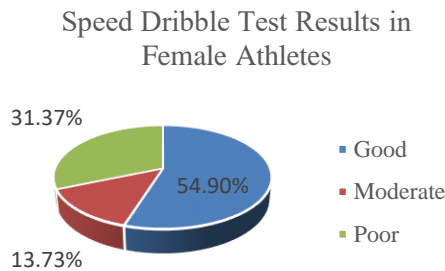


Fig. 8. Speed dribble test result for female athlete

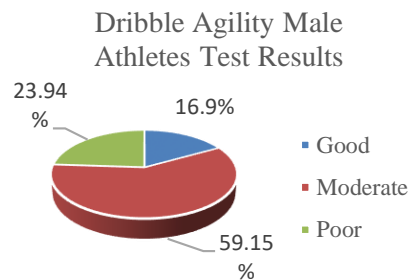


Fig. 9. Dribble Agility test result for male athlete

Dribble Agility Female Athletes Test Results

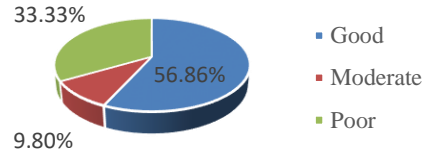


Fig. 10. Dribble Agility test for female athlete

The Results of Male Athletes's Shoot Accuracy Test

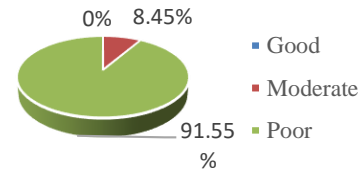


Fig. 11. Shoot accuracy test for male athlete

The Results of Female Athletes's Shoot Accuracy Test

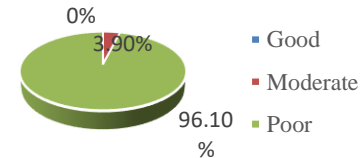


Fig. 12. Shoot accuracy test for female athlete

Research results for male athletes on the aspect of VO2max of all athletes is not good. On the aspect of speed more is poor than good. At speed endurance is almost balanced between good and poor. In the hockey playing skills for the reasonably average dribble aspect, the average agility dribble aspect is moderate, and for average accuracy shoot is poor.

Research results for female athletes on the aspect of VO2max all athletes are not good. At the speed of entirely poor and on the aspect of speed endurance is also nothing good. In hockey skills on the aspect of speed dribble the average female athlete has a good category. The average agility dribble aspect is good. As for the shoot accuracy aspect is mostly poor.

The results show that there are still many shortcomings possessed by male and female athletes both from the level of physical

condition and hockey playing skills in athletes in East Java.

From the results of the study it can be said that to improve VO<sub>2</sub>max in athletes can be given an exercise program using the training method of continuous training [6], HIIT method [4] and aerobic interval training method [17]. In the aspect of the speed can be trained by strengthening leg muscle exercises using the jump squat technique [16] and the various movements during each period of training [9].

As for increasing speed endurance coach can use dynamic running speed training model [10]. Train hockey skills consisting of speed dribble, agility dribble, and accuracy shoot can use the contextual inference training model [7].

#### CONCLUSION AND SUGGESTION

The results of research on male and female athletes from physical condition and hockey playing skills can be concluded still needed a lot of improvement if want to get optimal performance.

Suggestions for the city hockey organization as research subjects are improving the process of athlete recruitment, improving the quality of coach in order to create and run a good exercise program, to the evaluation of training results are needed. The city hockey organization should organize physical training course for coaches, involving universities to assist in the application of sports science and the creation of athletes training programs for high performance programs.

#### ACKNOWLEDGMENT

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# Shooting Movement Analysis in Futsal

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**Abstract**— Futsal is one of the sports that become a trend among the public. One of the basic techniques that players have to master is shooting. Good shooting resulted from all sequences of motion that work synergistically in order to create a good kick result (Anonymous, 2007). When player has good shooting ability, he can score goals easily. Therefore it is necessary to have an analysis related to the movement when doing shooting seen from the point of the segment of the player's body. From this research, it is hoped that it can give input and become knowledge in doing shooting movement. The purpose of this research is to know the angle of body segment in shooting which includes right knee flexion, left knee flexion, heeling torso, left hand elbow, right hand elbow, and ball velocity. This type of research is qualitative, subjects in this study amounted to 10 students. The data retrieval process is done once with twice the opportunity by using purposive sampling. The data of the research were analyzed by using Dartfish software program.

**Keywords**— *analysis, futsal, movement, shootin*

## Introduction

Futsal is the same as football but the difference is in the size of the field and the number of shoppers [7]. In playing futsal there are some basic techniques that must be mastered by players such as passing, dribbling, shooting and heading [2]. One of the basic techniques that become the main factor in playing futsal is shooting. In the game or futsal game one way

to score goals is to do the shooting [3]. The basic technique in playing futsal is very important to be mastered, especially compared to tactics and strategy. One of the basic techniques to be trained is shooting [10]. Good shooting results from all sequences of motion that work synergistically in order to create a good kick result. When a player has a good shooting ability, he can score goals with ease.

Shooting can be done well if players perform regular and programmed exercises but many factors affect the quality of shooting performed by someone. One of the factors that can affect the quality of one's shooting is a series of motion and body segments when shooting. The angle of the body segments greatly affects the outcome of the shooting. When the athlete is right in doing the series of motion then the shooting will be good, but when the player is less or not right in doing the series of motion then the shooting results were not good. When someone is shooting then there are several series of movements, this series of movements give force and strength to the foot in order to do shooting well. Every corner of the body can have an effect on the athlete's success in shooting. Than that required a research about the series of motion in doing the shooting.

One cause of poor athletes in shooting is not exactly the position of the body or the angle of the body segment during the shooting then with the issue required a motion analysis to determine the sequence of movement performed from everybody segments when doing shooting . There are two things that determine the quality of one's shooting is the accuracy and speed of the ball. But both things can be done well when a person has a good series, such as bending the legs, bending hands,

body tendencies, sloping body and shooting steps. From the above explanation, the researcher wanted to do a research about the angle of body segment of athlete when doing shooting. The results of this study are expected to provide recommendations on how to do shooting seen from the corner of the body segment.

#### materials and method

Type research this is research qualitative, revealed that a qualitative approach is a research approach that seeks to describe and understand a phenomenon in depth with research as the main instrument. The qualitative approach focuses on the general principles or patterns that underlie the manifestations of the units of symptoms present in human life [11]. Plot in research this that is ten UPGRIS students shooting futsal three times, then the results of the three trials will be analyzed. In the shooting of students documented in the form of video, then the video is included in the software dartfish for analysis. Then taken clips-clip pieces of images to be taken the results and then analyzed in accordance with the needs of researchers. Subject selection research using purposive sampling. Purposive sampling is technique taking sample data source with consideration certain [12]. Subjects in this study were ten students who have followed futsal training UPGRIS. Instruments and tools used in this research are, (a) Stationary Used to record the results of any shooting. (b) Meter used to measure tripod distance from the point of shooting. (c) Kun used to be a benchmark tripod position. (d) Lakban used to perform calibration. (e) Canon EOS 1100D and EOS 600D cameras are used to record movement during shooting . (f) Tripod used to put the camera so that the camera does not move, so the recording obtained will be better. (g)Laptop used after recording in can, to insert video and as a tool to perform analysis. (h) Dartfish is a software that can know the angle, distance and speed of the athlete in doing a move. Implementation and data collection to be conducted by researchers in accordance with the formulation of the problem. From the results of the study were taken in accordance with the problem namely, (a) Corner bend foot

pedestal before shooting. (b) The angle of the foot at the time to swing backward. (c) The angle of the foot at the time of the ball. (d) The angle of the body. (e) Right arm bending corner (f) Left arm bending angle. Some of the procedures for conducting research are as follows, (a) Students warm up before shooting. (b) Preparing the video recorder is camera. (c) Placing the video recorder in a designated place. Stages in the implementation of research, (a) Researchers give direction to athlete for shooting maximally. (b) Research subjects certainly understand the direction of the researcher. (c) Research subjects warmed up. (d) The subjects tested once. (e) The research subject occupies the prefix position to wait for the signal. (f) When the camera commands are ready, the subject is allowed to jump. (g) The subjects were given three times the cases empatan to do the shooting. (h) The recorder starts from the start until the end of the movement. (i) Recorded video then saved and imported to laptop

#### results and discussion

Based on the results of research conducted to determine the angle of the body at the time of shooting in the sport futsal average of the sample do bend the left foot is  $143.2^{\circ}$ , bending the left foot is taken when the sample put his left foot beside the ball as the foot pedestal, this is done to find out what is the degree of angle of the foot that becomes the pedestal at the time will do the shooting , whether there is a significant relationship to the ball speed results when shooting . Bend the right foot averaging  $93.1^{\circ}$ , this angle is taken when the right foot preparing before the shooting , the goal is to take this angle to see how many degrees of bending is done so that affect the result kicks. The average body bent  $83.9^{\circ}$ , to get a good kick, there needs to be coordination between the entire set of moves when shooting , many top european players like Lionel Messi, Cristiano Ronaldo and other star players when doing the shooting must do the body tendency towards the opposite from the foot that became a force for shooting, for example Lionel Messi who uses the left foot when doing shooting then

the body of Lionel Messi will be leaning or tilting towards the right of his body this can give effect to the kick results, it is necessary to know how the angle of the player's body when doing shooting . From the research conducted there is data after analysis using dartfish. This data can be a reference in doing the shooting and the athletes can understand the proper set of movements in the shooting. The result of statistical test of correlation indicates that there is a significant relationship between the speed of the ball data with the speed of the knee angle and forcing. The results also showed a large influence of the angular velocity of the knee ball influence 62 percent and force (force) by 68 percent and the rest is influenced by other factors (Ikhwan, 2014). Each player has a different body posture but we can do the right

movement analysis in doing the shooting, here are the data obtained from the research:

TABLE 1. Body posture

NO	NAME	LEFT KNEE FLEXION	RIGHT KNEE FLEXION	HEELING TORSO	ELBOW LEFT HAND	ELBOW RIGHT HAND	BALL VELOCITY
1	ABD	139.5°	99.5°	94.6°	68.7°	37.7°	13.60 m/s
2	AFI	141.5°	97.0°	84.8°	49.3°	22.0°	14.80 m/s
3	AUN	137.0°	90.7°	79.7°	25.7°	15.9°	16.90 m/s
4	DAY	134.8°	75.5°	60.1°	97.6°	42.2°	22.20 m/s
5	KOL	140.7°	79.3°	61.3°	72.9°	22.7°	20.00 m/s
6	NOP	158.0°	102.8°	99.9°	77.9°	36.9°	11.10 m/s
7	RIZ	149.8°	104.0°	101.7°	65.0°	23.5°	13.30 m/s
8	WIN	139.8°	88.3°	76.1°	30.7°	19.7°	18.00 m/s
9	YAS	138.3°	92.4°	81.7°	63.4°	27.1°	15.70 m/s
10	NAR	152.3°	101.5°	99.3°	60.1°	21.3°	11.30 m/s

#### conclusion

From this research there are six series of motion that is analyzed that is, left knee flexion, right knee flexion, heeling torso, elbow left hand, and elbow right hand and ball velocity. The sample in this study was shooting using the right foot. There are two aspects that greatly affect the shooting result, the first is the bending of the right foot during the shooting can be seen on the DAY sample that produces the best ball speed compared to other samples, bend the right foot when pulling back to bend his legs up to 75.5 ° bending done by the DAY sample is smaller than by the other samples, if it is sorted ball speed generated by the bending of the foot performed by the sample then found the result that the smaller angle when the foot is pulled backwards can give a bigger force so that the leg swing can be more leverage, so when swinging the leg the swing distance of the foot will give speed to the ball . The second is the slope of the body when the athlete shooting the slope of the body can provide a force against the swing legs that will do the shooting, can be seen on the DAY samples that do the slope of the body is more skewed than other samples, DAY athletes to tilt the body at an angle of 60.1 ° , if we remember Roberto Carlos's spectacular free-kick in the 1997 Confederations Cup he did with a distance of 40 meters, he did so by abruptly sloping and sloping, and we can also remember David Beckham's

banana kick in a free kick very suppose body to the left when doing shooting. In doing the shooting athletes and coaches should perform movements in accordance with an effective series of motion for athletes not injured and can perform the movement properly.

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# Physical Fitness Evaluation in Mental Retardation Students at Sigi Biromaru Regency

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**Abstract**—Research is to find out the level of physical fitness students in mental retardation at Sigi Biromaru regency. The descriptive research method is used in this research with the Indonesian test of physical fitness (TKJI: Tes Kebugaran Jasmani Indonesia). The researcher took the whole of Students in mental retardation at Sigi Biromaru regency. The purposive sampling is the technique of this research and the number of samples amounted to 16 students. The result of this research by using a descriptive percentage calculation which description in the level of physical fitness as follows: in very good category is 0%, also in good category 0%, then average category are 43.75%, 50% in less category, and very less category is about 6.25%. In conclusion physical fitness of mental retardation learners showed that physical fitness of mental retardation learners in Sigi Biromaru regency is on the less category.

**Keywords**— *evaluation, physical fitness, mental retardation students.*

## I. INTRODUCTION

Mental retardation students expected special needs. Adaptive learning in physical education is specially designed according to the characteristics of disability and needs of the learners. Adaptive Physical education activities is improve the basic motion skills of learners at mental retardation school [2]. The aim of physical education is to develop the physical aspects of health, fitness, critical thinking skills, social skills, emotional stability, reasoning and moral action through

physical activity and sports activities. Physical education adaptive encourage the growth of physical, psychic development, motor skills, as well as to stimulate the brain to increase mental retardation children's knowledge and his thought.

Adaptive physical education has adapted to the conditions of the students in need of special so that it can apply to learners in mental retardation, mental retardation because the child has the same rights with learners other normal in acquiring an education and learning every level of education. Granting a motion learning opportunities against mental retardation through Adaptive physical education from an early age to keep and develop the physical condition and the environment is very important, because it will be useful for the development of the normal skills once an adult, as well as for mental development.

Mental retardation children experiencing cognitive function disorders caused due to IQ level of the child's mental retardation is very low. Low IQ can cause slow stimuli and acceptance. The delay in receiving the stimulus will take a long time to do a reaction or response to new situations, limitations in the mastery of the subject less able to consider social development influence something will activities included in the motiNon. Research conducted by Somantri [20] which showed that the level of physical fitness that had a huge mental



retardation children's mental abilities at the age of 2 years to 12 years less in the category was once a normal child while on the category less. Advanced in research conducted by Westendrop, M, et al. [26]. That children have mild mental retardation score significantly lower on almost all items of a specific motor skills, and also skills against the control object when compared with peers of non mental retardation.

Low levels of physical fitness and mental retardation children will have an impact on his health so vulnerable to diseases. To find out the level of success of an education can be known through the evaluation, as it was said Beltasar Tarigan (2000:67) "how far the goal was reached or until where the learning progress learners can be expressed and presented through measurement and evaluation". Sterdt et.al. , (2014) "results showed that physical fitness is a complex behavior and multi-dimensional is determined by many factors biological, psychological, socio-cultural and the environment.

#### A. Mental Retardation Children

The term mental retardation is often also referred to as mental retardation or mental inhibitions (*mentally handicap*). Yudi Child mental retardation globally is the child who has the intelligence of below average that occur when the period of growth and has Adaptive assessment of the barriers. According to Adam Pramono and Qari'ah Hamid [17] is a State of mental retardation lapses grew deladis pyrotechnics, while the growing swell of events itself is the most important process and essential on the child.

The American Association On Mental Deliciency (AAMD) in Mumpuniarti [15] says that the classification of mental retardation mental retardation is lightweight with 50-70 range IQ, mental retardation is being with an IQ ranging from 30 – 50 and heavy and very heavy mental retardationis IQ range < 30. Furthermore.

The ability of each child's own mental retardation varies, so there is a classification of mental retardation children's ability to distinguish itself. Based on the low level of high intelligence as measured by using a Wechsler Intelligence scale for Children

(WISC) and the Stanford Binet test in Smart, Aqila [19] mental retardation can be classified into four categories:

##### 1) *The lightweight Category*

On the category of lightweight, has an IQ of 50-55 to 70. Based on Binet test his IQ ability shows the number 68-52, while with the WISC test his IQ ability of 69-55. Typically, these children have difficulty in learning. He more often live than move to the next class.

##### 2) *The medium Category*

Usually has an IQ of 35-40 up to 50-55. According to Binet IQ test result is about 51-36, while 54-40 in WISC test. Often found in people with brain damage and other illnesses. There is a possibility of sufferers also experience nerve dysfunction that plagued the motor skill. In this type, sufferers can be detected at birth because at the time of its sufferers experience a delay in verbal and social skills.

##### 3) *The weight Category*

This category has an IQ of 20-25 to 35-45. According to Binet IQ test the result is 32-20, while according to WISC test the IQ is 39-25. Sufferers have a physical abnormality and control remote motor is limited.

##### 4) *The very weight Category*

In this category of sufferers have a very low IQ. According to the results of the IQ scale sufferers under 19, while according to WISC test the IQ below 24. Many sufferers who have physical disabilities and nerve damage.

The characteristics or traits of the child's mental retardation can be viewed in terms of:

##### a. *Physically*

The characteristics of the child's mental retardation in physically: 1) Almost the same as a normal child, 2) motor slow Maturity, 3) Coordination less motion, 4) mental retardation children's weight can be seen.

##### b. *Intellectual*

According to Somantri [21] that intelligence is a complex function that can be defined as the ability to learn the information and skills conform issues-a new life situation, learning from past experiences, abstract thinking,

creative, critically assess, avoid mistakes, overcome difficulties, and the ability to plan for the future. Intellectual Level is 1) Difficult to learn the academic stuff, mild mental retardation Children 2), most of their learning abilities up to the height of the normal child 12 years of age with an IQ between 50 – 70, 3) mental retardation children's ability of learning are the highest level of normal children aged 7, 8 years IQ between 30 – 50, 4) Children of their learning ability weight up to the normal child age 3-4 years, with an IQ of 30 down. Seen from the intellectual level of mental retardation makes children cannot be studied in accordance with the normal learning and in terms of abstract thinking.

*c. Social and Emotional*

Social characteristics and emotions, namely: 1) hang out with younger children, 2) reclusive, 3) easily influenced, 4) Less dynamic, 5) Less consideration) 6) lack of concentration, 7) easily influenced, 8) can't lead himself as well as others.

*B. Physical Fitness*

Physical fitness is the ability of a person to complete a physical tasks without experiencing fatigue which means as well as having the ability to do other work. Tarigan [24] "Physical Fitness is the ability to perform daily activities with passion and full consciousness, which is done without experiencing fatigue which means, as well as avoid the disease less motion so that can enjoy life with a good and unpretentious".

Physical fitness is a person who has a functional capabilities in job over and over again without causing fatigue means, they must be aware of the requirement to have physical fitness. Physical fitness criteria which have structural and functional nature such as: 1) Anatomical Fitness, 2) Physiological fitness.

II. MATERIAL AND METHODS

Based on the problems above this research can be classified in a descriptive research, because the process are systematic, factual, and accurate about the facts and the nature of the population or

specific areas with qualitative approach. The population in this research is the entire mental retardation learners in Sigi Biromaru regency. Samples taken in purposive sampling. The number of samples in the study is 16 learners mental retardation consists of 10 boys and 6 girls. The technique of data collection in this research is the use of physical fitness test (Tes Kebugaran Jasmani Indonesia). These kinds of tests, 40-meter Run, pull-up for 30 seconds, sit-up for 30 seconds, Vertical Jump, 600-meter run. Processing of data analysis in this study using a percentage test.

$$P = \frac{f}{n} \times 100 \%$$

P = percentage score

F = the frequency that is being sought after percentage

N = the number of individuals (Anas Sudijono, 2012:43)

III. RESULTS AND DISCUSSIONS

In the Rachiwong [18] study there was no change in stress level but changes in flexibility, strength of handling and vital capacity, in the Hatha Yoga Group (HYG) group after yoga treatment

Based on the analysis of physical fitness level survey description of mental retardation children in Sigi Biromaru regency, data results showed that in the category of very good is 0, then category good is 0, category evarage is 7, category less is 8, and category very less is 1 learner. It can be seen a test of presentation in the table 1.

TABLE 1. DESCRIPTION DATA RESULTS OF (TJKI TEST) IN SIGI BIROMARU REGENCY:

No.	The number of learners	%	Classification
1	-	-	Very Good
2	-	-	Good

3	7	43.75	Average
4	8	50	Less
5	1	6.25	Very Less

The results of such research are analyzed using descriptive percentage calculations that physical fitness level with the following description: located on the category good is 0%, category good is 0%, average category are 43.75%, 50% less category, and the category very less are 6.25%.

Based on the result of data analysis and physical fitness test data processing at elementary school extraordinary in Sigi Biromaru regency has obtained result that learners of tunagrahita have level of physical fitness show that in very good category 0 learners, good 0 learners, being 7 students, less 8 students, very less 1 learner. If analyzed by using percentage calculation with the result of the percentage of students who are in either 0% category, are in good category 0%, are in moderate category 43.75%, are in the category less 50%, and are in the category less once 6 , 25%. These results are in line with research on the evaluation of the physical fitness of the tunagrahita students in the Salatiga State Junior High School which shows that it is in the less category [5].

In general, children aged 10-12 years are very active so that affect the level of physical fitness to be high as well. However, this does not happen to the students in extraordinary primary school Sigi Biromaru extraordinary primary school because they have special characteristics different from children his age. Students of MR have difficulty adapting to the environment. Children in this group have low activity compared with children of his age, so the level of physical fitness is low. Along with research conducted by Ghosh and Datta [3] found Children with mental retardation are not accepted in the group except with fellow children mental retardation. This study explains that sports activities can improve functional children better. Other research suggests that physical activity in intellectually disabled individuals not only improves mental and physical health but also produces effects on social skills such as the capacity for self-control over their own

behavior, as well as acceptance of instruction from others and the ability to interact cooperatively [8]. Based on the above research it is said that physical activity can help mental retardation children to socialize.

Physical activity is generally only obtained during physical education and exercise education at school. Whereas the mental retardation learner requires special handling in the provision of motion activities that are compatible with their ability to maintain their body's fitness and physical fitness levels. Mental retardation children have less motion skills than normal children. According to Kocic (2017) modification of sports form for motion activities of mental retardation children needs to be done. this is to adjust the motion pattern of mental retardation child. Research Rachiwong [18], showed that the activity of yoga more berpengaruh to increase physical activity compared with the psychological condition of children Mental Retardation.

Physical condition has an important role in the life of mental retardation children, so it can be said that physical fitness is directly proportional to the welfare state of the child's life. A study showed that through physical activity can help students in improving cognition and motivation at the time of learning [1]. Along with research Zwierzchowska [9] a good level of fitness can help students achieve good movement skills. So that students can live like most people in general.

The result of the survey about the level of physical fitness of learners of tunagrahita showed that the level of physical fitness of learners of tunagrahita in elementary school extraordinary in district of Sigi Biromaru in less category. This has a negative impact on the lives of MR children. Rintala [16] suggests good physical health can affect the development of functional skills, thus helping students to live independently. In line with Gu and Chang [27] research, improving children's physical fitness can positively affect health-related quality of life.

The goal of sending a child to MR is not solely to master academic subjects such as math, science, and others. But more

emphasis on the ability of children to face daily life. One alternative option to help the child's MR through motion activity. Motion activity in MR children brings many advantages. Research shows that physical fitness in adults with ID helps to perform daily tasks and helps individuals in socializing [12].

Physical fitness levels not only help mental retardation children to live independently, but also help the child's cognitive development. Findings from Martínez-Vizcaino [25], There is a positive relationship between fitness and cognition. The better the level of fitness then the performance of cognition will be better. supported by other studies that stated that fitness level affects the students' learning achievement [13].

Children who have a good physical fitness to avoid insomnia fatigue, increase metabolism, intelligence, and health so it is necessary to prioritize the improvement of physical fitness is an outstanding primary school students so that they can follow the lesson properly, [24]. P De Miguel-Etayo, et al (2014) describes the relationship of physical fitness with a person's ability to perform physical activities that require aerobic capacity, long-term durability, strength or flexibility, which appear to be associated with heredity and the environment. Another advantage of physical activity in mental retardation children is as a means of socializing to the environment. The reality is in the field, mental retardation children get rejection from the environment. Children with special needs require intervention in developing social relationships. For that reason, the role of teachers is very important in facilitating children in improving their social [14]. Research Tucker et.al, (2018) the development of societal capacity through physical health education should involve the role of principals and teachers.

Adaptive physical education teachers have an important role in increasing the basic motion and health of children mental retardation through physical activity learners with modifying games that are easy to do and gives rise to a sense of pleased at students to do increase physical Fitness, [22]. In this study, Adaptive physical education teachers

are expected to design a learning models in accordance with the growth and development of mental retardation children in extraordinary primary school, [11].

In addition to a good level of fitness, other things that have a role in improving the quality of life of children with special needs are Patterns of upbringing. Riyahi et.al, [4] states that the role of mothers with rigorous education helps change in children compared to the pattern of foster father.

#### IV. CONCLUSION

The low fitness of learners tunagrahita in Sigi Biromaru district due to low physical activity resulting in low socialization capabilities and not optimal cognitive development.

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# The Effect of Kettlebell Training on Total Increase of Strength among Central Java PPLOP Weightlifting Athletes in 2017

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**Abstract**—The weightlifting really needs strength, strong bodies, and perfect techniques to improve its performance. The objective of the research is to know the effectiveness of kettlebell practice method to increase the total weight lifter at Central Java PPLOP. The research method used experiment with training program of kettlebell load, composed from maximal repetition (RM) 70% s.d 80% for 2 months. A total of 16 times of practice with 2 meetings per week with a sample of 10 Athletes. Data analysis using ANOVA with SPSS 16. The result of the data analysis showed that, snatch ability showed significant improvement, proved from t test result obtained  $t_{ct} = 7,154$  with value of  $sign = 0,000 < 0,05$ . Clean and jerk ability shows significant change, from t count = 6,692  $sign = 0,000 < 0,05$ . In total, there was a significant increase, from the value of t count = 8,581  $sign = 0,000 < 0,05$ . The results show short-term kettlebell training is effective in increasing strength. In conclusion, 8 weeks of kettlebell training led to an increase in total force strength in weightlifting.

**Keywords**—kettlebell, weightlifting

## INTRODUCTION

Weightlifting as a heavy sport group that is in need of strength in doing lifting weights. Weightlifting is an exercise that emphasizes the heavy burden and is a separate sport, where the athlete is competing to lift the most weight possible in his class, therefore this will determine whether he came out in the champions or not [3]. Weightlifting is also a sport that relies on the power to lift me out of the iron material. A relatively new form of training for athletic training is kettlebell training. Kettlebell training is believed to provide many of the same benefits as weight lifting.

However, research on kettlebell training is limited. Anecdotal reports about the benefits of using 1s kettlebell weight lifting involves ease of teaching, is less efficient than buying a whole weight set, and is less intimidating to use. Trainers may be interested in using to ttlebells; If space is limited, there is a shortage of funds for the Olympics or b tight beam, or to help athletes who never lifted weights to get

a foundation in the basics of similar movements related to the strength and power (squat, press, clean and jerk, snatch).

The results of another study suggest that short-term weightlifting and kettlebell training are effective in increasing strength and power [7]. Good method training causes change significant in any anthropometric action. In conclusion, 6 week weightlifting led to a significant increase.

Therefore, the purpose of this study was to see an increase in weightlifting exercise achievement using kettlebell, for 8 weeks.

## MATERIALS AND METHOD

This type of research uses experimental type. The research design used the *pretest-postes group design* . Variable in this research is exercise exercise using kettlebell. Population used in this research is PPLOP athletes weightlifting Central Java 2017 man . The sample used is total sampling . The sample of 9 boys is the sample that received treatment on kettlebell load. Data collection techniques using treatments or direct measurement treatment on the subject of the snatch and clean and jerk forces . The technique of data analysis using ANOVA was continued by determinant test using SPSS 16.

## RESULTS AND DISCUSSION

Based on the results of the pretest at the PPL O P Central Java weightlifting athletes held on 21-22 April 2017 which coincided with the regional level weightlifting championship in Semarang.

Once *preetest* is done on the athlete, additional training is provided for technical improvement using kettlebell. This exercise is given for less than 2 Months. Athletes are given kettlebell snatch and kettlebell clean with loads for men 34 kg. For variations of exercises with modifications to the increase of reps and sets. After 16 rehearsals, a final test with a force test is conducted in the final week of June 2017.

T-test is used to determine the improvement of athletes achievement during the training from April to June 2017. The results of data analysis showed a significant increase, as evidenced from the results of t test obtained  $t_{arithmet} = 7,154$  with the value of  $sign=0.000 < 0,05$ . Similarly, the ability clean & jerk showed a significant change, as evidenced from  $t = 6.692$  with a sign value =  $0,000 < 0,05$ . In totality, there is a significant increase, as evidenced from the value of  $t_{arithmet} = 8.581$  with the value of  $sign = 0.000 < 0,05$ .

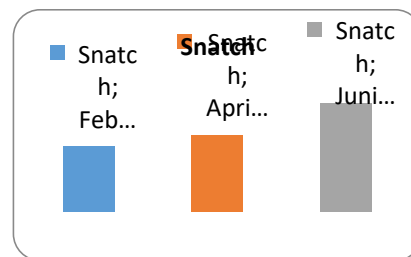


Fig 1. Snatch line diagram

PRETEST AND POSTTEST ACHIEVEMENT OF CENTRAL JAVA PLOP WEIGHTLIFTER

N O	NAM E	PREETEST MONTH APRIL			POSTTEST MONTHS JUNE		
		SNA TCH	C & J	TOTA L	SN AT CH	C & J	TOT AL
1	SN	74	90	164	77	94	171
2	IR	70	80	150	72	82	154
3	AR	57	67	124	60	70	130
4	FJ	73	90	163	75	90	165
5	AYR	75	95	170	80	100	180
6	IDA	40	45	85	42	48	90
7	AP	98	127	225	103	130	233
8	AK	65	90	155	70	92	162
9	AH	103	126	229	105	130	235
10	ANDI	120	147	267	122	150	272

The average increase of clean & jerk generation from February to April (*preetest*) increased 1,3 %, while the average increase of clean & jerk generation from April (*preetest*) to June (*posttest*) increased by 2.8%.

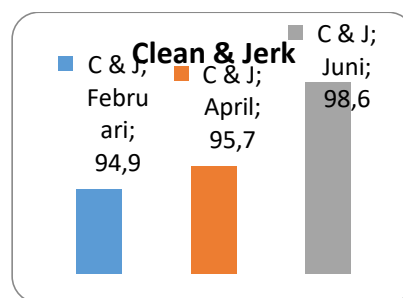


Fig 2. Diagram of Clean and Jerk Force Bar

The average increase in total force (*snatch and clean & jerk*) from February to April (*preetest*) increased 3,2 %, while the average increase in total force from April (*preetest*) to June (*posttest*) increased 10%.

T TEST RESULTS

	Paired Differences					T	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 SNATCH (April) - SNATCH (June)	3.100	1.370	.433	-4.080	-2.12	7.154	9	.000
Pair 2 C & J (April) - C & J (June)	2.900	1.370	.433	-3.880	-1.92	6.692	9	.000
Pair 3 Total (April) - Total (June)	6.000	2.211	.699	-7.582	-4.42	8.581	9	.000

The average increase of *snatch* force from February to April (*preetest*) increased by 0,84 %, while the increase of *snatch* force from April (*preetest*) to June (*posttest*) increased by 2.4%.

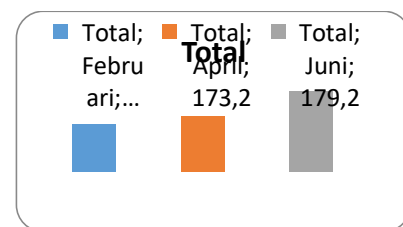


Fig 3. Total Force Bar Chart

Kettlebell exercises are used because they can be applied with various angles of movement in all directions, with a kettlebell snatch and clean exercise for weightlifting aimed at helping athletes train lifting weights always near the pivot point. Scienceally, the load raised near the fulcrum will be lighter than the far pivot point.

A key finding of the study was that short-term kettlebell training (16 training sessions over 8 weeks) significantly improved the snatch force ( 2.4%). And clean and jerk 2.8% To our knowledge, this is the first study documenting the effectiveness of kettlebell training in weightlifting performance during lower body force movements. This can be explained by the movement of a strong ankle, knee, and hip jerk that is done as quickly as possible when doing various kettlebell exercises.

Biomechanics There are 2 main styles of kettlebell swing: dominant swing of hips and dominant squatting

swings. In a previous review comparing these two types of swings, hyp-dominant kettlebell swings are an excellent alternative to traditional hamstring exercises such as deadlift Romanian [5]. They proposed that the hyp-dominant kettlebell swing was particularly useful for power and conduction coaches because they placed greater emphasis on rapid eccentric control on the hamstrings in a shorter stretching cycle movement of the hamstrings at more specific exercise speeds. Unfortunately, where re-researchers have investigated the biomechanics of kettlebell swings, they do not necessarily determine exactly whether 1 type of swing recommended for subject or commonly used. Does kettlebell swing involve maximal gluteus maximus activity at hip flexion level where maximal gluteus maximus EMG is uncertain. However, the findings of other study show that the peak is not deep hip flexion level high [6]. This can make kettlebell swing a complement to use in motion involving maximum hip extension torque at high-level hip flexions such as squats and deadlifts. It is also noted that the addition of kime on the swing mostly affects the abdominal muscles, with the greatest activation increase occurring in the external oblique [6].

As for the total force there is a 10% increase this shows that kettlebell exercise can increase the strength of both upper body and lower body. Comparing weight training and kettlebell results from this study indicate that short-term weightlifting and kettlebell training are effective in increasing strength and power [7]. Kettlebell has become one of the tools used to improve strength and conditioning. Although some studies use higher loads and training volumes are reported strength improvement. Given inconsistent findings at between a small number of research studies conducted on Kettlebell's training, more research is needed that investigates the success of Kettlebell's training to improve fitness, strength, strength.

The most important finding of this study is the need for programmed load training using the proven kettlebell

method by providing an increase of 10% in total snatch and clean and jerk forces. Benefits in this study are (1) enter and information for trainers that weight training with kettlebell is helpful in improving the total force *snatch and clean and jerk*. (2) development of sports science, especially experimental research in load burden field. The implication of this research is expected to implement weight training program with kettlebell tool in *total snatch and clean and jerk force*. for coaches at sports clubs so that it has an advanced impact on weightlifting

## CONCLUSION

Weight training with kettlebell is effective in increasing the total snatch and clean and jerk forces.

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# The Influence of Learning Model Play to Increase Vo2Max

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**Abstract**—This study is aimed to determine the level of influence of teaching models with the approach to play against the increase in VO<sub>2</sub>max In the students of SMA Negeri 10 Samarinda. The method used in this research is quantitative by using experimental approach. This study used the method of experiment. In this study using the design of One Group Pretest-Posttest Design. In this design there is no control group, and the subject is not placed randomly. The advantages of this design is to do pretest and posttest so it can be known with certainty difference result due to treatment given. The results showed that teaching method with play approach can be obtained t value of observation = 9.253 > t-table 1,70 (P 0.000 <  $\alpha$  0,05), meaning there is influence of pretest and posttest treatment. Can be proven with an average value of 22.90: 25.13 with the result showing an increase in the average value of 2.23 after treatment.

**Keywords**—play model, vo2max

TABLE I. INTRODUCTION

The increasingly complex and complex complexity of the future seems to require education to be able to prepare students for the real world [1]. At school, students need to be made aware of the expectations they endure, the challenges they face and the abilities they need to master.

Physical education teachers have a good position in providing opportunities for students to participate in activities that provide satisfaction for the process of fulfilling basic sociological needs. In the process of learning pemas, students meet sociological needs by becoming a member of the group, for example given the opportunity to play in a sports team. Students will gain recognition, friendship, approval and appreciation from their teammates and will benefit students' development in their cognitive, affective and psychomotor aspects.

The play approach is based on the essential human nature of play. This characteristic is a facet of human beings as social beings, because involvement in the game demands the willingness to obey and live the rules and sanctions that essentially come from the culture of society. Some experts say that play is a direct impulse from within each individual, which for children is a job, while for adults it is more perceived as a passion [2]. Play is an activity done with pleasure [3].

Physical Education teachers should take advantage of the school's active days, in an effort to improve the level of motor skills and physical activity of students by applying sports in the model of play [4]. The model of play is able to facilitate teachers in applying locomotor base motion training lessons as well as improving VO<sub>2</sub>MAX.

Playing in addition to having an educative function, it is also a fun reactions to children because children can channel their tension in a more positive way [5]. Play models can improve students' learning skills and motivation because students can follow the learning process enthusiastically and feel happy [6]. In addition play is used as a medium to improve certain skills and abilities in children [7].

The play approach is mostly done by teachers because the community has done it regularly [11]. It is called informal socialization in the form of a game. Broadly speaking the steps taken in applying the play approach are as follows: (a) Setting targets to be achieved. (b) Determine the type of game as a student playing activity. (c) Describes the ways and rules of play and always keeps students away from the forms of competitive activity that spawns the winners and the losers. For example the teacher gives the task to do the jump rope game. Strictly the way and the rules are disclosed and the grouping of students is made according to their level of ability, so the skill level is not too gigantic which affects the feeling of the inferiority of

the students with the lowest ability and the superior feeling of self in the highest student of the leap result.

Increased  $VO_{2MAX}$  is the most important part of overall educational goals. The success of national development is largely determined by the quality of humans, and it is almost certain that one factor of development actors is those who have good  $VO_{2MAX}$  skills. Various ways and efforts taken to achieve these ideals, ranging from socializing sports and sports communities, and optimize the performance of sports teachers in all levels of education and sports coaches in the community.

$VO_{2MAX}$ 's ability level is the maximum amount of oxygen in milliliters, which can be used in one minute per kg of body weight or oxygen volume in the body that can be used while working hard. Students with low  $VO_{2MAX}$  ability are almost certain that their ability to absorb the lessons maximally is also low, which ultimately affects low learning achievement [12].

$VO_{2MAX}$  is the ability of the lungs, heart and blood vessels to inhale and deliver a number of oxygen and nutrients to the cells to meet the needs of physical activity lasting more than three minutes or in a long time. When a person breathes, some of the oxygen contained by the air around us is absorbed by the lungs and transported through the blood to the heart. Heart rate is a simple and informative enough parameter to measure the height of one's body activity. A normal person's heart rate, in the sense of not having an abnormality, averages between 60-80 times per minute. While the lowest level of a person's heart rate, taken on a supine stretched calmly. It turns out there is a linear relationship between the rise in heart rate per minute with the use of aptake oxygen or  $Vo_{2max}$  in the body [13].

The cardiovascular system of the body is the system that carries oxygen to the active cells which are the main factors determining the ability of  $VO_{2MAX}$  [14]. A study showed a weak association between the body's ability to utilize available oxygen and increased  $VO_{2MAX}$  [15].

To know the ability of  $VO_{2MAX}$  researchers using Bleep test. This form of test has several advantages including  $VO_{2MAX}$  data more accurate than other field tests and can be implemented in bulk. The main principle is the availability of a relatively small field (about 20 meters long).

The implementation of the "bleep" test uses the rhythm, initially very slowly and will progressively faster then increasing the harder effort to follow the predetermined rhythm. If "testi (perpetrator) can not follow the rhythm (pace) then testi is considered to be incapable, and recorded effort is a picture of  $VO_{2MAX}$  it has" [16].

$VO_{2MAX}$  's upgrading efforts through sports are part of a flagship program in many countries including Indonesia. The government has realized that by improving the quality of society through increasing the level of ability of  $VO_{2MAX}$ , including the students, it is expected later in life this nation will become a nation that has high productivity and will be parallel to other nations in the world.

From the above description it is known that the learning that developed so far is a learning model play approach that is taught by physical education teacher physical and health at high school level. In this research, the researcher wanted to know whether the implementation of the model can influence the improvement of  $VO_{2MAX}$  ability

of students in East Kalimantan especially in SMA N 10 Samarinda by using bleep test.

TABLE II. MATERIALS AND METHOD

A. *Procedures*

The method used in this research is quantitative by using experimental approach. This research used is the method of experiment. In this study using the design of one group retest-posttest design used 30 subject. In this design there is no control group, and the subject is not placed randomly. The advantages of this design is to do pretest and posttest so it can be known with certainty difference result due to treatment given. The research design is as follows:

RESEARCH DESIGN

TI	X	T2
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Information :

T1: Pretest =  $VO_{2MAX}$

X: Treatment = Teaching Model Play

T2: Posttest =  $VO_{2MAX}$

Data collection techniques in this study conducted through learning are:

1. Learning is given 3 times a week.
2. Duration of learning every 90 minutes for meeting
3. 16 meetings.

SCHEDULE OF LEARNING

Day	Time	Group	Statement
Tuesday	07.15 – 08.45	Play	Playing
Thursday	07.15 – 08.45	Play	Field SMA
Saturday	07.15 – 08.45	Play	Negeri 10 Samarinda

B. *Research Instrument*

1) Aim

Measures maximum heart and lung function with predicted  $VO_{2max}$ .

2) Equipment tools

1. Test place - space inside the building or outside field. Minimum length of 25 meters.
2. Create two parallel lines with a distance of 20 meters, with space / free field 2.5 meters from continuation of running direction.
3. Each testi requires a run path of 90 cm, the number of testi adjusted width of space / field.
4. A time observer, a whistle holder, and a supervisor and resultant, a table modifying the implementation of a Bleep test with time in minutes and seconds.
5. Whistles, checklists, and ball points.

3) Implementation

1. Bleep test is done by running a distance of 20 meters back and forth (bb) begins with a slow run, gradually increasingly faster, so the testi is not able to follow the rhythm of running time, it means the maximum ability at the level and back and forth (bb) the.
2. Each time level is 1 (one) minute.

3. At level 1 the distance of 20 meters taken within 8.6 seconds of exercise 7 times back and forth.
4. At level 2.3 20 meters distance taken within 7.5 seconds in 8 times back and forth.
5. Level 4.5 20 meters distance taken within 6.7 seconds with 9 cal back and forth and so on.
6. At the same time the distance of 20 meters there is whistle 1 time and simultaneously the last alternating time every level there is a whistle 2 times.
7. For Star testi with star stand both legs behind the start / limit line. With the signal "siaap - Ya" testi ran by the rhythm of time to the boundary line so that 1 foot past the boundary line.
8. If before the whistle / tap testi has exceeded the boundary line, for turning must wait for the whistle / tap. Conversely, if there has been a whistle / testie tap not to the boundary line, the testi should accelerate the run to cross the boundary line and immediately re-run in the opposite direction.
9. If 2 consecutive testies are not able to follow the rhythm of running time means maximum ability at the level and the countercheck.

10. Suppose that at level 10 and reverse to 8; the results recorded 10.8 seen in the table, VO<sub>2</sub>max
11. After the testi is not able to follow the rhythm of running time, testi may continue to stop, but continue to run slowly for 3 - 5 minutes for cooling down.

The reference in making the length of the track is by calculating the time between two "bleep" sounds on the cassette (used as a benchmark). When the sound between two "bleep" for 55 seconds then the length of the field to the track is 18 333 meters. Meanwhile, when the sound between two "bleep" for 60 seconds then the length of the field that becomes the track is 20 meters. Calculate the sound between two "bleep" and create an appropriate field [17].

TABLE III. RESULTS AND DISCUSSION

#### A. Descriptive Data

In the description of this data discusses the average, standard deviation, maximum and minimum values and will be tested the requirements of normality with Shapiro-Wilk Test test at a significant level of 95%. Shapiro-Wilk Test Result Test conducted, obtained results as attached.

SUMMARY OF DESCRIPTIVE ANALYSIS OF VO<sub>2</sub>MAX PRETEST AND POST TEST DATA WITH LERANING MODEL PLAY

No	GROUP	N	Mean		Min		Max		STD		Sum	
			Pre-test	Post-test	Pre-test	Post-test	Pre-test	Posttest	Pretest	Posttest	Pre-test	Post-test
1.	Learning model play	30	22.90	25.13	20.40	21.50	25.80	29.50	1.63	1.99	687.10	753.90

Based on the table, summarizes the results of the data description analysis of VO<sub>2</sub>MAX group play approach, group of command approach, and control group, as follows:

Group Before Treatment or pretest (preliminary test) VO<sub>2</sub>MAX data learning with play approach before treatment or pretest (early test) obtained VO<sub>2</sub>MAX with an average of 22.90, maximum 25.80 Minimum 20.40, standard deviation 1.63 Sum 687.10.

Group after Treatment or posttest (final test): VO<sub>2</sub>MAX data learning with play approach after treatment or posttest (final test) obtained Vo<sub>2</sub> Max with average 25,13, max 25,80, Minimal 20,40, standard deviation 1,99 Sum 753,90.

On the basis of these differences can be seen the increase in VO<sub>2</sub>MAX the average value of pretest or preliminary test before the treatment of two months to the final test or posttest with the play approach. The average value of early test Vo<sub>2</sub>max 22.90 increased by 25.13 there was an increase of 2.23.

To prove the increase of VO<sub>2</sub>MAX SMA Negeri 10 Samarinda is proved with an average value of 25.13: 22.90 with the result showing an increase in the average value of 0.45 after the posttest or final test. And also obtained t value of observation = 9.255 > t-table 1.70 (P 0.00 < α 0.05), means there is a significant difference between pretest and posttest.

#### B. Test Prerequisites and results of data analysis inferential

T-Test results were used to test the effect of a two-month play-approach.

SUMMARY OF T-TEST ANALYSIS OF SMA NEGERI 10 SAMARINDA

Variable	Mean	t <sub>observation</sub>	t <sub>table</sub>	P	α
Learning model play	2,23	9,255	1,70	0,00	0,05

#### C. Normality Test

Normality test is used to determine whether a normal data or not and to determine whether the data is normally distributed or not, then need to be tested by One Sample Kolmogorov Smirnov. The basis of this analysis is used in making a decision whether the data follows the normal distribution or not ie if the value of significance or probability is greater than 5% (0.05), then the data is normally distributed.

SUMMARY OF NORMALITY TEST

Data	Asym.Sig (2-tailed)	Sig	Decision
Pretest	0,981	0,05	Normal
Posttest	0,945	0,05	Normal

The results of the analysis and explanation are necessary to obtain the corresponding theories that have been presented with the results of the research achieved. The results achieved in this study through statistical analysis as follows:

There is a significant influence using the teaching model with a play approach to the increase in  $VO_{2MAX}$ . According t-test data of Vo2 Max SMA Negeri 10 Samarinda obtained t-observation bigger than t-table at significant level  $\alpha$  0,05%. Furthermore, seen from the average value of  $VO_{2MAX}$  SMA Negeri 10 Samarinda after treatment for two months there was a significant difference.

A play model approach is an activity that can shape the personality and self-discovery for students. The emphasis in playing will make the subject of physical education something very fun and very interesting and always eagerly awaited by students. With the learning model of play to achieve the learning objectives will have an impact in the learning process that can put the play model into the focus of physical education subjects that can increase the excitement and satisfaction in students in doing movements to play in improving Vo2Max and children who do not has an interest in enjoying sports.

$VO_{2MAX}$  may increase for untrained people, although there has not been a change in aerobic capacity in skeletal muscle. In those untrained, skeletal muscle capacity can be burdened. The problem of oxygen is a limiting factor, because even highly trained muscles can not use oxygen when it is absent or not to the muscle, whereas oxygen is supplied to the muscles, while the muscles themselves are not trained in endurance, Vo2max will be more low, although the o2 supplied is quite large.

$VO_{2MAX}$  is the maximum amount of oxygen that can be consumed during intense physical activity until eventually fatigue occurs.  $VO_{2MAX}$  values depend on cardiovascular, respiratory, hematological, and muscle oxidative states. This measurement of  $VO_{2MAX}$  value can apparently be used to analyze the effects of a physical exercise program. In children who are developing, physical exercise can provide excellent health benefits. To be effective, physical exercise should be endurance and include a certain duration, frequency, and intensity. However, it is known that during the period of child development, there are many structural, hormonal, and biochemical changes that can affect the value of  $VO_{2MAX}$ . Therefore, it is important to know the change in  $VO_{2MAX}$  values in this population. A meta-analysis study says that the majority of studies on  $VO_{2MAX}$  x in children still use boys as their subjects.

#### TABLE IV. CONCLUSION

$VO_{2MAX}$  is the maximum amount of oxygen that can be consumed during intense physical activity until eventually fatigue occurs. The value of  $VO_{2MAX}$  depends on the

cardiovascular, respiratory, hematological, and muscular oxidative states. This measurement of  $VO_{2MAX}$  value can apparently be used to analyze the effects of a physical exercise program. In children who are developing, physical exercise can provide excellent health benefits. To be effective, physical exercise should be endurance and include a certain duration, frequency, and intensity. However, it is known that during the period of child development, there are many structural, hormonal, and biochemical changes that can affect the value of  $VO_{2MAX}$ . Therefore, it is important to know the changes in the value of Vo2Max in this population. A meta-analysis study says that the majority of studies on  $VO_{2max}$  in children still use boys as their subjects.

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# Educational Test and Measurement in Sport to Semarang City Community Through Activities FIK Goes to Public

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**Abstract**— The purpose of community service activities is to improve community knowledge about sports test and measurement tools, improve community knowledge about the use of test and sports measurements, improve community knowledge about test and measurement norms in sports. The method of the implementation of community service is qualitative descriptive. Located of this devotion in front of the Central Java Provincial Social Office. The sample in this devotion amounted to 115 people. The result of this devotional activity is an increase in community knowledge about sports tests and measurements. Increased knowledge of the community about the procedures for the use of test equipment and sports measurements. Increased public knowledge about test and measurement norms in sports. Suggestion of devotion to the people present is 1). Socialization activities on test and measurement tools to the community should be encouraged actively, so that the community will be helped in making daily activities plan in accordance with the ability of physical condition owned by the community. 2). The proper use of test and measurement tools can be a valid benchmark in drawing conclusions about the physical condition of the community. 3). The public should also know the norms applicable in sports tests and measurements.

**Keywords**— *Education, Test and Measurement in Sport, FIK Goes to Public*

TABLE V. INTRODUCTION

Exercise is all systematic activity to encourage, nurture and develop physical, spiritual, and mental potential [25]. The purpose of national is to maintain and improve health and fitness, achievement, human quality, inculcate moral values and noble character, sportsmanship, discipline, cultivate and build unity and unity, strengthen national resilience, and lift the dignity, dignity, and national honor. To achieve these national goals there are 3 scope of coaching and sports development include: 1)

sports education, 2) recreational sports, 3) sports achievements.

Society is a group of Indonesian non-governmental citizens who have attention and role in the field of sport. The public has equal and wide opportunity to participate in sports activities [25]. Emphasis on crime rate, illness rate, unemployment rate can be done by positive activity and one of them with sport.

Society needs knowledge and skills about the many things that are needed in modern life today. Including how the life of the nation in the increasingly complex constellation of relations between nations, filled with various express or implied interests. In relations between nations, even with the principle of equality of the degree, can not be denied the existence of an international network system that puts a nation in a position of dependence or be very limited freedom in interacting with other nations, both lateral and multilateral. Such circumstances require the community to need the ability to remain conscious of the dignity as a nation.

FIK Goes to Public is a sports-themed social event that aims to cultivate the community and promote sports. This event was first held in January 2016. Promoted by the Dean of the Faculty of Sport Science Prof. Dr. Tandiy Rahayu, M.Pd., FIK Goes to Public activities continue to show interesting events in order to foster and educate the wider community in the field of sports and health. This activity is held regularly every Sunday in the street of heroes in front of Social Office of Central Java City Semarang. This activity starts at 05.00 WIB until 09.00 WIB. This activity utilizes public space on Motor Vehicle Free Day (HBKB) or often called Car Free Day (CFD). CFD in Semarang City have been implemented by Semarang City Government since February 1, 2007. The activities of motor vehicle-free days in Semarang City are centered in Simpang Lima, Jalan Pahlawan and Jalan

Pemuda. The activities of CFD involve hundreds of people of Semarang city gathering with very high enthusiasm to exercise.

The phenomenon of car free day in stimulating people to do sports activities very well. This can be seen from the society's participation that every week is increasing. Some of the physical activities that people do in car free day activities are street, running, aerobic gymnastics, roller skates, skateboards, and cycling.

Based on the results of interviews with a team of devotees who are present in the car free day, we found there are some things that people lack attention before exercising. Some of these include the lack of community knowledge of programmed and measurable sports, lack of knowledge of the consequences of carrying out unprogrammed physical activity, lack of knowledge of some test tools and sports measurements that serve to assist in achieving the goals of physical activity undertaken.

Based on existing problems in the field, the solution that the authors offer is by giving "Education Test Tools and Measurements of Sports to the Community of Semarang City through FIK Goes to Public Activities".

#### TABLE VI. MATERIALS AND METHOD

The method of implementation of community service is qualitative descriptive. The population of this devotion is the community of Semarang city that is present in car free day activity which is held every Sunday and located in front of Central Java Provincial Social Service Office. The sample in this devotion was supervised by 115 people.

In this devotion the devotees present various sports test and measurement tools, the function of the test and the measurement of the sport, the procedure of the use of tools and the socialization of the norms of the physical condition read from the tool. The tools that will be displayed are :

1. Sphygmomanometer atau Tensimeter.
2. Timbangan berat badan.
3. Hand grip dynamometer.
4. Jump power meter.
5. Back and leg dynamometer.
6. Push and pull dynamometer.

#### TABLE VII. RESULTS AND DISCUSSION

The community service entitled "Education of Semarang City's Sports Measurements and Measurement Apparatus Through FIK Goes to Public Activity" has the purpose to increase community knowledge about sport as a programmed lifestyle by promoting the norms of physical condition, in order to reduce the risk of injury. This devotional activity will feature some sports test and measurement tools owned by FIK Unnes Laboratory.

This activity in cooperation with the Social Service of Central Java Province, the Environment Office of Semarang City and the Department of Transportation of Semarang City. Community Service Team hopes that with this activity people will be more active in carrying out

sports activities and can measure the achievements of each activity undertaken. Outside of this devotional activity, the authors will cooperate with local electronics media to mempublikasikan this activity and impact on the quantity of community participation to follow this devotional activity.

The results achieved in this community service activity is the team of devotees get data about the physical condition test conducted by participants of car free day activities located in front of Social Service of Central Java Province. The data is directly conveyed to the visitor taking the measurements. The data will provide a hypothesis about the health condition of visitors. Based on these data the team of devotees can also provide input on things to do in order to improve the health condition of visitors.

The physical condition of blood pressure can be measured using a sphygmomanometer or better known as a tensimeter. This tool is useful for measuring blood pressure that refers to the pressure of blood on blood vessels when blood is pumped throughout the human body. The device can measure blood pressure up the arteries due to a heartbeat called a systole and it can also measure blood pressure when the heart rests between pumps called diastoles.

Power is a combination of two elements of the physical condition components of strength and speed. The quality of muscle power will be reflected in the element of strength and speed in which the execution is carried out explosively in the shortest time possible. Muscle power or muscular power is the ability of a person to perform maximum strength, with effort done in a short time. In this case it is stated that muscle power is the multiplication of strength and speed. Meanwhile, explosive power or explosive power is a quality that allows the work of muscles or a group of muscles to produce explosive physical labor power determined muscle strength and speed of nerve stimulation and speed of contraction. The devotion of this community of devotees measures the muscle strength of arms and limbs of the people of Semarang who participate in car free day activities. Seed power arm by using push and pull dynamometer.

#### TABLE VIII. CONCLUSION

Semarang city community have increase the knowledge about the test and measurement in sport.

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# Effective Method Effleurage Traction Reposition to the Improvement of ROM (Range of Motion) in Knee Injuries

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**Abstract-** The most common injury to an athlete is a knee injury. The knee is the body's propulsion and weight-bearing. One sign of injury is the decrease of range of motion (ROM). Massage effleurage reposition traction is an alternative in healing injuries. Which research problem formulation is most influential between effleurage methods with effleurage method coupled with repositioning traction on ROM on knee injury.

**Type of experimental research.** The experimental design used is the pretest and posttest design (one group pretest posttest design). Samples of 8 athletes of the BPPLOP son with knee injury. There are several stages of implementation that is pretest, first posttest, and second posttest. The research instruments are goniometer, lotion and towel. The measurement results were analyzed by paired sample T-Test with 5% significance level using SPSS 21.0.

The result of data analysis is obtained from the result of paired sample T-Test with SPSS 21.0. The pretest average is 114.63. The first posttest with an average of 133.25. The second posttest obtained an average value of 138.13. The first posttest has a sig value. (2-tailed) of  $0.073 > 0.05$ . The second posttest has a sig value. (2-tailed) by  $0.036 < 0.05$ . The second posttest is a combination of massage effleurage reposition traction.

Suggestion of this research for trainer, athlete, masseur and masseus to be used as reference about handling of sports injury especially with massage method of reposition traction effleurage.

**Keywords:** *massage effleurage, ROM, knee injury*

## INTRODUCTION

Sports is one activity that is very popular by the public, ranging from children to parents. Exercising in addition to improving body health and fitness, exercise can be differentiated based on the purpose of the sport, namely sports education, recreational sports, and sports achievements. In doing the sport

of course someone must have experienced injury. According to Hardianto Wibowo what is meant by sports injuries (Sport Injures) are all kinds of injuries that arise, both at the time of practice and at the time of the sport (game) or after the game [9]. According to Garisson the factors that cause sports injuries are: (1) intrinsic factors that include: network weakness, flexibility, overload, biomechanics error, lack of adjustment, body size, performance ability, play style (2) include: wrong equipment, other athletes, playing surface, weather [17]. Ali Satya Graha and Bambang Priyonoadi revealed that one of the signs of injury is impaired function or decreased range of motion (ROM) [1]. There are basically two types of injuries that are common in the sport world, namely: 1) acute injuries, such as: fractures, dislocation (location of bone is not in place). This type of sports injury really takes serious care and handling as quickly as possible. 2) Severe / sustained sports injuries, these injuries are more difficult to detect and it is usually difficult to know the initial symptoms.

Sports injuries slowly and gradually will be able to interfere with other activities [21]. Meanwhile, according to Garrison, Susan J, there are two types of injuries that are often experienced by athletes are acute and chronic injury that drag (overuse syndrome) [17]. Acute trauma is a sudden, severe injury, such as a scratch injury, a tear in the ligament, or a falling bone. While overuse syndrome is an injury that begins from the presence of an abnormal strength in the level of low or light, but occur repeatedly and in the long term. If the injury is not handled properly it will aggravate the injury itself.

Based on observations that researchers conducted on March 8, 2017 section of massage and therapy Center for Central Education and Sports



Exercise Students (BPPLP) Semarang, from a total of 120 cases of 36.7% injury is knee injury as many as 44 injured cases from 120 injured cases. In addition Hardianto Wibowo, mentions that knee biggest percentage of injury that reached 22.5% because it doubles, namely as a mover and weight bearing, so the possibility of injury is greater [9]. Therefore it can be concluded that the injury that is most often experienced by the public and athletes is knee injury. One of the proper methods of accelerating the healing of injuries is with massage and repositioning traction.

**A. Understanding Range Of Motion (ROM)**

ROM (Range of Motion) is the maximum number of possible movements of a joint on one of three body parts, namely sagittal, transverse, and frontal. Another notion of ROM is joint movement exercises that allow for contraction and movement of muscles, where the client moves each of the joints according to normal movement either actively or passively. Range of motion is the movement under normal circumstances can be done by the joints concerned (Suratun, et al, 2008).

The cutting line on the body that can be done by the joints is as follows: 1) the sagittal pieces, the lines that pass through the body from front to back, dividing the body into the left and right, 2) transversal pieces, ie horizontal lines that divide the body into top and bottom, 3) frontal pieces, ie passing the body from side to side and dividing the body into the front and back. In addition ROM is divided into two types, namely: 1) Active ROM, ie movement performed by a person (patient) by using his own energy. 2) Passive ROM, ie energy spent on exercise comes from someone else (nurse) or mechanical device. The nurse performs the client joint movement according to the normal range of motion (the passive client). Muscle strength 50%. The indications of passive exercise are semi-comatose and unconscious patients, patients with limited mobilization are unable to perform some or all of the range of motion exercises independently, total restock patients or patients with total excess paralysis (suratun, et al, 2008). Passive range of motion is useful for maintaining flexibility of muscles and joints by moving other passive muscles such as nurses lift and move the legs of patients.

The following are various ROM movements: 1) flexion, ie decreased joint angle, 2) extension, ie increasing joint angle.3) hyperextension, ie further extension, 3) abduction, ie movement away from

the midline of the body, 4) adduction, the movement approaches the midline of the body, 5) the rotation, the movement around the center of the bone, 6) eversion, ie the rotation of the sole of the foot to the outside, moves to form the joint angle, 7) inversion, ie round the soles of the foot to the inside part moves to form the angle of the joints, 8) pronation, the movement of the palm of the hand where the surface of the hand moves down, 9) supination, the movement of the palm of the hand where the surface of the hand moves upward, 10) opposition, the movement touching the thumb to each finger-fingers on the same hand.

TABLE 2.1 CLASSIFICATION OF MOVEMENT RANGE ON JOINTS

<b>Joint</b>	<b>Action</b>	<b>Degres of motion</b>
<i>Shoulder</i>	<i>Flexion</i>	180°
	<i>Extension</i>	45°
	<i>Adduction</i>	40°
	<i>Abduction</i>	180°
	<i>Medial rotation</i>	90°
	<i>Lateral rotation</i>	90°
<i>Elbow</i>	<i>Flexion</i>	145°
	<i>Forearm</i>	
<i>Wrist</i>	<i>Pronation</i>	80°
	<i>Supination</i>	85°
	<i>Flexion</i>	80°
<i>Hip</i>	<i>Extension</i>	70°
	<i>Abduction</i>	20°
	<i>Adduction</i>	45°
	<i>Flexion</i>	125°
	<i>Extension</i>	10°
	<i>Adduction</i>	45°
<i>Knee</i>	<i>Abduction</i>	40°
	<i>Medial rotation</i>	45°
	<i>Lateral rotation</i>	45°
<i>Ankle</i>	<i>Flexion</i>	140°
	<i>Extension</i>	20°
<i>Foot</i>	<i>Inversion</i>	40°
	<i>Eversion</i>	20°

According to Easton, Range of Motion (ROM) is one of the physical indicators associated with the function of movement [14]. According to Kozier, ROM can be interpreted as the maximum movement possible in a joint without causing pain [14]. Joint stiffness causes decreased range of motion of the joints [11]. Range of motion refers to the range measured in the degree of the circle in which joint bones can be moved (Tortora et al, 2011: 305). According to John V. Basmajian, the motion range classification in joints is as figure 1.

The table above shows that the motion range of motion Flexion knee is: for 140o [10]. According to Clark, factors affecting ROM are age and sex, ie ROM in old age is lower than in young age and women are better than men [14]. However, according to Woljcik, et al., there was no significant difference between age and sex in ROM [14]. The degree of a person's ROM can be determined using a tool called Goniometer. Goniometer is a tool to measure and find the degree of angle of a joint. Goniometer is a tool made of metal or plastic with two arms like a folding bow. Figures in a Goniometer show a large angle in degrees, like an arc. At the time of measurement of ROM in general not cause pain. However there are some postoperative or injury cases where the ROM measurement process may be painful, but the pain is usually only briefly felt and occurs only during measurement. Here is a picture how to measure ROM on knee using Goniometer:

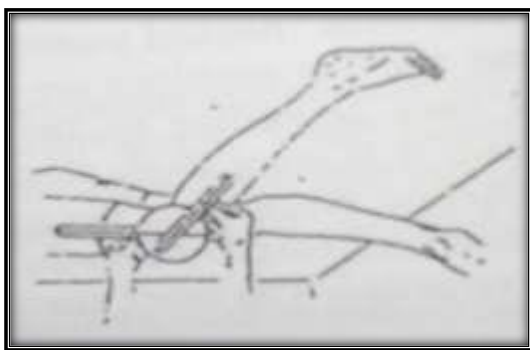


Fig. 1. How to measure knee ROM (John V. Basmajian)

There are 3 ROM recording systems, namely: 1) the system 0 -180 °, used to measure ROM joints of the upper and lower extremities. The 0 ° position reflects the anatomical position prior to flexion, extension, abduction, and adduction. ROM starts at 0 degrees and moves toward 180 degrees. This record system is the most widely used in the

world, 2) 180 - 0 ° system, This system measures ROM in anatomical position, ROM starts from 180 ° and moves to 0 °, 3) 360 ° system, 360 ° System also measures ROM in anatomical position. The flexion and abduction movement starts at 180 ° and moves to 0 °. The extension and adduction movement starts at 180 ° and moves towards 360 °. The 180 ° - 0 ° system and 360 ° system are more difficult to understand than the 0 - 180 ° recording system and are also rarely used. Before taking a ROM measurement a physiotherapist must know several important things in each joint and movement, among others: 1) recommendation of measurement position, 2) alternative position, 3) required Stabilization, 4) Structure and function of joint, 5) End feel normal, 6) Anatomy of bone, 7) Instrument compatibility. In addition to knowing these things, the physiotherapist must also be skilled at doing the following: 1) proper positioning and stabilization, 2) moving the body parts with the right ROM, 3) determining the end of ROM (end feel), 4) palpation on the part bone accurately, 5) adjust the measurement instrument appropriately, 6) read the measuring instrument, 7) record the exact measurement results.

Sports injuries are all sorts of injuries that arise during practice or during game or after game [9]. According to Cava, injury is a tissue damage caused by technical errors, impacts, or physical activity that exceed the limit of training load, which can cause pain due to excess exercise through too heavy exercise load so muscles and bones are no longer in anatomical state [7]. Meanwhile, according to Novita Intan Arovah sports injury is an injury to the integument system, muscle and skeletal body caused by sports activities [12]. From some opinions above it can be concluded that the injury is the destruction of tissue in the form of muscles, joints, body frame caused by physical activity as in training and match.

Taylor divides the types of injuries that are often experienced into two types: 1) acute trauma, which is a sudden severe injury, such as a scratching injury, tearing on the ligaments, or fractures due to falling. Acute injuries usually require professional help immediately. 2) Overuse syndrome, This syndrome begins from the existence of abnormal strength in the level of low or light, but lasted repeatedly in the long term [20]. While Hardianto Wibowo classifies the following sports injuries: 1) minor or 1st degree injury, characterized by a tear that can only be seen using a microscope, with

minimal complaints and little or no disturbing performance of the athlete in question, such as abrasions, bruising, mild sprain. 2) moderate or second-degree injuries, characterized by apparent tissue damage, pain, swelling, redness and heat, with significant impairment of function and affect the performance of the athlete concerned, eg muscle widening and ligament tearing. 3) severe injury or level III, this injury occurs complete or almost complete tear in the muscles, ligaments and fractures of the bone, requiring total rest, intensive treatment, and even surgery [9]. In addition Hardianto Wibowo, mentions that the largest knee percentage of injury that reached 22.5% because it doubles, namely as a mover and weight bearing, so the possibility of greater injury [9].

According to Tommy Fondy there are several kinds of knee injuries, namely: 1) knee sprain injury, 2) Injury to Muscle or Tendo and Ligaments, 3) Patella Injury (Kneecap), 4) Rear Knee Injury, 5) Dislocation 6) Broken Bones (Fractur). There are several methods in healing knee injury, one of them is the method of massage and repositioning traction [21].

Taylor shares the causes of injuries, internal factors such as fatigue, neglect, lack of skills, and lack of warming and stretching during exercise or learning [20]. Then external factors such as poor tools and facilities, poor weather, and mistreatment of materials by teachers. One of the external factors that is often forgotten by a teacher is the weather, that is the temperature of the environment. Temperatures in Indonesia generally range from 28-34 degrees Celsius. According to Bompa lack of knowledge about exercise and proper load addition, incorrect posture on lifting, and weak abdominal muscles are the cause of injury to children in sports activities [6].

According to Hardianto Wibowo, Handling Strain Injuries can be done as follows: 1) put the patient in a comfortable position, rest the injured part. Elevate the injured area. The goal is to reduce excessive swelling, 2) give a cold compress, for 30 minutes, repeat every hour if necessary [9]. When a new injury lasts, a blood vessel ruptures resulting in the blood vessels in the surrounding tissue resulting in swelling, the blood vessels around the injury site will also widen in response to inflammation. Giving cold compresses / ice will constrict blood vessels widening so as to reduce swelling. Cold compress can be done 1-2 times a day, not more than 20

minutes because it would interfere with blood circulation. Conversely, when the injury is chronic, inflammatory signs such as swelling, redness, severe pain are gone, then the principle of warm compresses can be done, 3) pressure bandage and keep it elevated. Compress / emphasis on the injury, can be done with bandages / bandaged. Do not be too tight, the goal is to reduce swelling and keep emphasis on being elevated. Press on the injured area until the pain is gone (usually 7 to 10 days for minor injuries and 3 to 5 weeks for severe injury If needed, use a support stick when walking When in doubt as a fracture do fot

## II. METHODS

This type of research is an experimental research. Experimental research can be interpreted as a research method used to seek a certain treatment against others in a controlled condition [15]. The experimental design used is the pretest and posttest design (one group pretest posttest design)

According to Suharsimi, that the variable is the object of research, or what the point of attention of a study. In this research there are two kinds of variables that are independent variable and dependent variable [16]. Independent variable is independent more than one. Independent variable in this research is massage effleurage reposition traction.

The dependent variable is dependent variable or dependent variable. As for the dependent variable in this study is the ability of Range of Motion (ROM) on knee injury. Sutrisno Hadi, which states that the population is the entire population to be included for investigation is called the population or universum [18]. The population is limited as a number of residents or individuals who have at least one similar trait. The same characteristics of the population are as follows: 1) BPPLOP athlete Central Java, 2) gender of the son, 3) injured knee, 4) age 16-18 years. Based on these data, the population in this study was the athlete of BPPLOP son of Central Java who suffered knee injury as many as 11 athletes.

The sample used in this research is athlete of BPPLOP Jawa Tengah son who suffered injuries and 8 knee ROM disturbances. In this research, sampling technique using purposive sampling of a group of subjects is based on certain characteristics or traits that are deemed to

have a close relation to previously known characteristics or population traits.

Research instruments are tools or facilities used by researchers in collecting data for easier work and better results, in a more accurate, complete and systematic so easy to process [16]. Instruments used in this research are: 1) hand and body lotion, small towel, mat, book, pencil, goniometer. Hand and body lotion is used for lubricant / lubricant during massage. A small towel is used for tools while tractioning and repositioning so that when pulling is not slippery. Mattress is used for pedestal during massage. Books and pencils are used to record the results of measurements during pretest and post test. Goniometer is used as a tool to measure the degree of angle of joint movement.

The formula used to analyze the data using SPSS version 21 through Paired Samples T Test. Test paired samples t test or paired sample test that aims to test the average difference of two groups of data or paired samples. The way of decision making for test paired samples t-test is: a) significance > 0.05 HO accepted, b) significance < 0.05 HO rejected [8]. Paired Samples T Test requirements must first use the normality test. The normality test is used to determine whether the data has a normal distribution. Normality tests were performed using the Kolmogorof-Smirnov test. Decision-making for normality test is: a) if significance > 0.05 then Ho is accepted or data is normally distributed), b) if significance < 0.05 then Ho is rejected or data is not normally distributed [8].

### III. RESULT

Based on the results of data analysis obtained can be seen that the provision of massage effleurage has no significant effect although the sample has increased ROM (Range Of Motion). This can be seen when posttest results have increased from pretest results. But when the result is tested with Paired Sample T-Test using SPSS 21 with result of sig value. (2-tailed) of 0.073 > 0.05, since the sig value. (2-tailed) of 0.073 greater than 0.05 it can be concluded that there is no significant difference between massage Effleurage to increase ROM (Range Of Motion) on knee injury. Increased ROM (Range Of Motion) on knee injury is influenced by the treatment of massage effleurage. Massage effleurage able to smooth blood circulation, relax muscles, relieve pain. So that the knee injury initially hard to bend because of muscle stiffness

and pain can be overcome by massage effleurage method.

Massage effleurage method plus traction and repositioning is the perfect combination to improve ROM (Range Of Motion) on knee injury. This can be reviewed from the function of each treatment. massage effleurage able to smooth blood circulation, relax muscles, relieve pain, so the stiffness of muscle can be overcome by this method. The function of repositioning traction is to restore the position of the shifting joint to its original position. Based on the function of both methods it can be concluded that this method is suitable to overcome the ROM (Range Of Motion) disorder on knee injury.

### IV. CONCLUSIONS AND SUGGESTIONS

Based on the results of research and discussion it can be presented the following conclusions: 1) From Paired Sample T-Test test result using SPSS 21 with sig value. (2-tailed) of 0.036 < 0.05, because the sig value. (2-tailed) of 0.036 smaller than 0.05 it can be concluded that repositioning trace effleurage massage can increase ROM (Range Of Motion) on knee injury. So there is effect of massage effleurage reposition traction on Range Of Motion (ROM) on knee injury. 2) Massage effleurage reposition traction has a significant effect on ROM (Range Of Motion) on knee injury. This method is perfect for handling knee injuries that have ROM (Range Of Motion) disorders.

#### A. SUGGESTION

Based on the above research conclusions, suggestions that can be submitted by researchers are:

- 1) The trainer can know how to properly handle the knee injury. In addition it is expected the coach is able to understand the condition of athletes so that athletes do not get injured.
- 2) The athlete may know how to prevent injuries, deal with injuries correctly, and treat injuries so that injuries do not get worse.

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# The Development of Jump Power Meter 2

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**Abstract**--Power is needed for physical movement which uses strength and speed. To maximize the power, it must transfer the power from the lower body to the upper body. Vertical jump is a type of test that is often used to measure leg power. This research and development is aimed at developing and realizing a leg power meter with an integrated system called Jump Power Meter 2 or JPM2. This prototype had also been tested for its validity and reliability as a reliable leg power meter. The writer conducted observation, planning and designing, experiments and testing, and analysis in doing his research. The result of measurement experiments with JPM2 will be compared to the measurement result using vertical jump test and Jump DF test. The results of this study are expected to realize JPM2 as a leg power measurement tool that has a high level of validity and reliability so that it can be considered as the most reliable leg power meter.

**Keywords:** *power, leg power, jump power meter 2*

## V. INTRODUCTION

The development of Indonesia's sports achievements in international competition has not shown satisfying results. Some sports that often achieve maximum achievement in events at the international level are also still not consistently able to maintain. As an example of badminton, this sport is very reliable to achieve high achievement in world level so as to raise the dignity of the Indonesian nation in the ranks of other nations that have advanced in sport development. The worst result of the national sport is the achievement of the 29<sup>th</sup> World Games in 2017 in Malaysia ranked V (five) with 31 gold, 50 silver and 58 bronze medals. In the event of 2012 in Singapore, although ranked the same, but can achieve better medal results, which is 45 gold, 58 silver and 74 bronze.

An overview of the use of leg power meter on athletes, based on the experience of performing athlete

physical tests in local training camps facing National Multi Sports Event in PON 2008, 2012 and 2016, as well as observations and interviews to trainers and athletes in Central Java, the athlete's leg power measurement is done by a vertical jump test using a measuring board or a Jump DF. This indicates that until now, leg power measurement still done in the conventional way although there is also a more modern tool by using more sophisticated technology that is with Jump DF. But these 2 types of vertical jump tests obtained are not leg power but the height of vertical jump in centimeter.

Based on that case, researchers will develop a leg power meter that is named Jump Power Meter 2 (JPM2). JPM2 is a development of JPM that have been developed previously with a more integrated system. The presence of JPM2 is expected to have many advantages as a reliable leg power meter with an integrated system, has a high level of validity and reliability, and affordable production costs that can be mass-produced to develop science and technology in Indonesia. In addition, JPM2 can be utilized to assist the process of fostering and developing the physical capacity of athletes, especially in the leg power component. This product will support athletes to get higher achievement.

In this study, the concept of development is the idea of developing Jump Power Meter 2 (JPM2) as a tool for measuring leg power with an integrated system with high accuracy and reliability based on existing products through research and development procedures. The concept of the model developed is JPM2 as a tool to measure leg power with integrated system, to know the ability of high stepping, time stepping and leg power

accurately, have reliability and can be produced with cheaper cost.

## VI. THEORITICAL BASIS AND METHODS

### A. Theoretical Basis

#### 1) Physical condition in sport

In an effort to improve the physical condition, all existing components must be developed. According to Sajoto, M, physical conditions include strength (strength), endurance, muscular power, speed, flexibility, agility, coordination), balance (balance), accuracy (accuracy), and reaction (reaction) [11]. Of the 10 components of these physical conditions muscular power) is one component of physical condition is very important in the motion of several sports. Johnson and Nelson state that Power may be defined as the ability to release maximum force in the fastest possible time [5]. It is exemplified in the vertical jump, the long jump, the shot put, and the other movements involving rapid muscular contractions. Another definition Power can be thought of as how quickly or slowly work is done" [7].

Thus it can be concluded that power is the ability of a person in using the maximum power deployed with a short duration of time. Based on the above study can be concluded also that the most important element in power is muscle strength and speed. According to Imam Hidayat power or power and there is a call with muscular explosive power can be calculated by the following formula [4]:

$P = \frac{W \times S}{t}$	<p>Keterangan:</p> <p>W = weight (kg)</p> <p>S = displacement/jump height</p>
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#### 2) Legs power meter

Legs power measurements can be performed using a vertical jump test. These tools include; 1) Measure Board, the test using the measuring board has been known for a long time. Until now vertical jump tests using measuring boards most often used because it is considered cheap and easy. 2) Jump DF, vertical jump test using Jump DF is more advanced because it uses modern science and technology, and 3) Force Plate

AMTI-Accu Power, vertical jump test using Force Plate gives actual power measurement result.

These tools have their own advantages and disadvantages. In this research will realize the leg power gauge which has the measuring result in real power unit (kg m / sec) which is valid and reliable. This tool will be called Jump Power Meter 2 (JPM2), which consists of sensor components and microcontroller that serves to measure weight, stepping height, and



time stepping, which then calculated in the system to generate power units.

Fig.1. Vertical jump using measurement board and Jump DF

### B. Methode

In developing JPM2 required some components are arranged so as to form a unity of work system that has a specific function. In the JPM2 tool, to be able to measure leg power, a tool that can measure the weight (kg), the height of stepping (cm), and the stepping time (sec). The results of these measurements will then be incorporated into the computer system embedded in the tool to perform the leg leg calculations automatically. Components of JPM2 tools include;

#### 1) Load Cell

Load Cell is used to measure the load (mass) of an object. Load Cells can be used as more precession digital scales in measuring the weight of an object. Load Cell is used to capture heavy data objects that can be directly captured by electronic equipment because it is tangible digital data. Mechanical devices from Load Cell as shown in figure 2.

The principle of work electronically, in Load Cell there is HX711 is a weighing module, which has the working principle of converting measurable changes in the change of resistance into the magnitude of the voltage through the existing circuit. Applications are used in the aerospace, mechanical, electrical,

chemical, construction, pharmaceutical and other fields, used to measure force, force, displacement, tensile force, torque, and acceleration. Features on Load Cell include; Differential input voltage  $\pm 40$  mV, 24 bit data accuracy (24 bit A / D converter chip), Refresh frequency 80 Hz, Operating current, Size: 38 Differential input voltage  $\pm 40$  mV mm \* 21 mm \* 10 mm. The working principle of the tool as shown in Figure 3.

The working principle of the strain sensor when it gets load pressure. When other more elastic parts are subjected to pressure, on the other hand it will undergo strain changes corresponding to that produced by the strain gauge, this is because there is a force that seems to fight on the other side. The change in the resistance value caused by the force change is converted to a voltage value by the existing measurement circuit. The weight of the measured object is known by measuring the magnitude of the applied stress value.

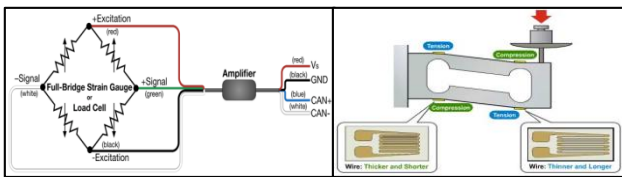


Fig. 2. Load cell



Fig.3. Load cell working system

### 2) Microcontroller Atmel AVR

Atmel AVR is a type of microcontroller most often used in the field of electronics and instrumentation. This AVR microcontroller has an 8-bit RISC (Reduce Instruction Set Computing) architecture, where all instructions are packaged in 16-bit code, and most instructions are executed within 1 clock cycle. To write

programs and on AVR, has provided a software called AVR Studio. In addition, there are some third party cross-compilers that can be used like Code Vision AVR Compiler or ICC AVR. For the mathematical concepts of this instrument calculation is inserted in the chip of Atmel AVR's microcontroller.

### 3) LCD

Electronic display is one electronic component that serves as a display of data. LCD (Liquid Cristal Display) is one type of electronic display made with CMOS logic technology that works by not producing light but reflecting the surrounding light on the front-lit or transmitting light from the back-lit. LCD (Liquid Cristal Display) functions as a data viewer either character, letter, number or pungrafik.

## VII. RESULT

JPM 2 is the refinement of JPM 1 by integrating the mass gauge using load cell on the jump plate. The difference between JPM 1 and JPM 2 can be seen in the following table:

Table 1. Differences of JPM 1 and JPM 2

JPM 1	JPM 2
Consists of 2 plates: 1) plate 1	Consists of 1 plate to measure body mass plate leap
Use infrared sensors to measur	Use the formula to determine the jump

JPM 2 is more practical than JPM 1 because it uses only 1 plate which can be used to measure body mass and used for leap. The infrared sensor used to measure the jump height in JPM 1 has the disadvantages of validity and reliability. JPM one often misreads the jump height which implicates the measurement of power limb power. To know the jump height in JPM 2 using a proven formula and through theoretical deepening. With the use of this formula then minimize the emergence of measurement errors, because the numbers obtained is a theoretical mathematical calculation. The following chart shows the working system of JPM 2.



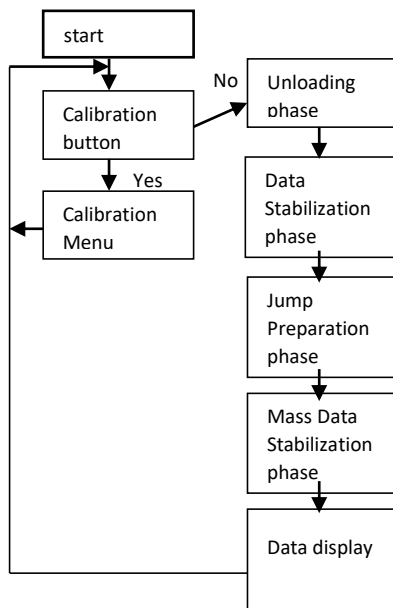


Fig. 4. JPM 2 Working System Chart

### VIII.CONCLUSION

The study of leg power meter development has a tough product that is named JPM 2. JPM 2 is a refinement of JPM 1 and is expected to have a higher level of validity and reliability. With the presence of JPM 2 that is able to measure the power of the limbs, not the leg strength is expected to educate the practitioners and academics in the field of sports.

Indirectly JPM 2 will help increase sporting achievement in Indonesia.

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# The Characteristics of the Patients Doing HIV Test in KTHIV Clinic at Ambarawa Hospital

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**Abstract**–VCT (Voluntary Counseling and Testing) is an examination of HIV voluntary. The data of patients characteristics are needed to do reporting that have been written in the KTHIV Form. Ambarawa Hospital has had KTHIV clinic since 2007 and has the highest number of patients in Semarang Regency in 2015. The aim of the study is to describe the characteristics of the patients doing HIV test in KTHIV clinic at Ambarawa Hospital. The design of study was cross sectional with purposive sampling and got 252 respondents. This study used secondary data obtained from medical records in KTHIV Form. Univariate analysis used frequency distribution and percentage. The result of this research characteristics of the patients were 59,5% male, 58,3% were married, 60,3% were adults (26 – 45 years old), 51,5% had primary education, 73,8% employed, 40,8% were in the risk group of sex workers, 88,9% had a non-formal reason to have an HIV test, and 27,4% had STI (Sexually Transmitted Infections) when taking an HIV test. Conclusion of this research is most patients in KTHIV clinic who do HIV voluntary testing is male, are married, are adult, have primary education, are employed, include as risk group of sex workers, have a non-formal reason, and have STI.

**Keywords** : HIV testing and counseling, HIV, characteristics of the patients, VCT

## I. INTRODUCTION

The Indonesian government in knowing the incidence of new HIV infections has carried out various ways, including by conducting HIV counseling and testing as stated in Permenkes No. 74 Tahun 2014. HIV counseling and testing is done through these approaches: (a) HIV Counseling and Testing of Health Service Provider Initiatives (KTIP); and (b) Voluntary HIV Counseling and Testing (KTS). Then every HIV counseling and testing service must be recorded and reported in accordance with the provisions of the legislation, documented in the medical record, and carried out in stages every 1 (one) month.

In Semarang regency, in 2015 the number of patients who checked themselves into the KTHIV clinic was 3813 cases, which increased from the previous year which was 3549 cases. Aside from the number of visits, the improvement of the KTS program was proven by the increase in the number of KTHIV clinics from last year (2015) from only 11 clinics to 14 clinics in 2016 (Dinkes,

2016). The highest data of the patients who visited and tested for HIV in the regency of Semarang was Ambarawa Regency Hospital, followed by Duren Public Health Center, Ungaran regency Hospital and other public health centers.

Ambarawa Regency Hospital in an effort to do a prevention has established the KTHIV clinic since 2007. Since that year there have been many patients who have visited and tested HIV at the clinic. In 2015, 687 people tested for HIV at the KTHIV clinic at Ambarawa Regency Hospital. This figure shows an increase from the previous year which was 548 people. From these data can be separated into 2 types of KTHIV they are KTIP and KTS. In 2015, from 687 people included 636 KTS data and 51 KTIP people.

Based on data regarding the incidence of HIV / AIDS and the number of KTHIV clinics in Semarang Regency, it is necessary to conduct research on the characteristics of patients who do HIV tests at the KTHIV clinic at Ambarawa Hospital. The aim is to find out the characteristics of patients who do HIV testing at the KTHIV clinic in Ambarawa Hospital, including the characteristics of gender, marital status, age, level of education, occupation, risk group, reasons for HIV testing and comorbidities.

## II. METHOD

### A. Subject

The total population in this research in October 2015 - September 2016 is 634 people, consisting of data of patients who came until HIV testing stage. In determining the number of samples using a non-probability sampling technique that is purposive sampling. Included in the inclusion criteria in this research were the respondents who joined the first HIV test (to control the double sample). And those included in the exclusion criteria in this research were uncomplete KTHIV form data in medical records. After sorting out the existing population of 634 people using inclusion and exclusion criteria, there were 252 samples.

### B. Instrument and procedure

Secondary data used were medical record data in KTHIV clinic of Ambarawa Regency Hospital, the taken data were data on gender, marital status, age, education, occupation, risk group, reasons for HIV testing, and comorbidities of the HIV respondent. In this research, data were collected from medical record that is from the KTHIV

form. When collecting data, the researcher used a table format prepared by the researcher. Secondary data was obtained by recapping the medical record data of KTHIV clinic patient.

**C. Statistic and analysis**

data in this reasearch are data that can be used to describe the respondent's data / characteristics obtained from medical record documents. In this analysis, the data is distributed into frequency distributions and percentages.

**III. RESULT AND DISCUSSION**

The results of the research were recap of medical record data in the form of characteristics of sex, marital status, age, education, occupation, risk group, reasons for HIV testing, and comorbidities. Patient characteristics are presented in several tables below.

**TABLE 1. Characteristics of sex**

Sex	Percentage (%)
Male	59,5
Female	40,5

Male susceptibility to HIV infection is caused by negative behaviors such as buying commercial sex services, and injecting drug user. Men have a high risk because having high mobility and away from wives (Umam, 2015). This is similar with data from the Directorate General of PP and PL of the Ministry of Health of the Republic of Indonesia (2014), that the number of people infected with HIV is higher in the male than female.

Based on table 1, the results of the research show that the ratio of male gender characteristics is higher (59.1%), which is 150 of the total 252 respondents. This can be caused by the negative behavior of men so that they have a higher susceptibility than women. Negative behaviors that can cause susceptibility included using alternate needles for injecting drug user and tattooing. In addition, because men are the head of the family who have the responsibility to earn money for the family, they have high mobility and are far from their wives. With this in mind, to meet their biological needs as long as they are far from their wives they have the option to buy commercial sex services. Another reason is that from the KTHIV clinic Ambarawa Hospital also has a program to conduct counseling on the importance of HIV testing with the target of prison inmates where most of them are male, who generally have tattoos.

The results of this research are in accordance with the research held at Simpang Tiga (Riau) Public Health Center, that most of the patients who visited and HIV test at the KTHIV clinic were men (51.2%). Male susceptibility to HIV infection is caused by negative behaviors such as buying commercial sex services, and Injecting Drug User. Men have a high risk can be due to having high mobility and away from wives [1].

**TABLE 2. Marital Status**

Marital Status	Percentage (%)
Marry	58,3
Single	36,5
Divorce	4,4
Divorce by death	0,8

Ministry of Health's Directorate General of PP & PL (2013) stated that when HIV-infected men marry, will have

the risk of transmitting HIV to their wives after having unprotected sexual intercourse or without using condoms.

Based on the table of research results (table 2), shows that the characteristics of marital status are sorted from the highest, from marital status of 147 respondents (58.3%), then the next sequence is the unmarried (single) status (36.5%), divorce (4,4%) and in the last order is the divorce by the death (0.8%). The results of this research have been in accordance with the research conducted by Syahrir, et al. (2013), in the City of Makassar, that out of 133 samples that had a marital status is 88.7% [6].

In another research stated that married men and women are susceptible to HIV infection. This is because HIV transmission occurs through direct contact between the deep skin layer (mucous membrane) or blood circulation with HIV-infected body fluids [2].

It can be concluded that with marital status it will increase the risk of transmitting HIV to their partners, because when they are having sexual intercourse the husband and wife don't use condom to get descent and because of that, it can make it possible that the baby being infected with HIV.

**TABLE 3. Age**

Age	Percentage (%)
Adolescent	25
Adult	60,3
Elderly	13,9
Seniors	0,8

Based on the theory and results of the existing research, researchers revealed that in the age of adolescents and adults have similarities, that is have a high risk of HIV if having unsafe sex and oftenly change partners and other risky behavior.

Based on the table of the results of the research(table 3) shows that the 252 respondents most of them were adults (26 - 45 years) as many as 60.3%. The results of this research are in accordance with the research that has been held at the Duren Public Health Center, where most of those who joined KTS test were adults as much as 71.8% [2]. In addition, the results of the study of patients who conducted HIV testing at the KTHIV clinic at Ambarawa Hospital were in accordance with the incidence of HIV in Indonesia in 2014, where the highest infection was in adulthood (69.1%), followed by adolescent age groups (17,2%) and the last is geriatrics (5.5%) (DG PP & PL, 2014)

Respondents who are in the category of adult (26 - 45 years) are more likely to have an HIV test than those who are not because of their maturity in thinking of being able to face and adapt to something new. In addition, because at this age is sexually active and includes fertile age. At the age of 26 - 45 years, they also understand the benefits of having an HIV test, that respondents realize that they are having risk of HIV infection.

**TABLE 4. Education**

Education	Percentage (%)
Never got education	1,6
Primary education	51,6
Secondary education	42,1
Higher education	4,8

Karmila in her research (2015) stated that the most of the patients have primary school background than those with secondary education, although with a small difference, ie 49.5% with 45.5% [2].

According to Table 4, the highest educational characteristics are occupied by primary education by 51%, then in the second place, secondary education is 42.1%, in the third place is 4.8% higher education and the rest in the last place is respondents who do not have been to school.

The results of this research are in accordance with data from the Ministry of Health of the Republic of Indonesia (2010) which stated that the majority of those classified as women working for prostitution risk groups, transgender and customers of prostitution, have a primary education background. According to the researcher, this could be caused by the environment and socio-cultural background in the surrounding community, which have not consider the importance of high education. It was proven by the characteristics of the educational background of the society of Ambarawa sub-district that most of them have primary education background.

**TABLE 5. Job**

Job	Percentage (%)
Jobless	26,2
Worker	73,8

Respondents who have jobs tend to behave at high risk. In general, sufferers are affected by high risks with jobs such as commercial sex workers, drivers, and starship crew. For women and men working is part of self-actualization [3]. By working it will increase income. Income increases, the pattern of fulfilling needs will shift, from meeting other needs, especially health improvement [4].

According to the table of the results of the research that has been done (table 5) of 252 respondents, there are 186 respondents having jobs (73.8%) and the rest are jobless. Of the 186 respondents, 37.1% worked as employee, 28.5% worked as factory laborers, 12.9% are entrepreneurs, and 11.8% are farmers. Then the respondents who worked as drivers were 5.9%, and three other types of jobs were civil servant, Soldier / Police, Indonesian Labour respectively 2.2%, 1.1%, and 0.5%. The results of this research are in accordance with the research conducted by Umam, that the type of job which is most widely owned is as employee [1].

Respondents who do not have a job included direct sex workers, students or housewives. Most of the respondents who are jobless are couples with the high risk and sex workers, only a small percentage are students. This shows that the patient's job cannot be a guarantee that he/she is not at risk of being infected with HIV if his sexual behavior is not safe. Especially those with non-permanent partners. Of the small number who work as employee or laborer are sex workers who are indirectly as well.

**TABLE 6. Risk Group**

Risk Group	Percentage (%)
Sex Worker	40,9
Customer of Sex	14,7
Transgender	7,1
Risk Couple	12,7
Gay	2,4
IDU	3,6

Others 18,7

Ministry of Health of Indonesia (2010), stated that the biggest risk group came from sex workers which was then followed by a high risk couple. In the risk group of sex workers can be divided into two types, these are direct sex workers and indirect sex workers.

According to the table of research results (table 6) shows that the highest risk group is in the group of sex workers as much as 40.9%, and the lowest in the gay group is 2.4%. Of the 103 respondents (40.9%) who belonged to the risk group of sex workers 85 of whom were indirect sex workers (82.5%), while the remaining 18 respondents were direct sex workers (17.5%).

In this research, there were 18.7% of respondents who were not in the risk group. Respondents who were not included in the risk group but had risky behavior, is them who have risky sex in the last 6 months were quite high, it is about 74% [5]. This proves that doing an HIV test should be done immediately if you realize that you have done one of the risk factors. It does not rule out the possibility that an individual is not included in the risk group for transmitting HIV.

**TABEL 7. Reason Characteristic of HIV Test**

Reason	Percentage (%)
Formal Reason	5,6
Non- formal Reason	88,9
Formal & non- formal Reason	0,4
Others	5,2

Pradipta stated that patients who had an HIV test mostly had reason to feel risky [5]. The statement is in accordance with the results of the research held that the highest number on the reason for the test is a non-formal reason (88.9%). Where the non-formal reasons for certain symptoms is the highest of many other non-formal reasons, reaching 28.1%, then the reason for feeling at risk is 26.8%.

The results showed that the respondents who had formal reasons were only 5.6%. Some government and private agencies have indeed made HIV testing a mandatory requirement for applying for jobs there. This shows that with the risk of existing work can increase the risk of being infected by HIV so that the requirements of the HIV test results are mandatory when applying for a job. Likewise for other reasons which are owned by respondents who are not included in the formal reasons or non-formal reasons including those for foreign scholarships.

**TABLE 8. Comordibities**

Comordibities	Percentage (%)
Stage 2	15,5
Stage 3	18,7
STI	27,4
Others	8,7
Without Illness	29,8

Comorbidities when doing the HIV test is a disease that has been suffered by respondents at this time. In this research, comorbidities were classified into several types, according to the stage of the AIDS disease itself, sexually transmitted disease, and the last is other diseases.

For STI disease, which is mostly suffered by 27.4% of respondents, Syphilis is 21.7% and GO disease is 18.8%, the rest are other STI diseases. This shows that the biggest risk factor in the transmission of HIV infection is sexual intercourse. The risk group that had experienced the most STI symptoms in the past year was sex workers (31%) (Ministry Of Health of Republic Indonesia, 2010).

In third stage of the disease that mostly affects respondents is TB (Tuberculosis), which is 45.7%. Patients who have TB disease are among the at-risk populations along with prisoners, pregnant women, migrants, sex worker customers and partners of PLWHA (People Living with HIV AIDS) (WHO, 2011).

According to the results of research conducted almost one third of the total respondents, as many as 29.8% did not have the disease. This shows that the respondent done an HIV test is not only because he had suffered from an illness.

There are still many respondents who do the HIV test because they already have high knowledge so that their self-awareness is high as well, especially those who are susceptible to the HIV infection.

#### IV. CONCLUSION

Based on the results of research on the characteristics of patients who done HIV testing at the KTHIV clinic Ambarawa regency Hospital with a sample of 252 respondents, it can be concluded that all people have the risk of infected by HIV if they have done HIV risk behavior regardless of gender, marital status, age, education and occupation. It does not even rule out the possibility that if someone does not belong to the risk group category, they will not be infected with HIV as long as they do a safe behavioral. Not looking at the reasons and suffering from any diseases that are owned, if you feel at risk you should immediately do an HIV test. Because by doing that, it will soon be revealed how far the spread of HIV, so that prevention and treatment can be done (for those who are declared positive) quickly and accurately.

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# Adolescent Experience In Dealing With Kids Transition to Puberty in 33 Junior High School Semarang

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**Abstract**— The problem that most teenagers consulted on MCR at puberty, is problems related to physical changes 27%, concerns 16% during puberty, puberty as early adolescence 10.1%, and the emotional state of 7.6%. By digging the adolescent experience in dealing with child's transition into puberty will find various kinds of physical and psychological responses to them. The purpose of this study was to explore attitudes, the support of parents, constraints and impact in the face of the child transition into puberty. This study used a qualitative method with phenomenological approach. The data was obtained through in-depth interviews. Number of participants 4 students of 33 Junior High School Semarang aged 10-14 years who are currently studying in Class VIII bench. Triangulation in this study were parents and teachers Guidance. All participants felt afraid when other people pay attention to the changes experienced during puberty include a sense of wanting to be alone, bored, imbalance movements, emotions rising, uncooperative and loss of confidence. Support parents by giving credence to the role and puberty to participate in making decisions, communicating with provide an understanding of puberty. The obstacles are puberty yet fully understand what to do during the child's transition to puberty, due to the limited reproductive health education related to child's transition to puberty. The impact in the face of the child transition into puberty in male students - male sex high curiosity marked with the tell - mails and pornographic pictures bullying female students. Female students lost confidence as a result of physical changes and ignorant male student - male in children at puberty leaving the child felt inferior.

**Keywords**— *Juvenile, Puberty, Transition*

## I. INTRODUCTION

The smallest percentage of physical aspects of adolescent behavior regarding physical condition was 48.4%. This indicates that there are still many students who have poor knowledge, judgment and expectations about physical change. Using the Check Problem List (DCM) indicates a negative self-concept in students. This can be seen in the behavior of students who feel insecure with their physical possessions, arises between friends mockery about physical form that

causes students to become insecure in socializing, as well as the existence of behavior that is not in accordance with the ethics and values prevailing in the school or in the community [10].

One psychological aspect of changes in the body during puberty is that teenagers are worried about their body and forming a self-image of how their body is, maybe they look into the mirror every day and sometimes every hour to see if you detect something different about their body change, anxiety about a person's body image is strong during adolescence, but specifically acute during puberty when adolescents feel more dissatisfied with their bodies compared to late adolescence [9].

Puberty is a period when the development of children changes from asexuals to sexual beings. While puberty is a stage in development where there is maturity of sexual tools and achieving reproductive abilities. The most common criteria used to determine the onset of puberty are first menstruation in girls and nighttime wet dreams for boys [3]. Puberty is a sequence of transformations from a child to a young adult, with secondary sexual characteristics and reproductive abilities [2].

Experience can also be interpreted as episodic memory, which is the memory that receives and stores events that occur or are experienced by individuals at a particular time and place, which serves as an autobiographical reference. Experience is something that cannot be separated from everyday human life [1].

Attitude is the most important concept in social psychology which addresses the elements of attitude both as individuals and groups. Much research has been conducted on attitudes related to effects and

their role in character building and the system of relationships between groups and choices determined by the environment and their effects on change [8]. Experts formulate that puberty is used to express both form and physiological biological changes that occur rapidly from childhood to adulthood, especially changes in reproductive organs, while the term adolescence emphasizes psychosocial changes or maturity that accompanies puberty [6].

## II. MATERIALS AND METHODS

### a. *Subject*

In this study using 4 participants in 33 Junior High School Semarang students. Determination of the number of participants as many as 4 people was determined or limited because the data that the researchers got had reached saturation in the 4th participant. The selection of participants in this study uses purposive sampling method. The source triangulation in this study was counselor teacher and participant parents..

### b. *Instrument and Procedure*

This type of research is qualitative research, namely research conducted to obtain answers or in-depth interview about one's opinions and feelings that make it possible to get implied things about the attitudes, beliefs, motivations and behavior of teenagers in 33 Junior High School Semarang. The approach used in this study is phenomenology, where this approach is defined as subjective experience and one's perspective awareness of various types and types of subjects encountered.

### c. *Statistical and analysis*

Data analysis in this study uses qualitative analysis by analyzing content or discussion content. Transcribe the results of interview recordings about adolescents about adolescent experiences, adolescent attitudes, constraints and impacts in the face of children's transition to puberty. Processing units of sound and image recordings to detail the complexity of the reality in the section. Researchers listen, write, read and study carefully all types of data that has been collected, then identify teenagers about their experiences in dealing with children to puberty and enter into index cards. Coding or categorizing, looking for patterns and proportions of research, interpreting data, evaluating interpretations . Data credibility is obtained through data validity testing methods. The validity of the form of the boundary is related to a certainty that the measured is really the variable to be measured.

## III. RESULT AND DISCUSSION

In-depth interviews are one of the qualitative data collection, where interviews are conducted between participants and the interviewer which is marked by deep excavations using open interviews about the impact of early marriage on reproductive health in adolescents. There were 4 participants in this study, namely An. R (P1), An. S (P2), An. M (P3), An. A (P4) and triangulation participants as many as 3 people, namely Ny. T (T1) as a counselor teacher at school and from one of the participant's parents, Mrs. T (T2), Mrs. D (T3).

Research on processing raw data that has been collected by writing words according to records and recordings that researchers have obtained. Next, the researcher looks at several times and is presented in search of keywords then makes a category then the researcher classifies keywords that contain predetermined categories.

Exploring the attitudes of adolescents in the face of children's transition to puberty Based on interviews with four participants. Participants 1, 2, 3 and 4 said that feeling embarrassed, shocked, closed and emotionally elevated due to the physical changes they experienced during puberty. Explore parental support in the face of child transition to puberty Based on interviews with four participants. All participants said that parents gave advice in the form of not going out, wearing loose clothes, careful - getting along and not falling into cigarettes, alcohol and sex [4,5].

Exploring obstacles in facing the transition of children to puberty Based on interviews with four participants all participants experienced obstacles in realizing expectations during puberty, among others, namely environmental influences, fear of telling the teacher if for example the time of counseling about the transition of children to puberty does not understand and many activities feel themselves busy.

Exploring the impact of dealing with the child's transition to puberty Based on the interviews, the four participants said that they were now familiar with body changes like that, and were not as worried as they once were. Although sometimes still feeling strange to yourself, still need more understanding about puberty [7].

## IV. CONCLUSION

Attitudes of adolescents in facing the transition of children to puberty include a feeling of wanting to be alone, feeling bored, not willing to cooperate, rising emotions, loss of confidence and fear when other people pay attention to changes experienced by puberty. Support parents in facing the transition of children to puberty by giving the role and trust in puberty to be involved in family decision making related to the transition of children to puberty, giving understanding of puberty to children from an early age, communication between parents and children

regarding the transition of children to puberty goes well and parents become friends near puberty. The transition of children to puberty is puberty does not fully understand what to do during the transition to puberty, due to the limitations of reproductive health counseling related to the transition of children to puberty. The impact in dealing with the transition of children to puberty in male students of high sex curiosity is characterized by sending submission of pornographic images and female students. Female students lost self-confidence as a result of physical changes and were male students in female students during puberty resulting in female students feeling inferior.

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# Food Intake Relationship with Duration of Inpatient Care at Sinjai Regional General Hospital

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**Abstract**—Food services at the Hospital are an integral part of the entire hospital service system which aims to achieve recovery of patients in the shortest possible time so that feeding must meet the requirements of nutritional needs and must be consumed by patients. This research was carried out in the Inpatient Section of Sinjai District Regional General Hospital in 2016. This type of research was observational with a *cross sectional study approach* with the aim of finding out the relationship, knowledge, eating habits, taste of food, and length of treatment in hospitalized patients. The sample of this study were inpatients with *purphosive sampling* as many as 142 samples. The results showed that knowledge was associated with length of treatment with p value (0,000) <0,05, eating habits associated with length of treatment with p value (0,000) □ 0,05, food taste was associated with length of treatment with p value (0,000) <0.05. It is expected that patients to get used to consuming various types of foods that contain balanced nutrition according to their needs and varied menu and taste of foods that are expected to increase the appetite of patients so that the fulfillment of nutritional needs as part of the healing process can be fulfilled. It is suggested to the next researcher to continue this research by observing other variables related to the title.

**Keywords**—*Food Intake, Duration of Care, Knowledge, Eating Habits, Taste of Food*

## I. INTRODUCTION

Hospital nutrition services are an integral part of the entire hospital service system which aims to achieve recovery of patients in the shortest possible time so that the provision of food must meet the requirements of nutritional needs and must be consumed out by patients Syamsuddin (1995) found that the provision of nutrients optimal in hospital patients is very useful in reducing the period of treatment and speeding healing reduces

complications reducing mortality and improving the nutritional status of patients [3]

The prevalence of malnutrition in hospitals according to Mosner and Bader (2008) ranged from 30% -50%. Observations in 351 patients treated in Australian public hospitals found 45% with low Hb, 35% low Albumen, and 24% reduced body weight. This also happened in the observation of 13 patients in teaching hospitals in America and Asia, found 48% lack of Nutrition intake, 37 of whom were treated more than 2 weeks, 78% decreased upper arm circumference, 70% lost weight and albumin decreased on average 0.5 gr / dl [8].

Malnutrition is a problem in hospitalized patients in the last fifteen years. Research conducted by Galghar Allred (1996) that data on malnutrition shows 40-50% of patients are malnourished or have a risk of malnutrition, 12% of them are severe malnutrition, 48% mild malnutrition, acute nutritional status of patients has increased after 2 weeks, and increased up to 69%, of the total patients with severe and mild malnutrition during hospital care. Based on data from the Directorate of Community Nutrition Research and Development, out of 171 government hospitals there were 40% of patients, stated that the food provided by the hospital did not meet nutritional adequacy [5]

The most common types of diseases that affect the decline in nutritional status are liver disease (*hepatitis cirrhosis*) as many as 16 people (43%), kidney failure as many as 11 people (29%), and the remaining 10 people with cancer. The type of diet given to *cirrhosis*, chronic renal failure and cancer was that some of the samples received the form of soft foods as many as 31 people (83%) the rest in the form of ordinary food. Food intake containing energy with a median of 1240.65 calories up to 427.06 while energy intake obtained a median of 44.63 grams to 15.78 grams. Energy intake is based on patient needs and hospital food diet standards with a median of 62.03% of needs and a median of 82.57% standard. While the percentage of patient protein intake was obtained by a median of

85.05% of the needs and a median of 96.0% of the standard hospital diet, from this data it can be concluded that nutritional intake should be calculated in advance so that intake can be prevented less, if less than 75% of the need for intake continuously, it will be at risk of suffering from malnutrition and is an indication of diet with standards prepared specifically for each patient [2]

Research reported by Ratna Hafid in 1997 at Dr. Wahidin Sudirohusodo Makassar, that the nutritional status of patients tends to decrease. This is characterized by weight loss of 74.72% of the 14 patients studied, this is due to the non-fulfillment of nutritional needs, namely (66.15%) of the amount that should be obtained with details of 50.67% of hospitals, while research conducted by Syarifuddin in 2009 at Bhayangkara Makassar Hospital on 120 inpatients, there were 41.7% lacking food intake, 24.2% did not like the type of food, 43.3% did not vary food, 49.2% did not suit the taste food. In general, patients were also found that 50% of patients separated their food for reasons that the taste of the food served was unsatisfactory and 4.60% of patients separated their food because it was not warm, 19.6% said the food was not good, 16.6% said the food did not attract its shape and 13.1% said the menu was boring because it did not vary [7]

Based on the data in the medical record of Sinjai Regional General Hospital, Sinjai District, inpatients in 2013 were 3,720 patients, in 2014 there were 32,549 patients with a total of 36,269 patients with an increase in the number of patients meant that the food intake was also increased. Therefore, the researcher was interested in researching the relationship between food intake and length of stay in inpatient rooms at Sinjai District General Hospital, Sinjai Regency in 2016.

## II. METHODS

Type of research used in this study was *observational* with a "approachcross sectional study" to determine the variable relationship independent and dependent variables are observed in the same time period. This research was conducted in the inpatient section of Sinjai Regional General Hospital on June 30 to September 6, 2016. The sample in this study were some inpatients, who were taken using the method *Purposive Sampling*.

## III. RESULTS AND DISCUSSION

**Table 1. Distribution of Respondents by Age**

Age	n	%
20-23	24	16.9
24-27	40	28,2
28-31	43	30,3

32-35	10	7,0
36-39	12	8,5
40-43	10	7,0
44-47	2	1,4
>48	1	7
<b>Total</b>	<b>142</b>	<b>100,0</b>

Source: *Primary Data, 2016*

Table 1 shows that of 142 inpatients there was the highest age group 28-31 as many as 30.3% and the lowest group age > 48 as much as 7%.

**Table 2. Distribution of Knowledge of Inpatient Care at Sinjai Regional General Hospital, Sinjai District, 2016**

Knowledge	n	%
Less	109	76.8
Enough	33	23.2
<b>Total</b>	<b>142</b>	<b>100.0</b>

Source: *Primary Data, 2016*

Table 2 shows that out of 142 inpatients there is less knowledge 76.8% and sufficient knowledge as much as 23.2%.

**Table 3. Distribution of Eating Habits of Inpatient Care at Sinjai Regional General Hospital, Sinjai District, 2016**

Eating habits	n	%
Not	112	78.9
Corresponding	30	21.1
<b>Total</b>	<b>142</b>	<b>100.0</b>

Source: *Primary Data, 2016*

Table 3 shows that of 142 inpatients there inappropriate eating habits as much as 78.9% and appropriate eating habits as much as 21.1%.

**Table 4. Distribution of Food Taste of Inpatient Care at Sinjai Regional General Hospital, Sinjai District, 2016**

Taste of Food	n	%
Not In	104	73.2
Accordance with	38	26.8
<b>Total</b>	<b>142</b>	<b>100.0</b>

Source: *Primary Data, 2016*

Table 4 shows that out of 142 patients treated there is a taste of food that does not match as much as 73.2% and the taste of food is as much as 26.82%.

**Table 5. Distribution of Duration of Inpatient Care at Sinjai Regional General Hospital, Sinjai District, 2016**

Treatment duration	n	%
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not ideal	100	70.4
ideal	42	29.6
<b>Total</b>	<b>142</b>	<b>100.0</b>

Source: *Primary data, 2016*

Table 5 shows that of 142 inpatients there not ideal treatment duration of 70.4% and ideal treatment duration of 29.6%.

**Table 6. Relationships between Knowledge with Duration of Inpatient Care at Sinjai Regional General Hospital, Sinjai District, 2016**

Knowledge of	Duration of Care				N	X <sup>2</sup> (p)
	Not Ideal		Ideal			
	n	%	n	%		
Less	92	84.4	1	15.6	10	44,01
Enough	8	24.2	2	75.8	33	6 (0,000)
<b>Total</b>	<b>100</b>	<b>70,4</b>	<b>4</b>	<b>29,6</b>	<b>14</b>	<b>2</b>

Source: *Primary data, 2016*

Table 6 shows that out of 109 the number of inpatients with insufficient knowledge there were 84.4% of not ideal treatment times, whereas from 33 inpatients with sufficient knowledge there were 24 not ideal treatments. , 2%.

The result of chi-square test  $\times^2$  count (44,016)  $> \times^2$  table (3,841) with p value (0,000)  $< 0,05$ , this shows that there is a relationship between knowledge and length of treatment.

The level of knowledge of the patient knows the food presented about how to fulfill iron and how to maintain a healthy lifestyle in good and safe conditions [1]

The results showed that out of 109 the number of inpatients with insufficient knowledge there were 84.4% of not ideal treatment times, whereas from 33 inpatients with sufficient knowledge there were 24.2% of not ideal treatments.

**Table 7. Relationship Between Eating Habits with Duration of Inpatient Care at Sinjai Regional General Hospital, Sinjai District, 2016**

Eating Habits	Treatment Duration				N	X <sup>2</sup> (p)
	Not Ideal		Ideal			
	n	%	n	%		
Not Appropriate	97	86,6	1	13,2	11	66,66
Appropriate	3	10,0	2	90,0	30	8 (0,000)
<b>Total</b>	<b>100</b>	<b>70,4</b>	<b>4</b>	<b>29,6</b>	<b>14</b>	<b>2</b>

Source: *Primary data, 2016*

Table 7 shows that out of 112 inpatients with inappropriate eating habits there is no ideal treatment period as much as 86.6%, while out of 30 the number of inpatients with eating habits

according to there is not ideal treatment duration of 10.0%.

The result of chi-square test  $\times^2$  count (66,668)  $> \times^2$  table (3,841) with p value (0,000)  $< 0,05$ , this shows that there is a relationship between eating habits and length of treatment.

Eating habits are a type of food that is consumed regularly every day by patients in their homes which is adjusted to the habits presented in each feeding schedule [6]

The results showed that out of 112 the number of inpatients with inappropriate eating habits there were 86.6% not ideal treatment time, while from 30 inpatients with appropriate eating habits there were 10.0% not ideal treatments.

**Table 8. Relationship between Food Taste with Duration of Inpatient Care at Sinjai Regional General Hospital, Sinjai District, 2016**

Food Flavor	Duration of Treatment				N	X <sup>2</sup> (p)
	Not Ideal		Ideal			
	n	%	n	%		
Not Corresponding	95	91,3	9	8,7	10	81,68
Appropriate	5	13,2	3	86,8	33	4 (0,000)
<b>Total</b>	<b>100</b>	<b>70,4</b>	<b>4</b>	<b>29,6</b>	<b>14</b>	<b>2</b>

Source: *Primary data, 2016*

Table 8 shows that out of 104 the number of inpatients with food tastes do not match long not ideal treatment as much as 91.3%, while from 33 inpatients with food taste there were not ideal treatment times of 13.2%.

The result of chi-square test  $\times^2$  count (81,684)  $> \times^2$  table (3,841) with p value (0,000)  $< 0,05$ , this shows that there is a relationship between the taste of food and the length of treatment.

The taste of food is food that can increase the appetite of the patient to consume food until it is exhausted at all times of feeding at the hospital [4]

The results showed that out of 104 the number of inpatients with food tastes did not match there was not ideal treatment time as much as 91.3%, whereas from 33 the number of inpatients with food taste there was not ideal treatment time of 13.2%.

#### IV. CONCLUSION

Of the 142 samples studied, there were those who stated that treatment time was not ideal which had 84.4% lack of knowledge, 86.6% inappropriate eating habits and 91.3% had inappropriate food taste. Knowledge related to length of treatment. Eating habits are associated with length of treatment. The taste of food is related to the length of treatment.

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# Environmental Factors on Spreading Filariasis Disease on Demak Coast

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**Filariasis is an endemic infectious disease in Indonesia. Endemicity of filariasis was shown by Demak district with mf rate was >1% in 2016. Purpose of this research is to describe of environmental (physics, biology, and social) in endemic filariasis area. The result showed that average distance of the biological environment (garden plant, puddle of rob, mangrove plants, open sewerage, garbage inundated, and cattle pen) from the house was <10 m.**

**Keywords: Filariasis, Environmental.**

## V. INTRODUCTION

Lymphatic filariasis is an infectious disease that attacks lymph nodes with symptoms of lymphangitis and lymphadenitis caused by filarial worms (*Brugia malayi*, *Brugia timori*, and *Wuchereria Bancrofti*) and is transmitted by mosquitoes (WHO, 2013).

Bedono village is a coastal area bordering the Java Sea and has an area of 551,673 Ha. Administratively, Bedono Village is divided into 5 hamlets, 5 RW and 23 RT and its territory is included in the lowland because it is located at an altitude of 0-3 mdpl. Most of Bedono Village area consists of wetland (pond) of 490,673 Ha, protected forest with area 166,876 Ha, and settlement area is only 61 Ha (Government of Bedono Village, 2017). In the preliminary study results during March 2017, it was found that Bedono village has environmental characteristics that are mostly overgrown with mangrove and bush vegetation (75%), puddles of rob in surrounding houses (70%), chicken cages around mangrove plants (10%), and ditch / open ditch (100%).

In addition, in Bedono Village area there has been an extreme environmental change due to conversion of mangrove forests for land clearing and environmental pollution. Reduced mangrove forests (since 2006) are known to have resulted in extreme

environmental changes such as abrasion that drowned two hamlets (in 2009) and the emergence of vector-borne disease (2016). Environmental changes such as loss of mangrove vegetation are known to cause the migration of mosquito habitat from mangrove forests to settlements so that the behavior of mosquitoes looking for blood also changes (Kemenkes 2011). Mangrove forests are known to be vector-borne diseases such as mangroves have a canopy that protects mosquito larvae from breeding into mosquito habitats (Putra et al., 2015). Because of the environmental changes, the distribution of mosquitoes is suspected to be uncontrollable. In addition, mosquitoes could potentially be vector filariasis since mosquitoes have invasive properties (capable of widespread in new environments) (Manguin, 2011).

## 2 METHOD

The research was conducted in Bedono Village, Sayung District, Demak District with 1,081 families, divided into 5 villages, Bedono, Morosari, Mondoliko, Pandansari, Tonosari, and Tambaksari Hamlet. This research was conducted for one month since May II (11-20) to June II (11-20).

This study used descriptive study with observational type and cross sectional design. Sources of data in this study are secondary data and primary data. Secondary data in the form of filariasis case report (obtained from infectious disease report of Demak District Health Office 2016 and Sayung I Health Center) and data on rainfall (obtained from BMKG 2017). Primary data comes from observations about the physical and biological environment as well as interviews related to the social environment during the study.

The research instruments used in this research are measurement sheet, observation, and questionnaire sheet. The measurement sheets are used to record the

measurements of the physical environment (temperature, humidity, and rainfall) and the biological environment (garden plants, puddles, mangroves, open SPALs, waste in puddles, and cattle stables).

### 3 RESULT AND DISCUSSION

#### a. Biological Environment

The biological environment described in this research is in the form of condition of yard plant, mangrove plant, puddle rob, open SPAL, chicken livestock pen, and garbage with water. It is known that the average distance between the biological environment (garden plants, mangroves, puddle rob, open spal, chicken litter, and garbage) with a population of <10 m. The distance of the yard plant is in accordance with the research by Sipayung (2014) that the yard plant found in the majority filariasis endemic area is 0-500 m from the house. While the distance of mangrove plants is in accordance with research by Kurniawan (2008) that the average distance of mangrove plants in the coastal area is 0-200 m from the settlement. The puddle distance is similar to that of Wulandhari (2015) that the average pipe in Pekalongan City as endemic area is 0-10 m from the house. The gap opening distance is similar to that of Ginandjar (2008) that in Muaro Jambi district as filariasis endemic areas have an average gap of 0-100 m. While chicken and litter cages are the same as Ardias's research, et. al (2013) that the majority of the population in filariasis endemic areas have cattle and trash cages 0-10 m from home.

The biological environment spacing of <10 m is a vulnerability to filariasis transmission due to the average mosquito flight distance of 0-3 km from the blood-searching site (MOH RI, 2007; Tsuda, et al., 2008; Okorie, 2014). However, the flying distance of the mosquito can be as far as > 30 m from where the blood is sought by the wind speed factor (Kusnanto, 2013). In addition to wind speed, the type of biological environment in the form of yard plants can affect the presence of filariasis vector, considering the type of garden plants (trees and shrubs) is the preferred place for mosquitoes to rest (Manimegalai, 2014).

While close proximity of mangroves (<100 m) to households causes the risk of filariasis vector bites to increase as mangroves can be a breeding ground for mosquitoes. On the contrary, if the distance of mangrove plant is far from settlement (> 100 m) then

mangrove plants can change function as protection of vector borne disease. This is because the mangrove plant provides a habitat for mosquitoes so that mosquitoes can be localized to residential areas. The statement is supported by Putra et. al (2015) which mentions that mangrove plants can become immunity vector borne disease diseases such as malaria because mangroves have a canopy that is able to protect the breeding of mosquito larvae to become a habitat when adult mosquitoes. Loss of mangrove function as protection of vector borne disease (filariasis, malaria, dengue) can be caused by land clearing so mosquitoes move habitat to settlement (Kemenkes, 2011).

In the biological environment, a puddle of rob which is <10 m from the house is known to be at risk of mosquito bites as it is closer to the mosquito breeding area. Inundation with 0.2-18% salt is known to be a breeding ground for mosquitoes such as *Anopheles* sp (Jude, et al., 2012; Pratama, 2015), *Aedes* sp (Jude, et al., 2012; Arduino, et al., 2015), and *Culex* sp (Jude, et al., 2012; Saputri, 2015).

In addition to the salinity conditions, the characteristics of the inundation pools found in the village Bedono is overgrown with water plants and clumps of fish. The existence of a water plant in the form of catfish (*Lemna* sp) makes the puddle of rob can not be used as a place for mosquito breeding due to water plants type catfish eye (*Lemna* sp) makes the mosquito larvae can not live because *Lemna* sp releases substances capable of causing perforation in larvae so that larvae can not survival (Tariq, M, et al., 2009). In addition, the existence of the clump fish makes the mosquito larvae can not survive because the clump fish are known to eat mosquito larvae (Manguin, et al., 2011). The existence of these conditions causes a rob pool with water-planting characteristics and the predators have no potential as potential vector filariasis habitat. However, in the rob pools that are not overgrown with catfish and predatory fish can be used to breed mosquitoes.

While the presence of open drains within <100 m can be at risk of mosquito bites since open ditches are potential habitat of filariasis vector (*Culex* sp) (Misrha, 2014). In addition to *Culex* sp. Mosquitoes, *Anopheles* sp and *Aedes* sp mosquitoes are also known to be able to breed in gullies (Arana-Guardia, et al., 2014; Naeem, et al., 2015). Sewers may be used by mosquitoes to breed because the gut provides provides a place for female mosquitoes to ovoposit (Arana-Guardia, et al., 2014). Therefore, it is necessary to eradicate mosquito breeding such as maintaining the smooth flow of sewer water from blockage (eg garbage) so as not to stagnate.

The existence of livestock enclosures with a mean distance of <10 m is known to increase the potential for transmission of filariasis disease since cattle pens can be used for mosquitoes to rest (Mishra, et al., 2014). In addition, temperatures and humidity in livestock enclosures that are compatible with mosquito breeding, cattle pens may potentially be potential habitat of filariasis vectors (Dhimal, et al., 2014). While the presence of waste contained in puddles may increase the risk of mosquito bites due to waterlogged waste is one potential habitat of aquatic mosquitoes phase with a minimum volume of 5 cc (Higa, et al, 2010).

## **b. Distribution of Filariasis Vector by Temperature, Humidity, and Rainfall**

Based on the results of the study, it is known that the mosquitoes are caught in Bedono village at 25-30°C with peak temperature caught at 29,5°C. These results are similar to Sukendra's (2016) study which states that *Culex* sp mosquitoes caught in Pekalongan City as filariasis endemic areas are present at 27-30°C. The temperature is known to be the optimal temperature for the development of several species of mosquitoes such as *Culex* sp (in the range 26-30°C) (Okorie, et al., 2014), *Aedes aegypti* (temperature range 24-27°C) (Puspawati, 2012), and *Anopheles* sp (temperature range 25-30°C) (Beck-Johnson, L., et.al, 2013). Due to the condition of air temperature in Bedono village as filariasis endemic area support activity of mosquito bites, hence needed strategy to avoid mosquito bites like repellent use mosquito repellent.

Changes in environmental conditions found in filariasis endemic area of Bedono Village is indicated by the decreasing of mangrove forest and abrasion phenomenon that drowns the land and sweeps the ponds. The existence of environmental changes is known to affect the temperature and humidity environment. In the Donatoa study, et. al. (2012) mentions that the reduction of mangrove vegetation by 0.7% causes an increase in carbon emissions by 10% which will affect the temperature rise of 0.0190°C. Increased temperatures and decreased moisture can cause some types of mosquitoes to adapt and have an increased durability (Manguin, et al., 2011). Therefore, at the location of the research (Bedono Village) has a moisture that supports the activity of mosquitoes, the mosquitoes can move to bite optimally. For that, the strategy needed to avoid mosquito bites like the use of anti-mosquito drugs.

## **4 CONCLUSIONS**

The conclusions of this research are physical condition such as temperature, humidity and rainfall in filariasis endemic area of Bedono Village during May-June 2017, ie temperature, humidity and rainfall in medium / tropical category. The existing social environment in filariasis endemic area of Bedono Village in 2017 is known that most respondents have average night-out habits at 23.00-24.00 with kind of activities chatting on home terrace, fishing, keep post pilgrimage ticket, and eat.

Suggestions from this research are for Bedono Village community should clean up the potential environment of mosquito breeding (open SPAL and waste water puddle), protect mosquito bites (wear mosquito repellent lotion, wear shirt and trousers) when out at night -20.00 and 23.0-03.00), and reduced nighttime activities outside the home with mangrove vegetation.

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# The Characteristics of the Patients Doing HIV Test in KTHIV Clinic at Ambarawa Hospital

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**Abstract**–VCT (Voluntary Counseling and Testing) is an examination of HIV voluntary. The data of patients characteristics are needed to do reporting that have been written in the KTHIV Form. Ambarawa Hospital has had KTHIV clinic since 2007 and has the highest number of patients in Semarang Regency in 2015. The aim of the study is to describe the characteristics of the patients doing HIV test in KTHIV clinic at Ambarawa Hospital. The design of study was cross sectional with purposive sampling and got 252 respondents. This study used secondary data obtained from medical records in KTHIV Form. Univariate analysis used frequency distribution and percentage. The result of this research characteristics of the patients were 59,5% male, 58,3% were married, 60,3% were adults (26 – 45 years old), 51,5% had primary education, 73,8% employed, 40,8% were in the risk group of sex workers, 88,9% had a non-formal reason to have an HIV test, and 27,4% had STI (Sexually Transmitted Infections) when taking an HIV test. Conclusion of this research is most patients in KTHIV clinic who do HIV voluntary testing is male, are married, are adult, have primary education, are employed, include as risk group of sex workers, have a non-formal reason, and have STI.

**Keywords** : HIV testing and counseling, HIV, characteristics of the patients, VCT

## VI. INTRODUCTION

The Indonesian government in knowing the incidence of new HIV infections has carried out various ways, including by conducting HIV counseling and testing as stated in Permenkes No. 74 Tahun 2014. HIV counseling and testing is done through these approaches: (a) HIV Counseling and

Testing of Health Service Provider Initiatives (KTIP); and (b) Voluntary HIV Counseling and Testing (KTS). Then every HIV counseling and testing service must be recorded and reported in accordance with the provisions of the legislation, documented in the medical record, and carried out in stages every 1 (one) month.

In Semarang regency, in 2015 the number of patients who checked themselves into the KTHIV clinic was 3813 cases, which increased from the previous year which was 3549 cases. Aside from the number of visits, the improvement of the KTS program was proven by the increase in the number of KTHIV clinics from last year (2015) from only 11 clinics to 14 clinics in 2016 (Dinkes, 2016). The highest data of the patients who visited and tested for HIV in the regency of Semarang was Ambarawa Regency Hospital, followed by Duren Public Health Center, Ungaran regency Hospital and other public health centers.

Ambarawa Regency Hospital in an effort to do a prevention has established the KTHIV clinic since 2007. Since that year there have been many patients who have visited and tested HIV at the clinic. In 2015, 687 people tested for HIV at the KTHIV clinic at Ambarawa Regency Hospital. This figure shows an increase from the previous year which was 548 people. From these data can be separated into 2 types of KTHIV they are KTIP and KTS. In 2015, from 687 people included 636 KTS data and 51 KTIP people.

Based on data regarding the incidence of HIV / AIDS and the number of KTHIV clinics in Semarang Regency, it is necessary to conduct research on the characteristics of patients who do HIV tests at the KTHIV clinic at Ambarawa Hospital. The aim is to find out the characteristics of patients who do HIV testing at the KTHIV clinic in Ambarawa Hospital, including the characteristics of gender, marital status,

age, level of education, occupation, risk group, reasons for HIV testing and comorbidities.

## VII. METHOD

### D. Subject

The total population in this research in October 2015 - September 2016 is 634 people, consisting of data of patients who came until HIV testing stage. In determining the number of samples using a non-probability sampling technique that is purposive sampling. Included in the inclusion criteria in this research were the respondents who joined the first HIV test (to control the double sample). And those included in the exclusion criteria in this research were uncomplete KTHIV form data in medical records. After sorting out the existing population of 634 people using inclusion and exclusion criteria, there were 252 samples.

### E. Instrument and procedure

Secondary data used were medical record data in KTHIV clinic of Ambarawa Regency Hospital, the taken data were data on gender, marital status, age, education, occupation, risk group, reasons for HIV testing, and comorbidities of the HIV respondent. In this research, data were collected from medical record that is from the KTHIV form. When collecting data, the researcher used a table format prepared by the researcher. Secondary data was obtained by recaping the medical record data of KTHIV clinic patient.

### F. Statistic and analysis

data in this reasearch are data that can be used to describe the respondent's data / characteristics obtained from medical record documents. In this analysis, the data is distributed into frequency distributions and percentages.

## VIII. RESULT AND DISCUSSION

The results of the research were recap of medical record data in the form of characteristics of sex, marital status, age, education, occupation, risk group, reasons for HIV testing, and comorbidities. Patient characteristics are presented in several tables below.

**TABLE 1. Characteristics of sex**

Sex	Percentage (%)
Male	59,5
Female	40,5

Male susceptibility to HIV infection is caused by negative behaviors such as buying commercial sex services, and injecting drug user. Men have a high risk because having high mobility and away from wives (Umam, 2015). This is similar with data from the Directorate General of PP and PL of the Ministry

of Health of the Republic of Indonesia (2014), that the number of people infected with HIV is higher in the male than female.

Based on table 1, the results of the research show that the ratio of male gender characteristics is higher (59.1%), which is 150 of the total 252 respondents. This can be caused by the negative behavior of men so that they have a higher susceptibility than women. Negative behaviors that can cause susceptibility included using alternate needles for injecting drug user and tattooing. In addition, because men are the head of the family who have the responsibility to earn money for the family, they have high mobility and are far from their wives. With this in mind, to meet their biological needs as long as they are far from their wives they have the option to buy commercial sex services. Another reason is that from the KTHIV clinic Ambarawa Hospital also has a program to conduct counseling on the importance of HIV testing with the target of prison inmates where most of them are male, who generally have tattoos.

The results of this research are in accordance with the research held at Simpang Tiga (Riau) Public Health Center, that most of the patients who visited and HIV test at the KTHIV clinic were men (51.2%). Male susceptibility to HIV infection is caused by negative behaviors such as buying commercial sex services, and Injecting Drug User. Men have a high risk can be due to having high mobility and away from wives [1].

**TABLE 2. Marital Status**

Marital Status	Percentage (%)
Marry	58,3
Single	36,5
Divorce	4,4
Divorce by death	0,8

Ministry of Health's Directorate General of PP & PL (2013) stated that when HIV-infected men marry, will have the risk of transmitting HIV to their wives after having unprotected sexual intercourse or without using condoms.

Based on the table of research results (table 2), shows that the characteristics of marital status are sorted from the highest, from marital status of 147 respondents (58.3%), then the next sequence is the unmarried (single) status (36.5%), divorce (4.4%) and in the last order is the divorce by the death (0.8%). The results of this research have been in accordance with the research conducted by Syahrir, et al. (2013), in the City of Makassar, that out of 133 samples that had a marital status is 88.7% [6].

In another research stated that married men and women are susceptible to HIV infection. This is

because HIV transmission occurs through direct contact between the deep skin layer (mucous membrane) or blood circulation with HIV-infected body fluids [2].

It can be concluded that with marital status it will increase the risk of transmitting HIV to their partners, because when they are having sexual intercourse the husband and wife don't use condom to get descent and because of that, it can make it possible that the baby being infected with HIV.

**TABLE 3. Age**

Age	Percentage (%)
Adolescent	25
Adult	60,3
Elderly	13,9
Seniors	0,8

Based on the theory and results of the existing research, researchers revealed that in the age of adolescents and adults have similarities, that is have a high risk of HIV if having unsafe sex and oftenly change partners and other risky behavior.

Based on the table of the results of the research(table 3) shows that the 252 respondents most of them were adults (26 - 45 years) as many as 60.3%. The results of this research are in accordance with the research that has been held at the Duren Public Health Center, where most of those who joined KTS test were adults as much as 71.8% [2]. In addition, the results of the study of patients who conducted HIV testing at the KTHIV clinic at Ambarawa Hospital were in accordance with the incidence of HIV in Indonesia in 2014, where the highest infection was in adulthood (69.1%), followed by adolescent age groups (17,2%) and the last is geriatrics (5.5%) (DG PP & PL, 2014)

Respondents who are in the category of adult (26 - 45 years) are more likely to have an HIV test than those who are not because of their maturity in thinking of being able to face and adapt to something new. In addition, because at this age is sexually active and includes fertile age. At the age of 26 - 45 years, they also understand the benefits of having an HIV test, that respondents realize that they are having risk ofHIV infection.

**TABLE 4. Education**

Education	Percentage (%)
Never got education	1,6
Primary education	51,6
Secondary education	42,1
Higher education	4,8

Karmila in her research (2015) stated that the most of the patients have primary school background

than those with secondary education, although with a small difference, ie 49.5% with 45.5% [2].

According to Table 4, thehighest educational characteristics are occupied by primary education by 51%, then in the second place, secondary education is 42.1%, in the third place is 4.8% higher education and the rest in the last place is respondents who do not have been to school.

The results of this research are in accordance with data from the Ministry of Health of the Republic of Indonesia (2010) which stated thatthe majority of those classified as women working for prostitution riskgroups, transgender andcustomers of prostitution, have a primaryeducation background. According to the researcher, this could be caused by the environment and socio-cultural background in the surrounding community, which have not consider the importance of high education. It was proven by the characteristics of the educational background of the society of Ambarawa sub-district that most of them have primary education background.

**TABLE 5. Job**

Job	Percentage (%)
Jobless	26,2
Worker	73,8

Respondents who have jobs tend to behave at high risk. In general, sufferers are affected by high risks with jobs such as commercial sex workers, drivers, and starship crew. For women and men working is part of self-actualization [3]. By working it will increase income. Income increases, the pattern of fulfilling needs will shift, from meeting other needs, especially health improvement [4].

According to the table of the results of the research that has been done (table 5) of 252 respondents, thre are 186 repsonden having jobs (73.8%) and the rest are jobless. Of the 186 respondents, 37.1% worked as employee, 28.5% worked as factory laborers, 12.9% are entrepreneurs, and 11.8% are farmers. Then the respondents who worked as drivers were 5.9%, and three other types of jobs were civil servant, Soldier / Police, Indonesian Labour respectively 2.2%, 1.1%, and 0.5%. The results of this research are in accordance with the research conducted by Umam, that the type of job which is most widely owned is as employee [1].

Respondents who do not have a job included direct sex workers, students or housewives. Most of the respondents who are jobless are couples with the high risk and sex workers, only a small percentage are students. This shows that the patient's job cannot be a guarantee that he/she is not at risk of being infected with HIV if his sexual behavior is not safe. Especially

those with non-permanent partners. Of the small number who work as employee or laborer are sex workers who are indirectly as well.

**TABLE 6. Risk Group**

<b>Risk Group</b>	<b>Percentage (%)</b>
Sex Worker	40,9
Customer of Sex	14,7
Transgender	7,1
Risk Couple	12,7
Gay	2,4
IDU	3,6
Others	18,7

Ministry of Health of Indonesia (2010), stated that the biggest risk group came from sex workers which was then followed by a high risk couple. In the risk group of sex workers can be divided into two types, these are direct sex workers and indirect sex workers.

According to the table of research results (table 6) shows that the highest risk group is in the group of sex workers as much as 40.9%, and the lowest in the gay group is 2.4%. Of the 103 respondents (40.9%) who belonged to the risk group of sex workers 85 of whom were indirect sex workers (82.5%), while the remaining 18 respondents were direct sex workers (17.5%).

In this research, there were 18.7% of respondents who were not in the risk group. Respondents who were not included in the risk group but had risky behavior, is them who have risky sex in the last 6 months were quite high, it is about 74% [5]. This proves that doing an HIV test should be done immediately if you realize that you have done one of the risk factors. It does not rule out the possibility that an individual is not included in the risk group for transmitting HIV.

**TABEL 7. Reason Characteristic of HIV Test**

<b>Reason</b>	<b>Percentage (%)</b>
Formal Reason	5,6
Non- formal Reason	88,9
Formal & non- formal Reason	0,4
Others	5,2

Pradipta stated that patients who had an HIV test mostly had reason to feel risky [5]. The statement is in accordance with the results of the research held that the highest number on the reason for the test is a non-formal reason (88.9%). Where the non-formal reasons for certain symptoms is the highest of many other non-formal reasons, reaching 28.1%, then the reason for feeling at risk is 26.8%.

The results showed that the respondents who had formal reasons were only 5.6%. Some government and private agencies have indeed made HIV testing a mandatory requirement for applying for jobs there. This shows that with the risk of existing work can increase the risk of being infected by HIV so that the requirements of the HIV test results are mandatory when applying for a job. Likewise for other reasons which are owned by respondents who are not included in the formal reasons or non-formal reasons including those for foreign scholarships.

**TABLE 8. Comordibities**

<b>Comordibities</b>	<b>Percentage (%)</b>
Stage 2	15,5
Stage 3	18,7
STI	27,4
Others	8,7
Without Illness	29,8

Comordibities when doing the HIV test is a disease that has been suffered by respondents at this time. In this research, comorbidities were classified into several types, according to the stage of the AIDS disease itself, sexually transmitted disease, and the last is other diseases.

For STI disease, which is mostly suffered by 27.4% of respondents, Syphilis is 21.7% and GO disease is 18.8%, the rest are other STI diseases. This shows that the biggest risk factor in the transmission of HIV infection is sexual intercourse. The risk group that had experienced the most STI symptoms in the past year was sex workers (31%) (Ministry Of Health of Republic Indonesia, 2010).

In third stage of the disease that mostly affects respondents is TB (Tuberculosis), which is 45.7%. Patients who have TB disease are among the at-risk populations along with prisoners, pregnant women, migrants, sex worker customers and partners of PLWHA (People Living with HIV AIDS) (WHO, 2011).

According to the results of research conducted almost one third of the total respondents, as many as 29.8% did not have the disease. This shows that the respondent done an HIV test is not only because he had suffered from an illness. There are still many respondents who do the HIV test because they already have high knowledge so that their self-awareness is high as well, especially those who are susceptible to the HIV infection.

## IX. CONCLUSION

Based on the results of research on the characteristics of patients who done HIV testing at the KTHIV clinic Ambarawa regency Hospital with a sample of 252 respondents, it can be concluded that all people have the risk of infected by HIV if they have done HIV risk behavior regardless of gender, marital status, age, education and occupation. It does not even rule out the possibility that if someone does not belong to the risk group category, they will not be infected with HIV as long as they do a safe behavioral. Not looking at the reasons and suffering from any diseases that are owned, if you feel at risk you should immediately do an HIV test. Because by doing that, it will soon be revealed how far the spread of HIV, so that prevention and treatment can be done (for those who are declared positive) quickly and accurately.

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# The Overview of LBW (Low Birth Weight) Risk Factors in Puskesmas (Community Health Center) Sumowono of Semarang Regency in 2016

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**Abstract** \_\_ LBW is one of the risk factors for mortality and morbidity. Infant mortality rate (IMR) in Semarang Regency in 2015 is 11.18 per 1,000 KH (158 cases), the biggest cause of IMR is LBW (62), Asphyxia (33), and the rest (63) are due to congenital infection, aspiration, tetanus and others. The study aims to describe the LBW risk factors in Puskesmas Sumowono, Semarang in 2014-2015. The study uses a descriptive research design. The research subject in the study is all mothers who gives birth and has the LBW babies in Puskesmas Sumowono, Semarang in 2014-2015 as many as 72 people, with the sample of 72 LBW infants by using sampling total technique. LBW data collection is by looking at cohort records of pregnant women in Puskesmas Sumowono, Semarang. Statistical analysis uses univariate analysis. The result of study shows that the overview of the highest maternal age is age 20-35 years as many as 51.4% (37 respondents), based on the highest gestational age is 37-42 weeks as many as 94.4%, (68 respondents), based on the highest nutritional status is mother who is not KEK with LiLA  $\geq$  23.5 cm as many as 55.6% (40 respondents), based on the highest anemia incidence, Hb  $<$ 11 gr / dl as many as 59.7% (43 respondents), and based on the parity highest is mother who has  $\leq$  3 children as many as 77.8% (56 respondents). It can be described that maternal age, gestational age, nutritional status, anemia and maternal parity in LBW are mostly not at risk.

**Keywords:** Maternal Age, Gestational Age, Nutritional Status, Anemia, Parity and LBW

## I. INTRODUCTION

The state of fetal well-being is influenced by various factors including hereditary factor and the health condition of the parents, so as to strive to get healthy offspring, the parents should be able to prepare themselves physically, and psychologically long before pregnancy is begun and is carried out (Magareth, 2013).

If the birth weight is low, babies are generally less able to adapt to the new environment, so that it can result in stunted growth and development and even disrupt their survival and will increase mortality and morbidity. Low birth weight is one of the main factors that contribute to perinatal death.

The infant mortality rate (IMR) in Semarang Regency in 2015 is 11.18 per 1,000 KH (158 cases), while the Infant Mortality Rate in 2014 is 10.09 per 1,000 KH (142 cases). In 2015, infant mortality rate increases even though the increase is not much. The biggest cause of AKB is LBW (62), Asphyxia (33), and the rest (63) are due to congenital infections, aspiration, tetanus and others.

LBW infant in Semarang Regency in 2015 is as big as 4.70%, if it is compared to 2014 as big as 4.80%. In 2015, the infant mortality rate decreases compared to 2014 in Semarang Regency, LBW is still one of the health problems that is noticed. However, LBW case



has been handled 100% well so that it does not adversely affect subsequent child growth and development.

Puskesmas Sumowono is a community health center (Puskesmas) with a high incidence of low birth weight, based on the results of previous studies, in January-December 2015 babies with low birth weight are 34 cases (10.30%) of 330 live births, this number decreases compared to January- December 2014, 38 babies with low birth weight (12.62%) of 301 live births.

This study aims to determine the overview of LBW risk factors.

## II. MATERIAL AND METHOD

### A. Subject

By using total sampling technique that is the entire population sampled (Notoatmogjo, 2012). The population in this study are mothers who give birth and have LBW in 2014-2015 as many as 72 people in Puskesmas Sumowono. The sample in this study are all LBW data

which amounts to 72 LBW in 2014-2015 in Puskesmas Sumowono, Semarang.

### B. Instrument and Procedure

The process of conducting research is the subject of taking initial data for LBW event. The instrument is the tools used for data collection (Notoajmodjo, 2010). The instrument used in this study is the Master table by taking data in the Register of Pregnant Women Cohort in Pukesmas Sumowono, Semarang.

### C. Statistics and Analysis

Descriptive survey research is a research that is used to see the overview of phenomena occurring within a particular population. This research has been conducted in Puskesmas Sumowono, Semarang Regency. The implementation of this study has been conducted in August 2016. The analysis used in this research is Univariate Analysis with frequency distribution (Saryono, 2011)

## III. RESULT AND DISCUSSION

### A. Univariate

#### 1. Age of Mother

Table 5.1 Age of Mother at Risk of LBW

Age of Mother	Frequency	Percentage (%)
20-35 years	37	51,4
< 20 years dan > 35 years	35	48,6
Total	72	100,0

#### 2. Age of Pregnancy

Table 5.2 Age of Pregnancy at Risk of LBW

Age of Pregnancy	Frequency	Percentage (%)
37-42 weeks	68	94,4
< 37 weeks	4	5,6
Total	72	100,0

#### 3. Nutritional Status

Table 5.3 Nutritional Status at Risk of LBW

Nutritional status	Frequency	Percentage (%)
LILA $\geq$ 23,5 cm	40	55,6

LILA <23,5 cm	32	44,4
Total	72	100,0

4. Incident of Anemia

Table 5.4 Incident of Anemia at Risk of LBW

Anemia	Frequency	Percentage ( %)
Hb $\geq$ 11 gr/dl	43	59,7
Hb < 11 gr/dl	29	40,3
Total	72	100,0

5. Parity

Table 5.5 Parity at Risk of LBW

Parity	Frequency	Percentage ( %)
$\leq$ 3 children	56	77,8
> 3 children	16	22,2
Total	72	100,0

1. The overview of maternal age during pregnancy at LBW risk di Puskesmas Sumowono, Semarang.

The mother age is an individual's age counted from the moment of birth until the time of study, the more enough the mother's age, the maturity level of one's reproductive organs and strength will be more mature. The result of research conducted in Puskesmas Sumowono, Semarang in 2016, is known that the percentage of respondents aged 20-35 years is 51.4% (37 respondents), higher than the respondents aged <20 years and  $\geq 35$  years is 48.6% (35 respondents). This shows that the age of 20-35 years is a good age to give birth because of the age of 20-35 years it is a reproductive age and it is called adulthood, where at this time people have been able to prevent problems faced with calm emotionally, especially in facing of pregnancy, childbirth, postpartum, and taking care their baby later. At this reproductive age the reproductive organ is mature, and hormonal balance is still optimal. This makes the process of conception, the development of the fetus in the mother's womb until the baby is ready to be born can run well, so as to reduce the emergence of other risk factors that accompany pregnancy that can endanger the mother and fetus in the womb.

Respondents aged 20-35 years are not at risk of delivering LBW babies, namely 51.4% (37 respondents). But the reality in Puskesmas Sumowono, even though the mother age during pregnancy is more than 20-35 years old, but it still gives birth to a baby with low birth weight. This is known from the result of research obtained at Puskesmas Sumowono in 2014-2015 the mother age during normal childbirth, namely at the age of 21 years, but there are the other factors that the mother experiences that the mother has a nutritional status lacking with maternal LILA 21 cm, and the mother also experiences anemia with a maternal hemoglobin state of less than 11 gr / dl ie maternal Hb of 10.2 gr / dl. It can also be explained in the Master table on the number of 12 of 2014 the result of research obtained by researchers that although maternal age is normal during pregnancy but there are other factors causing LBW, mother experiences anemia with maternal hemoglobin 10 g / dl, mother has more children of three, and giving birth mother with a gestational age of less than 37 weeks, which is 36 + 2 weeks, because it has been explained that the nutritional status of mother during pregnancy really affects the birth of a normal baby. if the mother has normal nutritional status while pregnant then most likely the mother will give birth a normal

baby, but on the contrary if the mother is malnourished during pregnancy then the mother will give birth to an abnormal baby. Aside from maternal nutrition that must be fulfilled, the mother may not experience anemia during pregnancy. Because if the mother is pregnant with anemia, it will affect the fetus who is born because the blood needs in the mother is less, besides the mother is not anemic, the baby will not be less from 37 weeks. The smaller the gestational age, the bigger the mother will give birth to a baby with low birth weight, and vice versa if the maternal age is getting bigger, then the chances of the mother giving birth to a baby with low birth rate is low.

2. The overview of pregnancy age factor causing LBW in Puskesmas Sumowono, Semarang.

From the result of research conducted in Puskesmas Sumowono, Semarang, it is known that the percentage of respondents whose gestational age is 37-42 weeks is 94.4% (68 respondents), higher than the respondents who have a pregnancy age <37 weeks and > 42 weeks namely 5.6% (4 respondents). This indicates that a gestational age of 27-42 weeks is the perfect age to give birth to a baby and the age is ripe for childbirth. Age of maternal pregnancy has the effect of complications in pregnancy, childbirth and postpartum. At the beginning of pregnancy the weight gain occurs so that it is large for the preparation of maternal organs. In the next stage the increase in body weight is more concentrated than the addition of the fetus, so that the older the gestational age, the more weight the baby will be born.

But from the result of research conducted at Puskesmas Sumowono, although the higher number of mothers who give birth at 37-42 weeks of gestation, where the age is the age that does not cause risk, but from the result of the study even though the mother give birth with a gestational age of 37-42 weeks still giving birth to a baby with low birth rate. This can be influenced by several factors, namely the mother experiences that it can be explained from the Master table found in number 33 of 2014 that although the age of maternal pregnancy does not cause risk but the age of the mother when pregnant under 20 years is 19 years where the age really affects the condition of the fetus that is born, apart from the mother age and the nutritional status of the mother during pregnancy is also lacking, namely the condition of the mother's LIL less than 23.5 cm which is 22 cm, where if the nutritional status of the mother is less during pregnancy, then

most likely the mother will give birth to an abnormal baby or baby born in low birth weight. Because of nutritional status mothers during pregnancy greatly affect fetal growth in the uterus, in addition to the lack of maternal nutritional status, mothers also experience anemia with Hb less than 11 g / dl which is 10 g / dl. Where if the mother has anemia during pregnancy, most likely the baby will be born not normal, because the maternal blood hemoglobin level also affects the condition of the mother's fetus, apart from a number of factors causing the baby to be born with low birth weight condition pregnant woman in Puskesmas Sumowono also still works in the garden and market as trader.

### 3. The overview of nutritional status factor during pregnancy at LBW risk in Puskesmas Sumowono, Semarang.

From the result of research conducted in Puskesmas Sumowono, Semarang, it is known that the percentage of respondents who possess LILA  $\geq$  23.5 cm is 55.6% (40 respondents), higher than the respondents who have LILA  $<$ 23.5 cm which are 44, 4% (32 respondents). This shows that the upper arm circumference  $\geq$  23.5 cm is a normal nutritional status both before pregnancy and during pregnancy. Because mothers who are pregnant with nutritional status must be fulfilled, and most of all respondents in the public health center have good nutritional status although there are still some who have nutritional status when pregnant is not normal, this can be influenced by several factors, such as maternal age, pregnancy age, mother is not anemic, and the number of mother is not more than 3 people.

But from the result of research conducted in Puskesmas Sumowono, even though the highest number of respondents who has LILA is above 23.5 cm, which is not a risk for babies to be born, but from the result of research conducted in Puskesmas Sumowono, respondents who have LILA above 23.5cm, the respondent gives birth to a baby with the condition of a baby with low birth weight, this can be influenced by several factors, such as the mother experiences, which it can be seen in the Master table in 2014-2015 which despite the normal nutritional status of the mother but the mother experiences several factors causing the baby to be born with low birth rate, that is, the mother experiences anemia during pregnancy, namely the condition of maternal hemoglobin is less than 11 g / dl, that is 10 g / dl, because if the mother experiences anemia during pregnancy, then most likely the baby will be born

with low birth weight, besides mother experiences anemia, mother also has more than 3 children, mother has children 4, where the number of children born to mother is also very affected by children who are born now. If more children are born, then most likely the fetus will be born that will experience the weight of baby low birth, because if the mother experiences repeated pregnancies that it will cause damaging to the blood vessels of the uterine wall which is the circulation of nutrient intake to the fetus where the amount of nutrition will be reduced compared to the previous pregnancy. Besides the number of children who are born, the gestational age of the mother is less than 37 weeks is 36 + 2 weeks, where the gestational age affects the fetus to be born, if the greater the gestational age the fetus to be born does not experience low birth weight, but on the contrary if the gestational age is lower or less than 37 weeks the baby will that it's most likely to experience be the body of a baby is born low, because gestational age greatly affects the weight of the fetus born.

### 4. The overview of anemia factor during pregnancy at LBW risk in Puskesmas Sumowono, Semarang.

Based on the result of research conducted in Puskesmas Sumowono, Semarang, it is known that the percentage of respondents who has Hb  $<$ 11 gr / dl is 59.7% (43 respondents), higher than the respondents who have Hb  $\geq$  11 gr / dl of 40, 3% (29 respondents). The large number of respondents who has Hb  $<$ 11 g / dl, namely 59.7% (43 respondents) caused LBW due to pregnancy when the mother of the baby they conceived have several complications which requires the fetus to be removed, apart from complications from the fetus the mother also lacked knowledge about age and status poor nutrition during pregnancy, and mothers are also mostly a farmer.

From the result of research conducted in Puskesmas Sumowono, it can be seen from the Master table in 2014-2015 which even though the higher respondents are mother who does not experience anemia with hemoglobin levels above 11gr / dl, but it can be seen on the Master table even though the mother was not anemic but the mother gives birth to a baby with a low birth rate, because this can be influenced by several factors, such as the age of the mother when she is under 20 years of age which is 17 years when the mother's age is smaller when pregnant, it will affect the condition of the fetus in her birth. because the mother must divide the

nutrition in her body with the fetus she carries, and the mother is still in the process of growth, but if the mother's age above 20 years is less likely the mother will not give birth to a baby with a low birth rate, because the nutritional needs of the fetus are no longer divided the fetus, apart from the age of the mother, also experienced a lack of nutritional status, namely LILA Mother turtle of 23.5cm, which is 22cm, where if the nutritional status of the mother is less than most likely the baby will experience a low birth weight, because nutrition greatly affects the fetus's weight at birth, but on the contrary if the mother nutritional status is good during pregnancy, it is less likely that the mother will give birth to a baby with low birth weight, apart from the nutritional status of the age of the mother's pregnancy it also greatly affects the fetus's weight at birth, here it can be seen when the mother gives birth that is less than 37 weeks, where if the gestational age of the mother is less than 37 weeks that it affects the weight of the fetus at birth, and most likely the fetus is born with a low birth weight, because the smaller the gestational age during pregnancy, then most likely the baby to be born will experience low birth weight or can cause a baby to be born with a premature state, and vice versa if the greater the age of the mother's pregnancy during pregnancy is less likely to give birth to a baby with a low birth condition.

5. The overview of parity factor during pregnancy at LBW risk in Puskesmas Sumowono, Semarang.

Based on the result of research conducted in Puskesmas Sumowono, Semarang, it is known that the percentage of respondents whose parity is not at risk ( $\leq 3$  children), namely 77.8% (56 respondents), is higher than the risky respondents ( $> 3$  children), namely 22.2 % (16 respondents), because where the number of children greatly affects the occurrence of risk factors both in the mother and the fetus to be born and the mother's knowledge of how many children must be born. Respondents who have  $\leq 3$  children were not at risk of delivering LBW babies, this was due to maternal age, gestational age, nutritional status, hemoglobin, and maternal parity which are not at risk, so the mother is very small to give birth to LBW babies.

But the reality is from the result of research conducted in Puskesmas Sumowono, although the highest is mother who has children less than 3 mothers, they still give birth to baby with low birth conditions. This can be influenced by several factors that mother experiences, which can be seen from the

year Master table. 2014-2015 the number of children born to mother is unconscionable, in which new mothers are one, but mothers give birth to babies with low birth weight, from which we can see that the mother's age during pregnancy is less than 20 years, namely 17 years of age, where age can affect the occurrence of low birth weight because if the younger the mother's age it is likely that the baby will be born having a low birth weight, because the nutritional intake given by the fetus is divided with the mother's body, because the mother is still in the process of growth so the mother must share her nutrition with the mother's mother biological, and vice versa if the mother's age during pregnancy is older then less likely to give birth to a baby with a low birth weight condition, apart from the mother age, it can be seen also the nutritional status of the mother in which the mother is malnourished, which can be seen from the size of the LILA, where the mother's LILA is less than 23.5cm, which is 22cm. It will experience low birth weight, because nutritional status during pregnancy affects fetal growth in the womb, and vice versa if the nutritional status of the mother is good during pregnancy. The chances are the baby will be born to have a low birth weight, then in addition to maternal nutritional status can also be seen from gestational age where the gestational age of the mother here is less than 37 weeks which is  $36 + 1$  week, if the gestational age is less than 37 weeks then most likely the baby will be born that will experience low birth weight, because gestational age greatly affects the fetus they are carrying, the older gestational age, the bigger the baby will be born does not experience weight born low, on the contrary, the younger the age of pregnancy, the more likely the baby will be born to experience low birth weight or the baby will experience premature, even the baby will be born can experience death.

#### IV. Conclusion

Based on the result of the in Puskesmas Sumowono, Semarang, it can be seen the overview of the risk factors in LBW, where most of them are not at risk, who are not at risk according to the age factor of pregnant women, namely 51.4%, maternal age of pregnancy is 94.4%, the nutritional status of the mother is 55.6%, anemia during pregnancy is 59.7% and parity as many as 77.8%. But some are at risk for those at risk according to age factors of pregnant women, namely 48.6%, gestational age is 5.6%, maternal nutritional status is 44.4%, anemia is 40.3% and for parity is 22.2 %.

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# Knowledge Differences Class X before and after Giving Counselling about Sexual Infection in Mandiri Balaraja High School 2015

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**Abstract — District Health Office in Tangerang 2010 the case of sexually transmitted disease the most are HIV/AIDS and Gonorrhea, the prevalence of HIV/AIDS infection 20.3% 15.4%, gonorrhea and syphilis 4.6%(5.) One of the factors that affect that is lack of knowledge about PMS. The efforts increased knowledge about PMS can be provided through counseling. The purpose of this research is to know the difference in class 10 student knowledge before and after the given health counselling about PMS in high school Independent Balaraja. Research methods the research design of this is pre-eksperimen design with the menggunakan approach of one group pretest-posttest. The number of samples in this study i.e. 56 respondents using the total population. Normality test using Kolmogorov smirov and test different using Wilcoxon (test the dependent). The results of this research are knowledge grade x before given guidance value an average of 9.20 and after given extension value an average of 16.07. Bivariat analysis showed that the existence of a difference before and after the given extension with results p value  $0.000 < \alpha (0.05)$ . Conclusion of this research is the knowledge the students of class x getting better after being given counselling on HIV/AIDS.**

**Keywords- Knowledge, Teenagers, Health Counselling, STD**

## 1. INTRODUCTION

Teenagers also need to know what it is of the reproduction health of adolescents because will be easy understand the signs of secondary sex itself. According to the WHO reproductive health is a State of physical, mental and social whole, not just free of disease or disability in all aspects related to the reproductive system, function and process(3).

The impact of the globalization era is shown from the results of a Baseline Survey conducted by PILAR (Center for information and services teens) PKBI in West Java in 2000 revealed a 20.4% of respondents consisting of high school in the district

of Balaraja has been doing intercourse (intercourse) is now dating. The activity of teenagers in dating is known by the term KNPI (kissing, necking, petting, intercourse) and from this action, teenagers will try and do not know the negative impact so that teenagers often fall(5).

HIV/AIDS cases are found year after year ever increasing. According to the WHO (2007) the number of AIDS sufferers in the world there are as many as 33.3 million and in Asia there are as many as 4.9 million cases. In Indonesia alone, according to estimates of health RI in 2002 HIV/AIDS there are as many as 110,000 and in 2006 rose to 193,000 and in 2007-2008 the number of cases it has been dated to be 270,000 people(5).

In Indonesia, the sexually transmitted disease that is most widely found is syphilis and gonorrhea. The prevalence of sexually transmitted diseases in Indonesia found very high in Bandung city, namely the prevalence of gonorrhea infection as much as 37.4%, 34.5% of chlamydia, syphilis 25.2%. In the city of Surabaya, the prevalence of chlamydia 33.7% 28.8%, syphilis and gonorrhea 19.8%. While in Jakarta infection gonorrhea 29.8% 25.2%, syphilis and chlamydia 22.7%.

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Jakarta infection gonorrhea 29.8% 25.2%, syphilis and chlamydia 22.7%.

In Indonesia the incidence of syphilis continue to increase every year. The increase of disease is evident since the year 2003 increased by 15.4%, while in 2004 continued to show improvement being 18.9%, while the year 2005 increased to 22.1%. Anyone can become infected with a sexually transmitted disease. Growing trend of the increasing spread of the disease is due to an bergonta sexual behavior-change partners, and the existence of premarital sexual relationships outside of marriage and are quite high. Most sufferers of sexually transmitted diseases are adolescents aged 15-20 years, but there is also a babyof contracting because from her mother(9).

Based on data from Tangerang Regency Health Office in the year 2010 with the case of sexually transmitted disease the most are HIV/AIDS and Gonorrhea, the prevalence of HIV/AIDS infection 20.3% 15.4%, gonorrhea and syphilis 4.6% (5).

From the preliminary results of a study conducted by the method of interview on 10 adolescent respondents high school Mandiri Balaraja, there are 7 students who do not understand about sexually transmitted diseases.

## II MATERIALS AND METHODS

### A. The subject of the

Samples taken amounted to 54 respondents consisted of grade X in the Mandiri Balaraja high scholl with total sampling based on inclusion criteria i.e 1) have never followed the health counselling of PMS. 2) Present on the research time

### B. Instruments And Procedures

This research uses the instrument in the form of a questionnaire sheet contains 20 questions. The process is done in this research is initial data retrieval by providing a questionnaire sheet contains knowledge about PMS (pre test). Then researchers provide health counseling about PMS. After being given health counselling, students are given a posttest for data retrieval final.

### C. Statistics and analysis

Data are presented as mean  $\pm$  SD. normality test for measuring, data obtained has a normal distribution with the Wilcoxon test done the possibility of using the software SPSS 16.0 version.

## III. RESULTS AND DISCUSSION

Research results prior counseling about PMS obtained mean 9.20, highest value respondents 14, the lowest value is 5, and the middle value 9.00, after conducted health counseling about PMS, the value

of the mean of 16.07, highest value of 20, the lowest value is 7, and the middle value16.00 .

Test Data is analyzed with normality test of Kolmogorov-smirnov (table 1) obtained pvalue  $>$  0.05, it means that all the data for knowledge about PMS pre test and posttest usually distributed

Table 1. TEST FOR NORMALITY

Group	Means	SD) $\pm$
Pre test	0.027	2540
Post test	0.064	2756

The results of the research obtained by the p-value  $<$  0.000  $\square$  (0.05) showed that there difference is a significant of knowledge grade X before and after the given health counseling about PMS in Mandiri Balaraja high school.

Table 2. The results of the statistical test of Wilcoxon

Variable	Treatment	N	Mean
Knowledge	Before	56	9.20
	After	56	16.07

Before given counseling obtained a low knowladge because most of the students of class X have not understood about PMS, besides in Mandiri Balaraja high school is there is no programmes regarding health education , in particular in the discuss about PMS. so the know result from knowledge about health in particular regarding PMS are not widely known by them, this shows that education also affects the level of knowledge. It is supported by the theory of the Interview and the Goddess (2011), that the factors that affect the knowledge is internal and external factors. Internal factors that affect the knowledge one of them is education, where education is required to get information such as things that support the health so it can improve quality of life <sup>(19)</sup>.

Ignorance of the X high school students Balaraja can also affected because in the family nobody ever suffered from sexually transmitted diseases, so that information about HIV/AIDS and the transmission method of less note. It is supported by the theory of Notoatmodjo (2010), how to obtain knowledge is based on personal experience. Where personal experience can be used in an effort to gain knowledge by way of repeating the experience ever obtained in solving problems facing the past(14).

From the results of the study can be seen that after a health counseling about PMS most respondents have knowledge well. This indicates that the information has been obtained regarding education through health education is very



important. And public awareness can improve knowledge, so expect students not only know and understand about PMS and how to penularanya, but also want to implement a prevention menularnya PMS. This is expressed by Notoatmodjo (2012), stating that the health education health education activities is done by spreading the message and instill confidence, not only of the community sehingga aware, know and understand, but also want to and can make an argument that there are hubungannya with health(15). According to Nursalam (2003), said that the extension of health is part of health promotion process intentionally planned to create opportunities for individuals to learn to improve awareness and increase the knowledge and his skills in the interest of her health(16)

Other factors that affect the knowledge is age. The average age of the students of SMK is 14-16 years old. At the age of adolescence this is they have a sense of curiosity is high, so as to allow the respondent to receive knowledge about PMS as an update of knowledge. Such a theory advanced by Fudyartanta (2012), that the period of adolescence is an important period to be given a positive education. On this phase starts to happen changes both physically, psychologically and socially. Physical development is fast and quick mental development especially in early adolescence teens have a sense of making a high knowledge. All developments that give rise to the need for a mental adjustment, attitude and interest in something that is considered recently by teen <sup>(6)</sup>.

The material in this study is quite interest i.e. PMS a thing related to health reproduksi, thus making the students become more interested to know. Methods in research in using the method of lecture, this method fits in the granting of health education in teenagers who are educated are pretty high. in addition to the lecture, were held questions answers , which makes the students become more open in conveying a question or statement, students can exchange information. Instrumental in this research grant of extension health using audio visual media in the form of LCD with power point and video cases are made in such a way in order to get someone's attention. Extension officers or educators who provide health counseling by using language that is easy to understand for the listener, act as a friend and create a relaxing atmosphere. In accordance with the theory of Notoatmodjo (2003), said that the climate of the learning process must be created situations of life, joyful, and not too formal. After the granting of health education, improved knowledge on respondents. <sup>(13)</sup>.

#### IV. CONCLUSION

Based on the results of the study it can be concluded that there is a difference of knowledge

grade X before and after the given health counselling about PMS with a p-value of  $0.000 < \alpha (0.05)$ .

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# Characteristics of ARI in Terms of the Presence of Smoked Family and Nutritional Status in Metro Kibang

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Acute respiratory infections (ARI) is one of the causes of death in children in developing countries, include in Indonesia. (WHO) estimated the incidence of Acute Respiratory Infections (ARI) in developing countries with under-five mortality rates above 40/1000 live births of 15% -20% per annum in toddlers. Based on the data in the margototo health center work area there was an increase in the incidence of ARI toddlers in the last 3 years. Risk factors that caused ARI in toddlers in Margototo village include maternal education, incomplete immunization status, presence of family members who smoke and nutritional status of children. This study aims to determine the correlation of the presence of family members who smoked and nutritional status of children with the incidence of ARI in toddlers in Margototo village, Metro Kibang district. This study used quantitative research with analytic design and cross sectional approach. Population in this study were all toddlers who visited the posyandu in Margototo village on June, 11-12 2013. The sampling technique used non-probability sampling with the accidental sampling method with a total sample of 101 toddlers. The results showed that out of 101 subjects there were 68 subjects (67.3%) who suffered from ARI. Most subjects found the presence of family members who smoked, namely 65 subjects (64.4%), and respondents with less nutritional status as many as 43 subject (42.6%). The results of the chi square test analysis, the correlation of the existence of family members who smoked with the incidence of ARI in infants was obtained p value 0.020 ( $\alpha$

<0.05). The correlation of nutritional status with the incidence of ARI in infants was obtained p value 0,000 ( $\alpha$  <0,05). The conclusion of this study is that there is a correlation between the presence of family members who smoke with the incidence of ARI in infants and there is a correlation between the nutritional status of children with ARI in infants in Margototo village, Metro Kibang district. It is expected that Margototo Puskesmas can improve public health services such as providing health education regarding the dangers of smoking for the community.

**Keywords— characteristics, ARI, smoked family, nutritional status**

## I. INTRODUCTION

World Health Organization (WHO) estimates the incidence of Acute Respiratory Infections (ARI) in developing countries with under-five mortality rates above 40 per 1000 live births is 15% -20%/year in the under five years (toddlers). According to WHO pneumonia is one of the main causes of death by killing 4 million children under five every year (Depkes, 2006).

The percentage of ISPA events in 2011 for the East Lampung region ranks second after South Lampung. From the annual report of P2M East Lampung Health Office there were (27%) ARI diseases of 255,111 cases of outpatient care at health centers in all age groups and 23,321 (14.37%) ARI among children under five (Dinkes Lamtim, 2011).

In Margototo, ISPA for three years ranks first in the top ten diseases and has increased in number over the past three years. Recorded in 2010 the number of ARI cases was 3,353 (14%), in 2011 there were 3,712 cases (14.80%) and in

2012 there were 3622 cases (15.02%).

In 2012 the case of ARI was 3,622 cases (15.02%), while the target for ARI was 10%. In 2012 the number of nutritional status for the Margototo Health Center working area was 6,349 (97.8%), 139 (2.14%), and 1 malnutrition in the Margototo Community Health Center (Profile of Margototo Health Center, 2012).

This study aims to knowing the relationship of the existence of family members who smoked and nutritional status of children with the incidence of ARI in toddlers.

## II. MATERIALS AND METHODS

This study is a type of analytic research with cross sectional approach, to determine the correlation of the presence of family members who smoked and nutritional status of children with the incidence of ARI in infants. This research was conducted in Margototo village, Metro Kibang district. The population in this study amounted to 426 toddlers. The sample size is 101. The sampling technique is non-probability sampling with the accidental sampling method.

## III. RESULT AND DISCUSSION

TABLE 1.  
Frequency Distribution of existence of family members who smoke

Presence of family members who smoke	Amount	Percentage (%)
Yes Smoking	65	64,40
No Smoking	36	35,60
Amount	101	100

Table 1 shows that from 101 toddlers, 64.4% (65 toddlers) have family members who smoke

TABLE 2.

Distribution of Toddler Nutrition Status Frequency

Toddler Nutrition Status	Amount	Percentage (%)
Good	58	57,40
Less	43	42,60
Amount	101	100

Table 2 is known from 101 toddlers at 42.6% (43 toddlers) with poor nutritional status.

TABLE 3.

Distribution of Acute Respiratory Infection (ARI)

Incidence of ARI	Amount	Percentage (%)
Yes ARI	68	67,30
No ARI	33	32,70
Amount	101	100

Table 3 is known from 101 toddlers 67.3% (68 toddlers) with the ARI category

TABLE 4

The Relationship Between The Presence Of Family Members who Smoke with ARI of toddler

Prese nce Of Smok er	No ARI		ARI		Amount	%	P value	OR
	n	%	n	%				
No	17	16,8	19	18,8	36	35,6	0,020	2,740
Yes	16	15,8	49	48,5	65	64,4		
N	33	32,7	68	67,3	101	100		

Statistical test results obtained p value 0.020. So it can be concluded that there is a relationship between the presence of family members who smoke with the incidence of ARI of toddler

Table 5

The Relationship Between Nutritional Status With ARI of Toddler

Nutriti onal Status	Tidak ISPA		ISPA		Amount	%	p value	OR
	n	%	n	%				
Good	28	27,7	30	29,7	58	57,4	0,000	7,093
Less	5	5,0	38	37,6	43	42,6		
N	33	32,7	68	67,3	101	100		

Table 5 above shows that the results of statistical tests obtained p value of 0.000, which means that there is a relationship between nutritional status of children with ARI events of toddler.

Based on the results of research conducted by 101 toddlers, the frequency distribution of the presence of family members who smoke in Margototo village is 64.4% (65 toddlers). The results of this study are greater than the research conducted by Ike Suhandayani on 124 toddlers in Pati Pati Pati Puskesmas in 2006 with the proportion of the presence of family members who smoked was 42 toddlers (33.9%).

Based on the results of research conducted by 101 toddlers, the frequency distribution of children under five with poor nutritional status was 42.6% (43 toddlers). The results of this study are greater than the research conducted by Dewi Rahmawati on 30 toddlers in URJ children at RSU dr. Soetomo Surabaya in 2008 with the proportion of children under five with a nutritional status of less than 10 toddlers (33.33%)

Based on data collection conducted during the study from June 11-12, 2013, it was obtained data that out of 101 toddlers who visited the Posyandu in Margototo village who suffered from ARI were 68 toddlers (67.3%) and toddlers who did not suffer from ARI were 33 toddlers (32.7%). The results of the study showed that of the 65 toddlers with family members who smoked, most of them were ARI patients, which were 48.5% (49 toddlers) and those who did not suffer from ARI were 15.8% (16 toddlers). Statistical test results obtained p value of 0.020 so that it can be concluded

that there is a relationship between the presence of family members who smoke with the incidence of ARI of toddler

The results showed that of 43 toddlers with poor nutritional status, most of them were ARI patients, namely 37.6% (38 toddlers) and those without ARI were 5.0% (5 toddlers). Statistical test results obtained p value of 0,000 that there is a relationship of nutritional status with the incidence of ARI in infants. So the author assumes that the nutritional status of children under five will increase the chance of ARI of toddler

#### IV. CONCLUSION

Based on the results of the research, there was a significant relationship between the presence of family members who smoked and the incidence of ARI in toddlers and there was a significant relationship between the nutritional status and ARI in toddlers.

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# Level of Preference, Economic Value and Nutrition on Spring Rolls the Katuk Leaf

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**Abstract-** Nutritional intake Breastfeeding mothers can influence the baby during breastfeeding has an impact on the nutritional needs of breastfeeding mothers. Clumps of katuk leaves are processed food supplemental spring rolls made from spring rolls filled with katuk leaves. Katuk leaf spring rolls for breastfeeding mothers milk production are needed for baby growth. The study aims to determine the level of preference and nutrient content of katuk leaf spring rolls. Research design used pre-experiment. At the Mulawarman University Agricultural laboratory. The sampling technique with a completely randomized design was analyzed using Kruskal Wallis with a significant level of  $p < 0.05$ . The results of the panelist test statistical test ( $p = 0.000$ ). Results of Organoleptic Assessment Color lumpia A score of 3.84 B 3.625 and C 3.775 Texture lumpia A 3.76 B 3.72 C 3.77 Aroma A 3.85, B 3.525 and C 3.70. Taste A 3.758, B 3.76 and C 3.76. Kruskal Wallis test with asymp. Colorig 0,851, flavor 0,977, aroma 0,670 and texture 0,820 with katuk leaf lumpia in conducting panelist test. The level of preference of leaf lumpia katuk has no difference between spring rolls A, B and C. Analysis of laboratory results on the highest nutrient content in Spring Rolls namely Protein 3.26, Fat 4.26, Moisture Content 13.27, Ash Content 0.24, 0.035 Fiber and Carbohydrate Levels 78.9. Lumpia filled with katuk leaves produce as much as 368.00 Kcal of energy. And the economic value of the three Lumpia A samples is Rp. 1,053, B Rp. 1,063 C Rp. 1,153. Suggestions for further research on frying and leaf storage for leaf better to obtain better results.

**Keywords-** *Spring rolls, The Katuk Leaf, Level of Preference, Economic Value, Nutrition*

## I. INTRODUCTION

Coverage of nutritional intake Breastfeeding mothers can influence the growth of the baby. Physical and biological changes during breastfeeding have an impact on maternal nutritional needs. Thus during breastfeeding, the mother must have nutritional needs so that the breastfeeding output of breast milk (ASI) can succeed well and perfectly. Inadequate nutritional intake of food during breastfeeding can not only cause disruption to baby growth, but it is feared that it can also reduce milk production [1].

Based on the annual report of the East Kalimantan Provincial Health Office from 2011 to 2013, data on Exclusive ASI Coverage was obtained. In 2011 there were 38.34% in February, 72.23% in 2012 and decreased to August 61.19% and 62.5% in 2013, exclusive ASI coverage in February was the same as the previous year in August in 2013 fell to 54.5%.

Katuk leaf vegetables (*Sauropus androgynus*) can facilitate breast milk, anti-germ and anti-fat, because they contain estrogenic sterol compounds that spur the production and expenditure of ASI. These vegetables are also rich in chlorophyll which can cleanse the body's tissues and waste disposal of metabolic waste, while being antiparasitic, antibacterial, antiviral and cleanse toxins in the body. Based on research, katuk leaves contain ephedrine. In addition, according to the study, in 100 g of katuk leaves contained: energy 59 kcal, protein 6.4 grams, fat 1.0 grams, fiber 1.5 grams, ash 1.7 grams, calcium 204 mg, phosphorus 83 mg, iron 2.7 mg, vitamin A 10.370 SI, B 0.1, and C 239 mg, and water 81 grams [2]. Katuk leaves are usually sauteed or made clear vegetables. This vegetable is rich in vitamin A and Vitamin C. Vitamin A is good for eye health, cell growth, immune system, reproduction, and maintaining healthy skin. The Vitamin C is needed for collagen formation, regulate cholesterol levels, maintain healthy gums, and maintain body resistance. Vitamin C is also needed for wound healing and improves brain function in order to work optimally [1].

Katuk leaf spring rolls are processed food additives to treat spring rolls -shaped snacks generally made from spring roll skin wrapped in spring roll with katuk leaf mixture is beef that has been cut into small pieces added with carrots, garlic and salt spices. Katuk leaf spring is suitable for the daily menu of breastfeeding mothers who aim to increase the

production of milk that is needed for the growth of the baby. Therefore, research is needed on spring rolls katuk leaf as a snack food

for breastfeeding mothers in helping to expedite and produce breastmilk for infants so as to reduce infant mortality and succeed in the exclusive ASI program.

## II. MATERIALS AND METHODS

This type of research uses a pre-experimental research design. This method is a study that conducted a trained panelist test at the Quality Supervision Processing Laboratory at the Faculty of Agriculture, Mulawarman University. This study used a single factor analysis and research design using Completely Randomized Design (CRD), each with 3 treatments and 6 replications, namely at C<sub>1</sub> = Control (spring rolls without Katuk Leaves) C<sub>2</sub> = spring rolls with katuk leaves as skin lumpia and C<sub>3</sub> = Lumpia with katuk leaves as contents. Appraisal data collection techniques for the level of preference with organoleptic test using *Hedonic Scale Scoring method*.

The assessment score offered to panelists is a 1-5 scale which includes: very like (5), like (4), rather like (3), dislike (2), and very dislike (1). A total of 20 somewhat trained panelists gave an assessment of the food to be tested (lumpia) by filling in the assessment sheet prepared [3]. Each sample to be tested was prepared in the form of lumpia in the same form. Each plate is filled with one sample with each code number arranged randomly. Each panelist will try lumpia with another code, the panelist drinks water to eliminate the previous lumpia bias. Obtaining a large sample of 20 trained panelists. Data analysis used is Kruskal Wallis Test

## III. RESULTS AND DISCUSSION

### Color Hedonic Test

Based on the results of the assessment answers based on the distribution of the number of panelists and the average value is presented in the diagram of the Color Hedonic Value as follows.

**Table 1. COLOR Hedonic Test Differences in Lumpia Products with Katuk Leaf Addition Technique.**

Variable	Spring Rolls A	Spring Rolls B	Spring Rolls C
Colors	3,84	3,625.	3,775

Table 1 shows the results of the study with the average Hedonic Color value of spring rolls products in each treatment of color assessment showed the average value of the three samples of spring rolls, namely ordinary spring rolls (A), spring rolls with katuk leaf coloring (B) and katuk leaf contents (C) samples with an average yield of 3.84, 3.62 and 3.77 colors. From the results of the color test on the level of lumpiness of spring rolls with katuk leaves as coloring, the lowest value of all treatments was obtained. This is because the green color produced by katuk leaves is still less attractive. A lot of Lumpia is preferred because the color of brown lumpia will produce a cake whose color tends to be more brown. The higher the addition of flour, then the color of the spring will be brown. This is in accordance with the color produced from lumpia products, that lumpia is one of the attributes of the appearance of a product that often determines the level of consumer acceptance of the product in full

Color is an indicator that is first seen and observed by consumers because color is an appearance factor that can be seen directly by consumers. The appearance of the color of a food is a major factor that is assessed before other considerations, such as taste and nutritional value. A material that is considered nutritious, tasty, and has a very good texture will not be eaten if it has unsightly colors or gives the impression that it has deviated from the color that should be. Attractive and natural-looking food colors can improve taste. Natural dyes are natural dyes (pigments) obtained from plants, animals, or from water sources [4].

### Hedonic Hedonic Test

Based on the results of the Evaluation answers based on the distribution of the number of panelists and the average value presented in the diagram of the Hedonic Hedonic Value as follows.

**Table 2. Hedonic Hedonic Test Differences in Lumpia Products with Katuk Leaf Addition Technique.**

Variable	Spring Rolls A	Spring Rolls B	Spring Rolls C
Texture	3,76	3,72	3,77

Based on the results of the answers based on the distribution of the number of panelists and the average value presented in the table Hedonic Values The following textures show the results of the study with the

mean hedonic test of lumpia products in each treatment. The results of organoleptic tests on texture by the panelists showed that the texture of spring rolls with the addition of katuk leaves or not were equally disliked and disliked. In the three experimental lumpia results, lumpia with the highest score is spring rolls with the addition of katuk leaves as coloring (lumpia C) with a score of 3.77. However, the three experimental lumpia samples have the same criteria, namely elastic and crisp on the skin. Based on Kruskal-Wallis calculations, the texture of elasticity and the chi square value of 0.05 is 0.820, so in the sensory test substitution of katuk leaves affects the elasticity of lumpia. The average panellic preference for spring roll lumpiness ranged from 3.72 > 3.77 (like it or not).

Good spring rolls texture is elastic, with the size of the material that is suitable and the thickness of the skin and a deep frying pan will produce a good texture spring rolls. The use of too much flour will make stiff spring rolls dry and hard. And if too little will make the spring rolls too soft so it will tear when filled and will lose its shape. The thicker the ingredients, the acceptance of the intensity of the taste, smell, and taste diminishes. The addition of katuk leaves that are too much will produce poorly textured spring rolls, such as the results on B spring rolls is a lumpia with the lowest texture assessment score, it is caused by the high water content of 81 grams or 100 grams of katuk leaves. The less katuk leaves used, the better the spring rolls texture will be.

### Aroma Hedonic Test

Based on the results of the answers to the Evaluation based on the distribution of panelists and the average values are presented in the diagram of Aroma Hedonic Values as follows

Table 3. Scent Hedonic Test Differences in Lumpia Products with Katuk Leaf Addition Technique.

Variable	Spring Rolls A	Spring Rolls B	Spring Rolls C
Aroma	3,85	3,525.	3,70

Based on the results of the answers based on the distribution of the number of panelists and the average value is presented in the diagram of the Hedonic Value of Aroma as follows with a score of 3.85 while the lumpia with the addition of katuk leaves as a filling got a score of 3.70 and lumpia B with a score of 3.52 because of the aroma which is caused quite aromatic, this is caused by the proportion of the addition of katuk

leaves which is used larger. Based on the results of the scent test of lumpia products, katuk leaves showed results that were smaller than the color, aroma, taste, and texture, with the results of Kruskal-Wallis calculation greater than the table chi value of 0.05, namely 0.670, then the leaf substitution sensory test katuk affects the aroma of katuk leaves. Supported by the results of physicochemical tests on the content of water, protein, and fat which have a significant effect on katuk leaf lumpia products. The average value of panelists' preference for the aroma of katuk leaf spring rolls ranged from 3,525-3,85 (Like-Very Like).

The aroma is a odor that is difficult to measure so it usually raises different opinions in assessing the quality of the aroma. Disagreements are caused by everyone having different smells, even though they can distinguish scents but everyone has different preferences. A good spring rolls aroma is typical of spring rolls, meaning that it matches the ingredients and is almost liked by everyone from all groups of society. In the experimental spring rolls the results of this experiment use basic ingredients and additional ingredients of katuk leaves. The aroma of katuk leaves is a very sharp aroma. The aroma can cause nausea.

The scent on the leaves will generally occur when the leaves are chopped or mashed. spring rolls, the average experimental results are quite aromatic, the aroma arising from lumpia is caused by the aroma of the katuk leaves. In general, the smell that is received by the nose and brain more is a variety of herbs or a mixture of four main smells that are fragrant, sour, rancid, and charred. The sense of smell is very sensitive to odor and the rate of smell is approximately 0.18 seconds. The sensitivity of the sense of smell is estimated to decrease by 1% every year. Acceptance of the sense of smell will be reduced by the presence of certain compounds such as formal dehydration. Fatigue of smell to smell can occur quickly. Scent is closely related to the sensory sense of smell of the product, an important factor in food products that can affect the quality of the product is aroma, which has an important effect on the formation of the taste of food and the acceptance of consumers [5].

### Taste Hedonic Test

Based on the results of the assessment answers based on the distribution of the number of panelists and the average value is presented in the diagram of the Color Hedonic Value as follows.



Table 4. Hedonic Tests for Differences in Spring Roll Products with Katuk Leaf Addition Technique.

Variable	Spring Rolls A	Spring Rolls B	Spring Rolls C
Taste	3,76	3,625.	3,76

Based on the results of the answers based on the distribution of the number of panelists and the average value is presented in the diagram Hedonic Values as follows Based on the results of the research, there was no difference in the sense of taste between spring rolls A, B and C. Samples with the addition of katuk leaves as filling the highest average score compared to the other two samples namely 3.76. Samples that have average values below are control samples or regular spring rolls. The sample with the lowest value under the lumpia sample with the addition of katuk leaves as the coloring. The three samples of skin spring rolls from experimental results add the same amount of material but the results of the test have different sweetness and savory levels. This shows the sensitivity of panelists' sense of taste varies.

The overall results of the hedonic test showed that the fewer addition of katuk leaves in lumpia skin dough, the results obtained will also be of good quality. The addition of katuk leaves to the contents of the mixture will be better because the sweetness of dangurih in lumpia will taste more, on the contrary if the addition of katuk leaves is more and more in the skin mixture sweet and savory flavor on lumpia is reduced due to the taste of katuk leaves. Food ingredients contain two-thirds to four basic flavors. According to Fardiaz (2007), fat is a component of flavor and affects the savory taste and the taste of a food ingredient can be derived from the nature of the material itself or because of the presence of other substances added to the processing, so that the original taste becomes reduced or may become more delicious [6].

### Kruskal Wallis Difference Test Results

Table 5. Characteristics of Sensory Tests of Kruskal Wallis Difference Test Results

Sensory Test Characteristics	Asymp. Sig	Conclusion
Collors	0,851	No Difference
Taste	0,977	No Difference
Aroma	0,670	No Difference
Texture	0,820	No Difference

Based on the Kruskal Wallis test with grouping formula variables, it is found that the asymp.sign is

0.670. Thus, there is no difference in the third color assessment of the A, B and C spring rolls product formula or between the smell / aroma of one formula to another. Difference between Lump Formula and Difference between Katuk Leaf Skin. Based on the Kruskal Wallis test with grouping formula variables, it is found that the asymp.sign is 0.977. Thus, there is no difference in the third color valuation formula of spring rolls A, B and C product formula or between the taste of one formula to another.

Different Test Results of Katuk Leaf Lumpia Formula Texture. Based on the Kruskal Wallis test with grouping formula variables, it was found that asymp. the sign is 0.820. Thus, there is no difference in the third color valuation of the A, B and C spring rolls product formula or between the texture of one formula to another. Comparison of different Kruskal Wallis test results on the acceptance of the third sensory characteristics of the lumpia product formula. Acceptance of the third sensory characteristics of the A, B and C lumpia product formula is no difference.

### Economical Price of spring rolls the Katuk Leaf

Table 6. Economic Price Test Results of the Three Formulas.

Economic Price Test Results	Price
Spring Rolls A	Rp. 1.053
Spring Rolls B	Rp. 1.063
Spring Rolls A	Rp. 1.153

Based on table 6, it can be seen that there is no significant difference in the test results of the economical price of the formula for spring rolls A spring rolls without katuk leaves, lumpia B products with katuk leaves as spring rolls skin (natural coloring), and spring rolls C products with katuk leaves as contents. Economic value of research results from the economic value of spring rolls per portion obtained by the total price of all food ingredients used for each recipe per formula divided by the number of servings obtained from each formula From the ingredients for formula A above can produce 60 spring rolls, then the economic price of spring rolls per serving is Rp. 1,053. From the ingredients for formula C above can produce 60 spring rolls, the economic price of spring rolls per serving is Rp. 63,800 / 60 = Rp. 1,063. From the ingredients for formula B above can produce 60 spring rolls, then the economic price of spring rolls per serving is Rp. 69,200 / 60 = Rp. 1,153.

From this calculation it can be seen that there is no significant difference in the results of the economic price test between the formula of spring rolls A spring rolls without katuk leaves, lumpia B products with katuk leaves as spring rolls skin (natural coloring), and spring rolls C products with katuk leaves as contents. This can be caused because katuk leaves which are used as additional ingredients have economic value in the community so that they can be found at affordable prices. This can be a consideration for consumers because the production price is almost the same as regular lumpia but has high innovation and nutrition.

### Lumpia Nutritional Content

Based on the results of the laboratory test parameters in the mulawarman university assessment based on the best lumpia results from 3 treatments and 6 replications, namely at C<sub>1</sub> = Control (Lumpia without Katuk Leaves) C<sub>2</sub> = spring rolls with katuk leaves as spring rolls skin and C<sub>3</sub> = spring rolls with katuk leaves as the contents obtained in C<sub>3</sub> product =spring rolls with katuk leaves as the contents get the best results from the panelist trial, as follows:

Table 7. Spring Rolls Nutritional Content Test Results

Variable	Parameter Uji					
	Protein	Fat	Water Content	Ash Content	Fiber Content	Carbohydrate
On Spring Rolls Katuk Leaf	3,26	4,26	13,27	0,24	0,035	78,9

Nutritional content Test Results spring rolls or prosimat analysis is a method of chemical analysis to identify the content of nutrients such as protein, carbohydrates, fat, moisture and ash content at any nutrients from food. And, it has benefits as an assessment of the quality of foodstuffs, especially on the standard of food substances that should be contained in it. Based on the results of laboratory testing, it can be seen that the protein content varies according to the composition ratio. The difference in protein levels in each variable is influenced by the composition of the three samples. The protein content is highest in the variable C by stuffing leaves katuk that many of the products as the spring rolls B only with natural dyes katuk leaves. This indicates good katuk leaves. The more katuk leaves are given, the higher the protein content produced. Of the two samples with the addition of the leaf spring rolls katuk in select the best sample the product C, which is then tested by analysis prosimat

Protein levels. Providing 10 grams of katuk leaf substitution affects the increase in protein content of katuk leaf lumpia. Substitution treatment increases the number of main compositions in the manufacture of katuk leaf lumpia products. while katuk leaves used for substitution have high protein content, so the protein contribution from katuk leaves at a 10gram substitution is higher. Based on Table 7 the resulting protein content of lumpia products was 3.26%. The nutrient content of katuk leaves in 10 grams that the protein value in katuk leaves is 4.8 grams [2], [7]. But the results of the tests carried out by researchers obtained smaller results, this refers to the process of heating or boiling can damage the protein which is marked by the hardening of katuk leaf lumpia products so that the value of protein in spring rolls with katuk leaf contents decreases although not too low.

Fat level. The fat content of katuk leaf spring produced is 4.25. This content is much higher compared to the value of fat nutrient content in katuk leaves according to Santoso, which is 1.0 this is caused by other factors outside katuk leaves such as the content of flour, oil and other filling ingredients. The high fat content caused by flour has a high fat content of 0.41% while tapioca flour is around 0.30% and several other supporting factors such as the use of eggs, meat and oil [8].

Water content. The content of water content is 13.27%, as the flour ratio increases. This is because flour has a lower water content than tapioca flour. Ahmad (2012) stated that flour has a lower moisture content compared to tapioca flour [8]. This is also as reported (Almatsier, 2009), which states that the higher the concentration of flour used, the longer the moisture content in katuk leaf lumpia products is lost, there are several factors such as excessive boiling of katuk leaves so that the water content is widely released and result low emulsion stability [9]. This shows that the water content in all treatments is directly proportional, where the higher the concentration for katuk leaf spring becomes higher. The high water content is caused by katuk leaves holding more water. The high value of water content is caused by containing more oil. There is no attachment between water and oil so that the process of evaporation of water occurs during the oven and drying process [10].

Ash Content. Ash content in foodstuffs is the remaining minerals produced by combustion of organic matter at a temperature of around 550 C (Sudarmadji, 2004). ash content is closely related to the cleanliness and purity of the material, so the ash content requirements are very important to determine the level

of cleanliness and purity of a material. The increase in ash content of katuk leaf spring products seen in table 4.8 can be obtained with a value of 0.24% due to the added substitution treatment which reduces the composition of flour which has a relatively low ash content, so that the higher the substitution treatment will lower the ash content of katuk leaf spring

**Coarse Fiber Levels.** Based on Table 7, the crude fiber content of katuk leaf spring produced is 0.035%. Coarse Fiber Content is a non-nutrient substance that helps the digestive process, there are two types of fiber, namely dietary fiber (Dietary Fiber) and crude fiber (Crude Fiber). Coarse fiber is a residual substance from plants that can be eaten and left behind is a compound that cannot be detected in human or animal contamination organs while food fiber is part of the material that cannot be detected by polluting enzymes while. Carbohydrate. Based on Table 4.8, the carbohydrate content of katuk leaf spring rolls produced 78.9%. Increased carbohydrate levels occur are influenced by the addition of flour which has a high carbohydrate content compared to tapioca flour. Carbohydrates are polymers that are composed of sugar molecules that are strung into long chains and can also branch, called polysaccharides, such as starch, and cellulose.

**Protein Test**

Table 8. Calculation Results of Third Protein Test Parameters for Lumpia Samples

Product A	Product B	Product C
3,05	2,41	3,26

Characteristics of the test results of katuk leaf lumpia products using the parameters of processed products tested objectively include the protein content of the three samples, namely A Control Lumpia (Lumpia without Katuk Leaves), B Lumpia with katuk leaves as lumpia skin and Lumpia with katuk leaves as contents Table 8 below is the result of the measurement of the three katuk leaf lumpia products. From the results of protein tests that have been done in the laboratory of agricultural technology assessment, the results obtained in table 4.8. From the results of the study it can be seen that protein levels vary according to the composition ratio. The difference in protein levels in each variable is influenced by the composition of the three samples. The highest protein content is found in variable C with a lot of katuk leaf filling from lumpia B products only with katuk leaf natural coloring.

**Spring Rolls Nutrition (Calories) Contents Katuk Leaves** Table 9. Number of Spring Rolls Nutrients (Calories)

Content of Katuk Leaves

Composition	Amount Of Composition	Calorie / Gram Value	Number Of Calories
Protein	3,26	4 Kkal/G	13,8 Kkal
Fat	4,25	9 Kkal/G	38,3 Kkal
Carbohydrate	78,9	4 Kkal/G	315,9 Kkal
Total Calories	86,41	17 Kkal/G	368,00 Kkal

Based on the data presented in Table 9, it appears that the number of calories of katuk leaf spring rolls by the three macro nutrients is 368.00 Kcal. Determination of serving sizes is based on nutritional adequacy that meets a minimum of 300 Kcal per day as a calorie food requirement). AKG reference (Nutrition Adequacy Rate) for determining the nutritional value information of katuk leaf spring for breastfeeding mothers, breastfeeding mothers is +400, which is 2400 Kcal. By calculating carbohydrates 60% of total energy, protein is set at 15% of total energy. Energy needs for breastfeeding mothers are 200 Kcal higher than pregnant women, which is 2400 Kcal. Because, the calories absorbed by the mother will also be divided into babies through ASI. To produce quality milk, breastfeeding mothers are encouraged to consume foods that contain energy and complete nutrients [11].

For this reason, a nutritional value is calculated so that the same product will have different nutritional value information. For per 100 grams (1 seed) katuk leaf lumpia produce energy as much as 368.00 Kcal so as to meet the energy needs of breastfeeding mothers need 6 spring rolls filled with katuk leaves but if accompanied by other foods as a source of nutrition then only half of the supplement is needed 6 spring rolls, which are about 2-3 lumpia in a day as complementary food for nursing mothers.

The conclusion that is needed in the research technique of adding katuk leaves to spring rolls to the level of preference, protein value and economical, namely: There is no difference in the level of preference of katuk leaf lumpia color, taste, aroma, and texture of katuk leaf spring product A Control formula (spring rolls without katuk leaves ), B (spring rolls with katuk leaves as lumpia skin) and C (spring rolls with katuk leaves as contents) which have been tested on 20 trained and somewhat trained panelists in the Faculty of

Agriculture Laboratory of processing and controlling the quality of agricultural products.

The level of protein value of katuk leaf spring seen from the results of laboratory tests that have been carried out can be seen that the protein content varies according to the composition ratio, the highest protein content of 3.15 is found in variable C with katuk leaf filling. For the economic value level, there is no significant difference in the test results of the economic price of each spring rolls sample formula which ranges from Rp. 1053 to Rp. 1153 per serving.

Nutrient content (Protein, Carbohydrate, Fat, Fiber, Mineral Content, ash content) in katuk leaf spring rolls with the best formulation based on all the tests carried out are spring rolls with katuk leaf contents are Carbohydrate content 78.9 Protein 3, 26 Fat 4, 26 Content water 13.27 0.24 ash content and 0.035 crude fiber content. For this reason, a nutritional value is calculated so that the same product will have different nutritional value information. For per 100gr (1 seed) katuk leaf lumpia produce energy as much as 368.00 Kcal so that to meet the energy needs of nursing mothers need 6 spring rolls filled with katuk leaves but if accompanied by other foods as a source of nutrition then only half of the supplement 6 is needed lumpia, which is about 2-3 spring rolls a day as a complementary food for nursing mothers.

#### IV. SUGGESTION

Suggestions that are needed in the research technique of adding katuk leaves to spring rolls to the level of preference, protein value and economical, namely: Need further research on frying and steaming to obtain spring rolls texture and further research on storage of katuk leaf spring so that shelf life is longer.

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# Phenol Urine Level as a Biomarker Benzene Exposure of Gas Station Workers in Semarang

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**Abstract**— Benzene is one of the components contained in the fuel oil. Gas Station Workers one of the workers population who have high risk levels of benzene exposure. The purpose of this research was to analyze the factors that are correlation with phenol urine as biomarkers of benzene exposure for gas station workers in Semarang. Research methods using cross sectional design with sample of 31 subjects were male, who worked on the night. Phenolic urine measurement using 4-aminoantipirin colorimetry methods and data analysing using pearson product moment. Subjects in this research having average age of 37 years with a working duration about 9 hours/ day and has been working about 14 years. Gas station workers Gas station filled an average of 1,763 liters of fuel per day and 100% were not wearing PPE (Personal Protective Equipment). There are 90,3% in this study have abnormal phenolic urine (>20 mg/l). Statistic analysis showed a significant correlation between age ( $p = 0.000$ ), working period ( $p = 0.000$ ), working duration ( $p = 0.000$ ), the number of liters of fuel oil ( $p = 0.000$ ), premium fuel oil ( $p = 0.000$ ), and pertamax fuel oil ( $p = 0.003$ ) with a phenolic urine. The conclusion, the dominant risk factor is working period ( $p = 0.000$ ).

**Keywords**— Phenolic Urine, Biomarker, Benzene Exposure, Gas Station Workers

## I. INTRODUCTION

Semarang is a city that has high mobility which has the third largest population after Cilacap and Brebes regencies with the number of motorized vehicles with 467,223 units in 2013 (BPS Jateng, 2013). The large number of transportation in Semarang city affects the used of fuel oil in the city. The fuel oil consumption in Semarang city in 2010 was 248,812 Kilo Liters (KL) and in 2013 increase to 494,123 KL (ESDM Jateng, 2013).

The fuel oil consumption which aways increased every year in Semarang city caused the gas station workers to filled more fuel oil. The workers at gas stations are at risk of being exposed to hazardous chemicals from gasoline [3].

Biomarker metabolite from benzene were 13,2% phenol, 10,2% hydroquinol, 1,9 t-t muconic acid, 1,6% kathekol, and 0,5% 1,2,2-benzeneatriol [2].

Benzene absorbed the human body will become benzene epoxide which then encounters cytochrome P-450 which converts benzene to phenol in the form of excreted urine [4].

Effects of benzene exposure include respiratory infections, damage to the blood formation system, decreased resistance to infectious agents, and can caused loss of consciousness that occurs in the central nervous system [2].

## II. MATERIALS AND METHODS

### 1. Subject

Thirty one man gas staion workers by using non probability sampling [5] who not smoking from the 24 gas station unit in Semarang. The criteria for population harvesting are as follows: 1) sample of male and not smoking. 2) sample has worked minimal 3 years 3) sample working on the night shift. 4) sample has worked minimal 4 hours.

### 2. Instrument and Procedure

Research method used analytical method, with an explanatory research that explains causal correlation between variables by hypotheses [12]. For the study is a

cross sectional design , the are independent variables and dependent variables measured and collected at the same time [11].

Independent variables in this study are age, duration of work, used of PPE, the number of liters of fuel oil that is loaded and the type of fuel that is prepared, which is done on gas station workers in Semarang city who work on the night shift. The sample urine research was carried out for the Laboraturium Hiperkes Jawa Tengah used the 4-aminodipic acid colorimetric method.

### 3. Statistical and analysis

Descriptive statistics were determined for each variable recorded. Data are presented as mean±SD. Normality test to measure whether data obtained has a normal distribution so it can be used in parametric statistics (inferential statistics) [6]. Statistic analyzed with *Pearson Product Moment* for ratio-scale variables, and *Chi-Square* for nominal-scale variables using SPSS (Statistical package for Social Studies) 5

## III.RESULT AND DISCUSSION

Gas stations, is a building to sell fuel oil for transportation managed by companies or individuals [10]. Gas stations are partners of PT Pertamina as a domestic fuel provider. Types of fuel sold at gas stations include diesel, premium, pertamax92, and pertamina dex [14]. Various types of fuel products have different ingredients [1]. Gas station’s workers use a canopy to distribute fuel from the fuel tank to the transportation tank, where benzene vapor can inhaked through the respiratory system.



Figure 1. Distribution Map of Gas Station Sample

Subjects in this research having average age of 37 years with a working duration about 9 hours/day and has been

working about 14 years. Gas station workers filled an average 1,763 liters of fuel per day and 100% were not wearing PPE. There are 90.32% in this research have abnormal phenol urine levels (> 20 mg / l).

For the statistical analysis, cut of point for phenol urine levels is mean value (31.10 mg / l). From the mean value is used to determine the cut of point of the number of liters of fuel . Result for categorizing the number of liters of fuel 1970 liters / day with a sensitivity value of 60% and specificity of 63%.

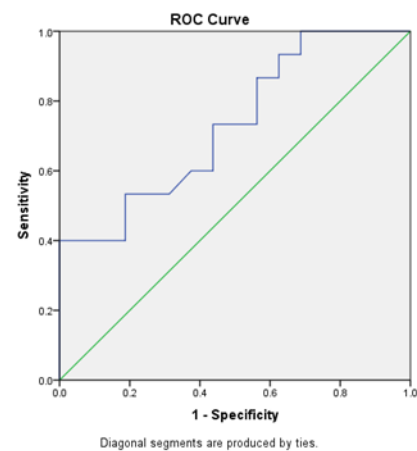


Figure 2. ROC Curve (Totals fuel oil to predict Phenol Urine Levels at Gas Station Workers)

Data showed that if the gas station workers filled in >1970 liters / day it will have a risk of abnormal phenol urine levels of 60% while for workers who filled ≤1970 liters / day the risk of phenol urine levels is 63%.

Table 1. Results of Pearson Product Moment Correlation Test between independent Variables and dependent Variables

Independent	Depend	<i>p-value</i>
Age		0,000
Working Period	Phenol Urin	0,000
Durasi of Work	Level	0,000
Total Fuel Oil		0,000

The Correlation between age and phenol urine levels, age is related to decreased physiological organs of the body so that it affects metabolism and decreased muscle work. The older the age of labor, the higher the risk of benzene exposure based on phenol urine levels [8].

Duration of work on the fuel fill operator workers is directly related to the number of benzene that expose them while in the workplace. If the concentration of benzene is inhaled every day for a long time it will affect the amount of benzene exposure. The number of working hours that exceeds normal time will be very vulnerable to exposure to chemicals including benzene in the workplace [9].

Working period is the length of time a person is exposed to chemicals continuously [7]. The longer the exposure that occurs will affect the degree of toxicity experienced by a person due to the accumulation of toxic substances in the body. Chronic toxic effects often occur because small amounts of toxic substances are absorbed for a long time, accumulating so that chronic toxicity is achieved [13].

Correlation of the number of liters of fuel loaded with phenol urine levels. From the data obtained in the field, operator workers fill fuel at gas stations whose phenol levels exceed the limited or  $\geq 20$  mg / l are workers who fill more than 1013 liters of fuel per day. With an average

duration of work 9 hours, fuel filling operator workers will be have higher risk of benzene exposure.

Correlation between type of fuel oil that is filled with phenol urine levels. Benzene content in different types of fuel oil, the premium content of benzene is the highest, which is a maximum of 5% of the total amount of gasoline per liter, while pertamax the maximum amount of benzene is 2.5% of the total amount of gasoline per liter and diesel is a maximum of 1% of the total amount of gasoline per liter. Statistical test showed a significant associated between Premium type and Pertamina type.

Multivariate analysis using multiple regression linear statistic, the dominant independent variable is working period variable with p value 0.000 ( $p < 0.05$ ).

To determine the effect of work period on the phenol urine level, the calculation is then obtained results that at each increase in the work period of 1 year the urine phenol content increased 3.65 mg / l. Similar with research of Sri Maywati and Siti Novianti which showed that an increase of 1 year working period increased urine phenol levels by 1,286 mg / l in gluing part workers in the Industri Sendal Kota Tasimalaya 2011.

#### IV.CONCLUSION

Based on the results of the research, it can be concluded that risk factors for benzene exposure to gas station workers in the city of Semarang are age, work period, duration of work, number of liters of fuel that is loaded and the number of liters of fuel type that is loaded. The dominant factor is the working period.

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