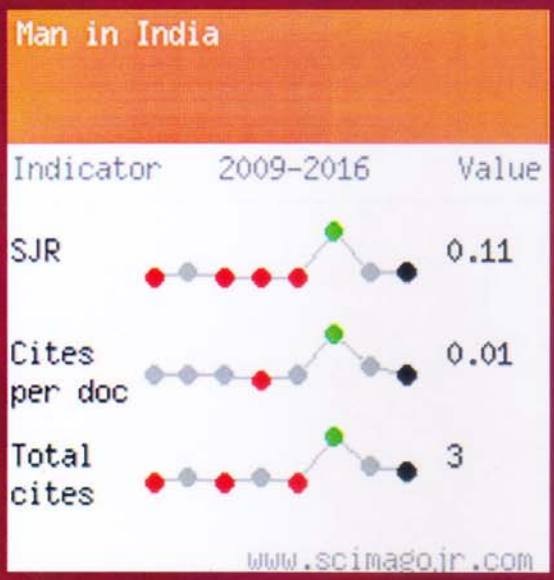
This title is indexed in Scopus

ISSN: 0025-1569

MAN IN INDIA

FOUNDED IN 1921 BY SARAT CHANDRA ROY

Volume 97 Number 24 2017



AN INTERNATIONAL JOURNAL OF ANTHROPOLOGY

SERIALS PUBLICATIONS (P) Ltd., New Delhi (India)

MAN IN INDIA

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Man In India, 97 (24) : 1-13

PUBLIC PERCEPTION TOWARDS CELEBRITY POLITICIANS: DESCRIPTIVE STUDY OF POLITICIAN ANANG HERMANSYAH

Hermina Manihuruk[1] and Ardhana Ulfa Azis[2]

Anang Hermansyah, the musician and entertainer in Indonesia is occupying the position of the Member of Parliament of the House of Representatives of the Republic of Indonesia. His career as politician definitely should be seen before public as someone who understands the nation state issues and work to build the nation with the goal of achieving the nation's ideals. However, Anang on television screen acts as a musician and an entertainer as if it does not strengthen public perception on his position as a politician. In this matter, the objective of the study is to know how public perception is really built towards Anang Hermansyah and what perception is really built in public about Anang Hermansyah.

The results describe public perception built from the elements of selection, organization and interpretation and indicate that the celebrity politician, Anang Hermansyah does not yet make his self-perception as a politician, and on the contrary, public remains have perception to Anang Hermansyah as a celebrity.

Keywords: Interpretation; perception; selection.

INTRODUCTION

After the 1998 reformation era, the presence of celebrities on the political stage is shown rather different. In the past the political parties' politicians took movie stars, singers and comedians along with them in the campaign. They become vote getters or merely mass gatherers. In the era celebrities did not have orientation as politicians occupying political position despite them were the claimed cadres from certain political parties. In current era, movie stars, sinetron players, comedians, singers and television presenters become legislative candidates from each of their political parties.

The emergence of the new brand *"celebrity politicians"* can represent some pop artists' success to be elected as politicians or the Members of Parliament, Senayan members, regional heads or regional vice heads and participants in the race for politician chairs. From the existing data, more than 40 pop artists in Indonesia have been success to become politicians or have been participating in election although they ever fail in election or merely participate in the election market. Some successful celebrity names as politicians are as follows (www.kpu.go.id):

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[2] Department of Politic, Universitas Pembangunan Nasional 'Veteran', Jakarta

No.	*Name*	*Occupation*	*Period*	*Political Party*
1.	Dede Yusuf	Vice Governor of West Java Province	2008-2013	PAN Democratic Party
2.	Deddy Mizwar	Vice Governor of West Java Province	2013-2018	PAN
3.	Zumi Zola	Mayor of East TanjungJabung District Governor of Jambi Province	2011-2015 2016-	PAN
4.	Rano Karno	Vice Mayor of Tangerang District Vice Governor of Banten Province Governor of Banten Province	2008-2011 2012-2014 2014-	PDI Perjuangan
5.	Dicky Chandra	Vice Mayor of Garut District	2009-2011	Independent
6.	Sigit Purnomo Syamsuddin Said	Vice Mayor of Palu City	2016-	PAN

The list of celebrities-politicians occupying the position of the Members of Parliament (MP) is as follows:

No.	*Name*	*Occupation*	*Term Period*	*Political Party*
1.	Okky Asokawati	MP DKI Jakarta II	2009-2014 2014-2019	PPP
2.	Dedi Gumelar	MP Banten I	2009-2014	PDI P
3.	Venna Melinda	MP East Java VI	2009-2014 2014-2019	Democratic Party
4.	Jamal Mirdad	MP Central Java I	2009-2014 2014-2019	Gerinda
5.	Nurul Qomar	MP East Java VIII	2004-2009 2009-2014	Demokrat
6.	Rieke Diah Pitaloka	MP West Java II	2009-2014 2014-2019	PDI P
7.	Rachel Maryam Sayidina	MP West Java II	2009-2014 2014-2019	Gerinda
8.	Mangara M. Siahaan	MP West Java I MP Central Java IV	2004-2009 2009-2014	PDIP
9.	Guruh Soekarno Putra	MP West Java II	2004-2009 2009-2014	PDI P
10.	Theresia Ebenna Ezeria Pardede	MP West Java IX	2009-2014	Democratic Party
11.	Primus Yustisio	MP South Sumatra II	2009-2014 2014-2019	PAN
12.	Tantowi Yahya	MP North Sumatra I	2009-2014 2014-2019	Golkar
13.	Meutya Hafid	MP East Java VIII	2009-2014	Golkar
14.	Eko Hendro Purnomo	MP West Java IV	2009-2014 2014-2019	PAN
15.	Desy Ratnasari	MP West Java II	2014-2019	PAN
16.	Dede Yusuf	MP West Java VII	2014-2019	Democratic Party
17.	Krisna Mukti	MP West Java VI	2014-2019	PKB
18.	Lucky Hakim	MP West Java I	2014-2019	PAN
19.	Nico Siahaan	MP East Java IV	2014-2019	PDIP
20.	Anang Hermansyah	MP East Java IV	2014-2019	PAN

For Inggried Dwi Wedhaswary, the Kompas reporter whose news reporting published on kompas.com, the presence of qualified celebrities politicians on the political stage truly remains in doubt. However, nothing is wrong if political parties nominate celebrities as legislative candidates or regional heads. What is wrong is if the recruitment principle of the celebrities only wants to increase voter turnout by selling popularity and instant entertainment to people. Replacing the existing politicians whose images are down with celebrities who have no competence as people's representatives or state officers is considered an unwise choice.

CELEBRITY POLITICIAN ANANG HERMANSYAH

Anang Hermansyah or frequently called Anang is Member of Parliament, Commission X elected in the 2014 General Election from the bearer party, *i.e.* National Mandate Party (PAN). However, as the elected Member of Parliament, Anang remains have shown on TV screen like the expert in the talent search reality show program, *i.e.* "The Rising Star Indonesia" broadcasted in RCTI. Anang's life almost entirely gets public attention until right now. As top singer in Indonesian music industry and his marriage and family, Anang's news reporting in the infotainment programs is great. His marriage and divorce with Kridayanti become infotainment news. It also occurs to his togetherness with his children with Krisdayanti. After his divorce, infotainment makes his close relationship with his duet as news. Moreover, he marries Ashanty and finally he gets two children from her. Infotainment news like to report his children from his marriage with Krisdayanti, *i.e.* Aurel and Azriel. Therefore, as if Anang Hermansyah is mostly known public as pop artist, in fact he is a politician right now. In other words, Anang Hermansyah is a politician frequently associated with the profession of a musician and entertainer. As a politician, he occupies the position of Member of Parliament, Commission X at DPR RI with the scope of duties (Education, Youth, Sport, Tourism, Arts and Culture Affairs). His career as politician should get public attention. Nimmo defines politicians are elected or appointed officers or career officers recruited to occupy state positions and their communication activities with political affairs (Nimmo, 2006, p. 30). Communicating about political issues can be meant a politician as someone who understands state meaning so that he works in state institutions as well as he thinks and works for the nation's development with the objective of the nation's ideals. Communicating political issues means any discussion on decision making and state policy process, and therefore, politicians are those involved in the process. Anang Hermansyah as politician should be seen as anyone who understands the nation, works to build the nation with the goal of reaching the nation's ideal. Moreover, he should be seen as the Member of Parliament who is actively involved in state policy making process. However, when Anang presents on TV screen as a musician and entertainer as if he does not strengthen public perception on his position as a politician. In this matter, it should be studied how

public perception is definitely built about Politician Anang Hermansyah and what perception about Anang Hermansyah is really built in public.When knowing the perception, a research was carried out in a group of students as the educated social group in Indonesia. They are considered to see fast and dynamic changes and follow information consciously. This research was conducted in students from Faculty of Political and Social Sciences University Pembangunan Nasional Jakarta. Therefore, the group of students can definitely represent social groups in Indonesia to know public perception towards Celebrity Politicians whose number is great right now.According to Kenneth K. Sereno and Edward M. Bodaken, Judy C. Pearson and Paul E. Nelson, public perception is built and developed through three phases, *i.e.* selection, organization and interpretation (Mulyana, 2007, p. 181).What we mean selection definitely includes sensation and attention. Sensation is a kind of sensing with five human senses (eyes, ears, skin and muscle, nose and tongue). Moreover, before we give response or interpretation, an event should get attention at first.After selecting stimuli from circumstances, what we do further is organizing the stimuli or information by combining them into more significant pictures. There are four types of cognitive schemata that we use to build our perception: prototypes, personal constructs, stereotypes, and scripts.The last phase is interpretation. The interpretation is a subjective process when we describe perception in various ways so that we will build the meaning of the perception's object. In the interpretation, humans give meaning in the combined information. The interpretation directs them to make conclusion and these get influence from experiences, demand, values, expectation, trust, physical and emotional condition and others.

METHODS

Researchers use quantitative descriptive methods. It aims at describing and explaining a problem after we analyze data with the use of statistical test to the existing variables. The data collection uses questionnaire with closed questions. The researchers distribute 100 questionnaires to 100 students from Faculty of Political and Social Sciences, Department of Communication Science with total number of 811 students. The reason of electing the population is due to their education background in communication science where they understand perception issues. Moreover, they comprehensively know national political issues because they have got the subject of political science so that they are a social group who can represent public and being competent to observe the politicians' behavior. Collecting samples uses the Solvin's formula (Umar, 2009, p. 78), namely:

$$n = \frac{N}{1 + N(e)^2}$$

$$= \frac{811}{1 + 811(0,1)^2} = 99,87 = 100$$

Note:

n = no. of samples

N = total population

e = error margin due to tolerable sampling error, for example 2%.

The tolerance limit for random error for each population is not similar; it can be 1%, 5% or 10%.

The data analysis technique conducted in this research is descriptive statistics with some measures among others (Sugiono, 2008):

1. *Frequency distribution:* The frequency distribution helps researchers to estimate how the frequency distribution is from the research data.
2. *Central tendency:* The central tendency is used to indicate some scores in a kind of number. In this research, it only calculates the mean tendency. The mean is "a tendency value used to see a middle value or median of total number". In the application, the mean is calculated to determine the interval class in the distribution of opinion:

Mean formula is as follows:

$$x = \boxed{\frac{\sum(wi(x) \cdot f)}{\sum f}}$$

Note:

x: Mean

f: frequency

wi: value of each frequency

SCALE OF MEASUREMENT

In keeping with the topic, the research uses Likert scale because the scale is used to measure attitude, opinion and perception of someone or a group of people about social phenomenon (Sugiono, 2008, p. 132).

The answer of each instrument items using Likert scale has gradation from very positive to very negative on the form selection:

1. Strongly Agree/SA : 5
2. Agree/A : 4
3. Not sure/NS : 3
4. Disagree/D : 2
5. Strongly Disagree /SD : 1

Man In India, 97 (24) : 35-40

DEVELOPMENT OF LEARNING MEDIA "STOP MOTION TECHNIQUE GYMNASTIC FLOOR ON SMARTPHONE"

Ch Fajar Sriwahyuniati[1], Endang Rini Sukamti[2], Sri Mawarti[3] and Ratna Budiarti[4]

This study was designed to assess gymnastics is a gymnastics exercises performed in software, the elements of motion consisting of rolling, jumping, jumping, spinning in the air, resting by hand or foot to maintain balance when jumping forward or backward. Gymnastics floor is one of the disciplines of sports artistic gymnastics. In the process of training the presence of instructional media has a great role for trainers and for athletes. Learning media has an intermediary role in delivering messages from trainers to athletes. The study of learning media development is in the form of "stop motion motion technique base gymnastics floor on smartphone. The purpose of this research is to produce a software product of learning media stop motion technique of floor gymnastic on smartphone. Stop motion learning media software contains learning process related to the floor gymnastic designed concept with an interesting layout, so the learning process becomes not boring. Research method used in this research is R & D (research and development). The results showed: Development of Learning Media "Stop Motion Technique of Gymnastics Floor on Smartphone through preliminary study, product planning, expert validation, revision, small group trial and trial. Equency of stop motion by category apply 90% (feasible) and media expert 87.50% (feasible) Based on field trials of media experts 90.00% (feasible), and experts. Thus 100 % (feasible) the learning media stop motion technique gymnastics can be used as a medium of learning.

Keywords: Stop Motion, R n D, Gymnastic

1. INTRODUCTION

1.1. Background

The term gymnastics derived from the English "Gymnastic" in the native language is the Greek word absorption word "Gymnos" which means bare, while the purpose of gymnastics is to increase body endurance, strength, agility, agility, coordination, and body control (Agus Mahendra, 2001: 9). Gymnastics is part or branch of gymnastics. Agus Margono (2009: 79) suggests, gymnastics is a gymnastics exercises performed on the mat, elements of motion consisting of rolling, jumping, jumping, spinning in the air, resting by hand or foot to maintain balance when jumping forward or back one of the disciplines of sports artistic gymnastics.

C.H. Fajar Sri Wahyuniati (2008), explains that the gymnastics floor is one of the gymnastics that is competed to the international level. The proper method for teaching floor exercises is by using a demonstration method. Some basic techniques

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that can be taught in early childhood include: front roll, roll back, split, handstand, and balance.

Gymnastics in Indonesia is a sport that has been well known among the community both children to adults. Branch gymnastics has been to competition from an early age to adult hood from the regional arena, national, to international. In the process of gymnastics floor exercises, basic motion techniques in gymnastics floor should be introduced and trained as early as possible from athletes stepping on the age of practice. Gymnastics of the floor requires a factor of flexibility. The trainer plays an important role in the training process at the athlete. The trainer needs to know the appropriate and well-paced media that is given to the athlete. The importance of learning media for trainers to facilitate in conveying basic motion techniques to be trained. Media word derived from Latin medius which literally means middle, 'urkan', or 'introduction', in Arabic media is or sender message from the sender to the recipient of the message, (Azhar Arsyad, 2011: 3).

According to Sadiman (2008: 7) describes the learning media is anything that can be used to distribute messages from the sender to the recipient of the message. In this case is the process of stimulating the thoughts, feelings, attention, and interest and attention of students so that the learning process can be intertwined. The statement may explain that instructional media is a tool used by teachers as teaching aids. In the interaction of learning, teachers convey the message of teaching in the form of learning materials to students.

Field observations show that not all floor gymnastics trainers involve learning media as a tool that can assist in the delivery of messages to athletes. This causes the learning process or training process carried out by the trainer is monotonous so as to enable athletes who follow the training will experience saturation. Saturation can cause the motivation to practice decreased, so that will have an impact on the decrease of training results or perfomance that is not optimal. Based on the observations made by researchers on the internet, there are many applications of learning media gymnastics floor but the average application of learning gymnastics floor using English and less detailed form of movement. Yet to pay attention to technical details in the floor gymnastics needed a benchmark as the basis of assessment.

Based on the above background researchers intended to conduct research and development of learning media stop motion technique base gymnastics floor on the smartphone.

1.2. Roadmap Research

Road map of research activities related to the stages of research activities Yogyakarta State University, especially supporting aspects related to the

management of budget financing more efficient and effective. The focus of this research is related to the formulation of Science and Technology Development in sports in encouraging the improvement of achievement. This means that the relevance of university research plans with the development of science and technology into one of the research that has implications for the progress and welfare of society. This research activity is the beginning that focuses on the prototype design aspect. The research that will be done is to analyze and develop the stop motion learning media. This research activity is based on the actual phenomenon that is currently done by some sportsmen who study gymnastics, related to understanding perception when the exercise process is different.in this research activity can be shown on the roadmap of research. The products, technology, and research & development (R & D) in this research activity can be showed to the roadmap research in Table 1.

TABLE 1: ROADMAP RESEARCH

Aspect	*I*	*II*	*III*
Subject	elementary school students	elementary schoolstudents	elementary school students
Product	Model	Model Publication	Model Copyrigt Publication
Technology	Design Prototype Stop Motion Learning Media	Stop Motion Software Learning Media	Stop Motion Software Learning Media

1.3. Problems and Objectives

The research problem is how to make a model of floor gymnastics learning that is easily understood by the child. In line with the research problem, the purpose of this research is to make learning media gymnastics easy to understand by children in learning process of floor gymnastics in Indonesia.

1.4. Implementation Results Activity

Implementation of the results of this activity can be a conceptual reference (modeling) and to produce learning include: (a) results in the form of the model prototype, publications and scientific journals for publication, both journals of international and national journals; (b) Document the results of this study can be used as a reference or a reference in the and develop concepts in a software model learning media gymnastic media for the community, especially children about the importance of learning media for efficient and effective floor gymnastics software. Means the implementation of the results of this activity can be done: (a) Academically; model estimates, publications, seminars, focus group discussions. (b) Practical; learning media gymnastics software

1.5. Outcomes & Contributions

Outcomes and contribute to the development of sport science and technology of the research activity include: (a) results in the form of the model prototype, publications and scientific journals for publication, both journals of international and national journals; (b) reference or a reference in the and develop concepts in a software model learning media gymnastic.

III. RESEARCH METHODS

3.1. Research Design

This was study was used research and development design

3.2. Scope

The scope of the study in this research is sport science and technology. The location of observation as the laboratorium s sport school in Sport Science Faculty, Yogyakarta state universities of Indonesia and gymnast in special region of Yogyakarta. The observation period is about 2017.

3.3. Types and sources of data

The data used is primer data and analysis unit. primer data sources are from the laboratorium sport school, sport coaching, sport science faculty, Yogyakarta state university and analysis unit in special region of yogyakarta. According to (Sugiyono, 2003: 333) research and development method (R & D) is a method used to produce a particular product, and test the effectiveness of the product

3.4. Methods of analysis

The method of analysis in this research is reseach and development. research methods used to produce a particular product, and tested the effectiveness of the product. In the design of this study, researchers want to create a software that can be operated on a smartphone. In the software there is a material about the technique of floor gymnastics, and there are explanations of techniques Having obtained a percentage with the formula, then this eligibility is classified into four categories of eligibility as follows:

TABLE 2: PERCENTAGE OF ELIGIBILITY.

No	*Persentase*	*appropriateness*
1	76%-100%	feasible
2	56%-75%	quite decent
3	40%-55%	less feasible
4	< 40%	not feasible

Source: Suharsimi Arikunto (1993:210)

3.4. Operational definition

Learning Media Stop Motion Gymnastics Technique Floor on Smartphone Learning media is a medium used by trainers, as well as athletes who are used as a means of learning so that the material delivered can be absorbed properly and fun.

Learning media and exercise stop motion technique motion gymnastics floor is a medium of learning for basic motion gymnastics techniques in the form of software that there are video, pictures, and technical implementation of basic motion gymnastics floor in the video and drawings steps of basic motion gymnastics floor. This app is designed to appeal to athletes to improve their motivation to exercise gymnastics.

(a) Development of Learning and Exercise Media The development of instructional media is an effort process to prepare and develop media that will be used for learning process. One effort to prepare and plan carefully in developing, producing and validating a media program.

(b) Learning Media Stop Motion Gymnastics Technique Floor on Smartphone

IV. RESEARCH RESULTS

1. Expert Judgement Validation

This gymnastics learning media is validated by a media expert learning and gymnastics experts. The result of validation both experts as follows:

TABLE 3: VALIDATION RESULT

Validation	*Score*	*Maximum Score*	*(%)*	*Category*
Media Expert 1	35	40	87.50%	**feasibility**
Media Expert 2	36	40	90%	feasibility
Learning Expert 1	36	40	90%	feasibility
Learning Expert	40	40	100%	feasibility

RESULT

Testing of the product. A small group of test subjects performed for 10 gymnasts SELABORA, while studies of field trials carried out in field trials conducted at 20 Gymnasts DIY. As for the product trial results as follows:

TABLE 4: A SMALL GROUP OF TRIAL RESULTS

No	*aspects*	*score obtained*	*The maximal score*	*presentation*	*Category*
1	display	81	100	81,00%	feasibility
2	material	79	100	79,00%	feasibility
Score total		160	200	80,00%	feasibility

The results of the test question form small groups. shows the display aspects of 81.00% by category " feasible ", material aspects of 79.00% by category "feasible", and could be construed that the media deserves to be tested to the next stage

TABLE 5: A FIELD TRIAL RESULTS

No	*aspects*	*score obtained*	*The maximal score*	*presentation*	*Category*
1	display	178	200	89,00%	feasibility
2	material	186	200	93,00%	feasibility
Score total		364	400	91,00%	feasibility

The results of the field trials now about learning media stop motion shows the display aspects of 89.00% by category "viable", material aspects of 93.00% by category "viable",. Total assessment test feasibility study stop motion media according to respondents (91.00% of Gymnasts are categorized "decent".

IV. CONCLUSION

Based on the research and testing in the previous chapter obtained some conclusions as follows: produce prototype design and model software floor gymnastics software. Beginner gymnast better using software floor gymnastics.

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Man In India, 97 (24) : 161-170

EFFECT OF MANIPULATION COMPLEX TRAINING (PYRAMID COMPLEX TRAINING & SQUARE COMPLEX TRAINING) TO IMPROVING AGILITY

Mansur, M. S.

This study aims to prove the effect of complex training manipulation on agility in non-athletes aged 18-20 years. This research is included in quasi-experimental research. Research design using pretest post test group design. The population of this research is the students of Sport education coaching program. Samples were taken using Isaac and Michael's formula with a significance level of 5%. Subjects were divided into 2 groups, namely PCT and SCT groups. The PCT group was treated with a combination of 8 RM, 6 RM, 4 RM and plyometric training with pyramid system (lateral single leg jump 6 contacts, 8-contact side jacks, box's jump 10 contacts, twist front jump 12 contacts and twist tuck jump 14 contacts) . The SCT group was treated with a combination of 8 RM, 6 RM, 4 RM and plyometric training with square system (single leg jump 10 contacts, 10-contact side jacks, 10-contact front jacks, 10 hard contacts and 10 contact tuck jumps). The training was conducted three weekly training sessions for 7 weeks. All groups were given preliminary and final tests. Initial tests were performed 40-48 hours before the treatment trial, and the final test was conducted 48 hours after treatment. The agility test uses an electric side step (TKK 1272 Beam Type Repetitive Side Stepping Tester). Analysis of research data with t test. The results showed that (1) There was a significant effect of PCT manipulation on agility, with significance value of 0.000 <0.05 and percentage increase of 14.66%. (2) There is a significant effect of SCT manipulation on agility, with a significance value of 0.000 <0.05 and a percentage increase of 10.58%. (3) There was a significant difference between PCT and SCT group of agility, with significance of 0.022 <0.05, so it can be concluded that PCT group is more effective than SCT group for agility improvement.

Key Words: Pyramid Complex Training, Square Complex Training, Agility

INTRODUCTION

To achieve high achievement in competitive sport, prime physical condition is required in accordance with the needs and demands of the sport. Prime physical conditions should be the need of every athlete, especially for sports that require long-lasting heavy performance. Many advantages are obtained from the prime physical condition is easy in mastering complex skills, reduce the risk of injury, maintain physical performance, accelerate post-exercise recovery and increase confidence.

In sports training biological and tissue systems are conditioned by applying increasingly heavy physical demands based on the development of athlete's physical condition. To achieve these objectives requires a proper training approach. In training terminology commonly called the training method. According to the Oxford Dictionary method is one form of procedure for achieving or approaching

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something, especially a systematic one. Training is an act of teaching a particular skill or type of behavior (oxford dictionary). Training according to Bompa, (2009) is a systematic repetition to achieve maximum performance. Training method is a systematic repetition procedure to master the skill or achieve the maximum functional qualities of the body. With the right training method, the body will experience adaptation in the form of enhancement of functional ability of the body so as to perform heavy performance in a relatively long time.

Any physical activity, especially exercise is always faced with the possibility of injury so that will have an impact on the disruption of physical activity, psychic, and achievement. One of the most commonly injured limbs is the ankle joint. The legs are bearing the weight of the whole body, are under tremendous pressure. In many sports, the foot absorbs shift and the loading force is very large, sometimes reaching more than 5 times the weight.

Studies have shown that female athlete injuries are 2-3 times more frequent than male athletes to maintain anterior cruciate ligaments (ACLs), especially in soccer and basketball programs (Yap, *et al.*, 2000) .ACL is one of the major ligaments in the knee capsule that serves to maintain knee stability and connect the back of the femur to the front of the tibia. The ACL injury usually occurs when an athlete twists the knee beyond the normal range of rotating, cutting, jumping or running motion. These injuries tend to increase when engaging an increasingly explosive movement difficult The top level competition requires an increase in neuromuscular conditioning because the athlete must move vertically, laterally, linearly, more precisely, explosively and reactively. The ACL is a ligament inside the joint that maintains knee joint stability ACL injuries often occur in high-impact sports, such as soccer, futsal, tennis, badminton, basketball and martial arts. ACL can handle great power with little or no problem. However, if the knee receives great strength and the muscles can not help dampen the pressure, the ACL will take over all the loads, and allow for tearing.

Common sports-related injuries are ankle sprain, about 10% to 25% (Schaefer, and Sandrey, 2012), 40% (Yaggie and McGregor, 2002) of all sports injuries, most injuries occur at the end of a activities when participants are tired (Yaggie and McGregor., 2002). It is possible that most of these injuries result from joint instability due to musculature fatigue. The relevance of fatigue to joint stability is evidenced by the relationship between postural control and isokinetic endurance of knee muscle groups (Yaggie and McGregor, 2002). Physiologically fatigue defined the inability to continue the exercise at a certain intensity. In all sports and exercises, the incidence of fatigue will vary depending on the person's fitness level, exercise intensity, and environmental conditions (eg. heat, humidity and altitude).

Most athletes maintain and improve physical conditions simply by taking part in the sport they choose, not yet accompanied by exercises involving the analysis

of the motion that they are in. While upper level competitions require core muscle requirements, maximal leg muscle strength, stability, balance, lateral deformity, vertical leap, and higher reaction time. This quality can be improved through a combination of weight training and plyometric training. The plyometric exercise is the rapid deceleration of the mass immediately followed by the rapid acceleration of the mass in the opposite direction.

Complext training is one form of high intensity exercise that combines maximum strength training with explosive strength training, so that the training results will be able to improve the power and strength of athletes (Word, 2009). Complex training is an exercise method that aims to improve the athlete's physical condition by doing high intensity strength training followed (transfer) to plyometric exercises. Biomechanically there is a similarity of muscle and joint involvement between weight training with plyometric. Examples of 3-6 RM squats training followed by 8-12 repetition knee tuck jump exercises and bench press exercises 2-5 RM followed by 8 repetition clack push exercises (Mackenzie., 2000).

The modification of complex training by varying the repetition pyramid load training decreased from 8 repetition maximum (8 RM), (6 RM) and (4 RM) with acending intensity not yet done much research. Most researchers use high intensity external resistance (1-3 RM) with constant methods. Similarly, with plyometrics, there is little research comparing plyometric pyramidal exercises (jumping to lateral, forward, sideways and twist), height of varied obstacles (20-50 cm), number of tiered contacts increased (6-12) and plyometric training square (jumping in the same direction with the same high hurdle and the same number of contacts). In addition, most of the complex training studies are applied to trained athletes. Complex training studies on the sample of poorly trained athletes have not been widely practiced. In this case, the student majoring in sports coaching Faculty of Sport Science YSU is mostly not an athlete so it is possible to be the subject of research.

Modified forms of explosive exercises such as jump up and down, side-jump, knee tuck jump, single leg jump, lateral jump and box jump either by normal jumping or twist will be the main study in this study. Single-leg training has many benefits and attention to injury prevention, rehabilitation, and performance improvement of sports programs. According to Boone, and Cook., (2006), sports movement skills in the field are dominated by gait cycles taking off from one foot and landing with one other foot appropriately to improve athlete performance.

METHODS

This study included quasi experiment. The research design used was "Pretest-Post test Groups Design", the research design that contained pretest before being treated

and posttest after being treated, thus can be known more accurate, because it can compare with held before treatment (Sugiyono, 2007). This research has two variables, that is independent variable and dependent variable. The independent variables in this research are Training of Pyramid Complex Training (PCT) and Training of Square Complex Training (SCT), while the dependent variable is Agility.

The population in this research is the third semester (three) Department of Sports Coaching Education, Faculty of Sport Science Yogyakarta State University, age 19 to 20 years and not athlete, consist of 80 men. Simple random sampling method, 21 people were subjected to agility, then ranked and divided into 2 groups. As many as 11 people as PCT training group, 10 people as SCT training group. Instruments used to measure agility with side step Data analysis technique. Before stepping into the t-test, there is a requirement to be met by the researcher that the analyzed data should be normally distributed, therefore normality test and homogeneity test (Arikunto, 2006) are required.

RESEARCH RESULTS AND DISCUSSION

The data in this research is agility. The result of pretest and posttest ability capability. Pretest and posttest data of PCT group agility capabilities as follows:

TABLE 1: PRETEST AND POST TEST GROUP PCT

No	*Pretest*	*Posttest*	*Delta*
1	35	40	5
2	34	39	5
3	33	38	5
4	37	41	4
5	37	41	4
6	38	43	5
7	35	40	5
8	30	36	6
9	33	39	6
10	33	40	7
11	37	41	4
Mean	34.7273	39.8182	5.0909
SD	2.41209	1.83402	0.94388
Minimal	30.00	36.00	4.00
Maksimal	38.00	43.00	7.00

Data pretest and post test agility, SCT group as follows:

TABLE 2: PRETEST AND POST TEST OF SCT GROUP

No	*Pretest*	*Posttest*	*Delta*
1	39	42	3
2	36	40	4
3	33	37	4
4	34	38	4
5	39	42	3
6	38	41	3
7	40	42	2
8	29	36	7
9	39	42	3
10	32	37	5
Mean	35.9000	39.7000	3.8000
SD	3.72529	2.45176	1.39841
Minimal	29.00	36.00	2.00
Maksimal	40.00	42.00	7.00
Prerequisite Test Results			

Normality test; The result summarizes the normality test presented in table 3 as follows:

TABLE 3: NORMALITY TEST RESULTS

group	*p*	*Sig.*	*result*
	PCT group		
Pretest Agilty	0,819	0,05	Normal
Posttest Agility	0,886	0,05	Normal
	SCT group		
Pretest Agilty	0,752	0,05	Normal
Posttest Agility	0,687	0,05	Normal

Prerequisite Test Results, Normality test

From table 3 above it can be seen that all data have p value (Sig.)> 0.05, then the normal distributed variable.

Homogeneity Test. The results of homogeneity test of this research can be seen in table 4 as follows:

TABLE 4: HOMOGENITY TEST RESULTS

Group	*Sig.*	*Result*
	PCT group	
Pretest-Posttest Agilty	.266	Homogen
	SCT group	
Pretest-Posttest Agilty	.141	Homogen

From table 4 above it can be that all data has p value (Sig.)> 0.05, so the data is homogeneous.

Hypothesis Test Results. Testing of research hypothesis is done based on result of data analysis and interpretation t test analysis. The sequence of results of the hypothesis testing is adjusted with the hypothesis, as follows: Hypothetical influence of Manipulation Complex Training on agility. The first hypothesis reads "There is a significant effect of PCT and SCT manipulation of agility". Based on the analysis results obtained data in table 5 as follows:

TABLE 5: T-TEST RESULTS OF PRE-TEST AND POST-TEST OF PCT GROUPS

Group	*Sig.*	*Result*
	PCT group	
Pretest-Posttest Agilty	.000	Significant

From the t-test results in the above table, it shows that the agility variability is significant at p:0,000 <0.005, "There is a significant effect of PCT manipulation on agility, acceptable. Based on the above data shows that PCT exercise is appropriate to increase Agility by 5.09 seconds and increase percentage by 14.66%.

Group	*Sig.*	*Result*
	SCT group	
Pretest-Posttest Agilty	.000	Significant

From the t-test results in the above table, it shows that the agility variability is significant at p 0,000 <0.005, then the hypothesis reads "There is a significant effect of SCT manipulation on agility, acceptable. Based on the above data shows that PCT exercise is appropriate to increase Agility of 3.80 and percentage increase of 10.58%.

TABLE 6: TEST-TEST OF PCT GROUP AND SCT GROUP

Group	*Sig.*	*Result*
	SCT Group	
PCT-SCT group	.022	Significant

Based on the data in the above table, it shows that the significance value of 0.022 <0.05. Thus it shows a significant difference. So Hypothesis which sounds, there is significant difference between PCT and SCT group to agility, accepted. On average, the PCT group was better than the SCT group for agility.

DISCUSSION

The results showed that PCT and SCT manipulation had a very significant effect, (p<0,000) on increased agility. Next observe the average increase in PCT

manipulation (5.09) or equivalent to 14.66% greater than SCT (3.80) or 10.58%. there was a significant difference between PCT and SCT groups with agility of 0.022 <0.05 to observe the mean score, indicating that PCT group was better than the SCT group for agility. The results of this study need to be studied based on the theory and findings of previous researchers related to the variables in this study.

Based on theoretical study, Young & Farrow., (2006) agility is determined by two main factors, namely 1) perceptual and decision making and 2) change of direction speed. The first factor influenced four components of visual scanning, anticipation, pattern of recognition and knowledge of situation. The second factor includes technique, sprint speed and quality of leg muscles. Agility is a complex biomotor, influenced by physical and non physical. Therefore more discussion on physical quality is the second factor the speed of change direction.

As Young & Farrow pointed out, (2006) that the speed of change in direction is influenced by three important components namely 1) technique, 2) sprint speed and 3) quality of leg muscles. The ability to change the direction and speed of the acceleration is influenced by the position of the body adopted when running (technique). Leaning forward is required for acceleration, leaning backward for deceleration and stopping, and leaning sideways to produce lateral alteration.

Based on this theory, athletes who have good skills have the potential to have better agility. In this case the technical variables are considered the same because the sample of a homogeneous population of students majoring in education SSF YSU. 2) Quality of leg muscles, including three components, namely: limb strength, power, and reactive power. In theory good leg strength will increase reactive power. Reactive power is defined as the ability to change rapidly from eccentric to concentric phase in a sequence of stretch-shortening-cycle (SSC). The treatment in this study is a combination of weight training and plyometric. The weight training treatments of both groups (PCT and SCT) were the same with the APS method (ascending pyramid system) 8 RM, 6 RM and 4 RM so that the effect on the increase of leg muscle strength was assumed same. Plyometric training in the PCT group focused more on the manipulation of functional training (Verkhoshansky., 1986) and the SCT group more emphasis on the manipulation of amortization. Functional training in PCT group plyometric training involves twist, rotational, lateral, and integrated balance movements. This type of exercise involves acceleration, deceleration, and stabilization during multipurpose movements in all 3 areas (sagittal, frontal, and transverse), and must be proprioceptively challenged (Yep, *et al.* 2000). Theoretically these two forms of training will increase explosive strength. This is corroborated by the research of Miller *et al.* (2006) that subjects undergoing plyometric training were able to significantly increase time on both T-test and Illinois agility tests. Therefore, Miller found a positive relationship between plyometric training and improvement of both agility tests. In terms of treatment, the total time of plyometric exercise exercise of the SCT manipulation group has a

shorter time record than PCT training. If the same jump count is reached by a faster time, then the group with faster record time can be ascertained to have shorter contact time.

According to Dr. Michael Yessis that the jump should run within 0.15 seconds or less, 0.1 - 0.2 seconds (Vissing, *et al.,* 2008), <0.2 seconds (Edwin & Gordon, 2000), rapid muscle stretching when eccentric followed rapid concentric contractions (Ebben, 2002), the longer the amortization period, the less optimal the plyometric exercise (Koni, 2003), combining rapid and strong movements involving eccentric contractions, is immediately followed by explosive concentric contractions (De Villarrea, *et al.,* 2012).

The stretch shortening cycle is more influential with rapid movement and minimal ground contact (Komi., 2003). A decrease in contact time increases the movement strength and the stored elastic energy is not lost. The faster the clutch of eccentric action-the more concentric the effect of the exercise is the better. Clutch acts eccentric-concentric quickly, resulting in greater power and muscle deployment at the turn of the athlete running faster, jumping higher and changing direction very quickly. Based on the theory, the SCT training method should have a better effect in improving agility due to the shorter amortization time of 6.53 seconds / type of exercise than the 6.67 second PCT training method / exercise type (appendix 2).

While in PCT training, although longer contact time (amortization) has an advantage in the adaptation of biomechanical, physiological and neurological systems due to synchronization and coordination of vertical and horizontal jumping movements, sideways, forwards, backward, lateral, and twist (Verkhoshansky. 2009). Hartmann and Minow (2008) in Yasumitsu, *et al.,* (2012) explain that coordination is the ability to move the body skillfully, and as a prerequisite for sports performance. Coordination skills related to rhythm skills, balance skills, transformation skills, reaction skills, consolidation skills, orientation skills and know-how skills. Yasumitsu's research, *et al.* (2012) showed that 3 times weekly coordination training interventions in elementary school children aged 10-11 years, significantly improved the agility capability as measured by side step tests (35.69) for the experimental group and (32.87) for the control group ($p < 0.005$). Participating in coordination training programs (such as PCT training) will improve the subject's ability to quickly change direction in response to conditions or orders. For example, when a subject performs a jumping twist movement on a particular obstacle followed by a twist bounce in different directions, they must make quick decisions and moves to remain stable. Also, possible improvements occur in the ability to identify different barrier positions and height of obstacles, ie, orientation and conversion skills, as shown by Hartmann and Senf (2008) in Yasumitsu, et al. (2012). It turns out that all improvements in the coordination will contribute to the increase in agility that is reflected in the side step test.

Avery *et al.* (2007), compared the effect of six weeks of plyometric combination training and resistance (PRT, n = 13) and weight training (RT, n = 14) in boy's fitness performance (12-15 years). The RT group performed static stretching exercises followed by weight training while the PRT group performed plyometric exercises followed by a weight training program. The training duration per session for both groups was 90 minutes. At the beginning and after the training all participants are tested on vertical jump, long jump, throwing medicine balls, 9.1 m sprint, agility and flexibility. The PRT group significantly ($p < 0.05$) increased greater than the successive RTs for long jumps (10.8 cm vs. 2.2 cm), throwing medicine balls (39.1 cm vs. 17.7 cm) and agility (-0.23 sec vs - 0.02 sec).

Similarity of treatment with the test used also affects the results, the more similar treatment with the type of test used the higher the effect on the measurement results.

Illustration of similarity theory is shown by the more economical runners generally outperform the less economical runners in similar actions. Physiologically they consume less oxygen for an identical work rate. In other words, at certain running speeds, they do not have to work harder. In this case the PCT training method is more identical to the type of test used than the SCT training method so it gives better results. Besides being also reinforced by training specifications, training specifications refer to the methods and mechanisms responsible for physiological systems in responding to acute and / or chronic stress training.

It can be derived that the PCT training method is more effective in improving agility than the SCT training method. These findings simultaneously provide new information that shorten the time of contact (amortization) alone is still not enough to increase agility. Plyometric training involving a combination of vertical and horizontal jumping movement, sideways, forward, backward, to and from the lateral, twist, and shorten the amortization stage is indispensable for the development of agility quality.

CONCLUSION

Based on the results of research and data analysis results that have been done, the conclusion is obtained: 1). PCT training methods have a significant effect on increasing agility; 2). SCT training methods have a significant effect on increasing agility; 3). There was a significant difference between PCT and SCT groups of agility, so it can be concluded that PCT group is better than SCT group against agility.

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Man In India, 97 (24) : 193-201

WEIGHT TRAINING WITH PYRAMID SYSTEMS TO INCREASE THE LEG AND BACK MUSCULAR STRENGTH, GRIP STRENGTH, PULL, AND PUSH STRENGTH

Yudik Prasetyo* and Ahmad Nasrulloh*

This study aims to find out how much influence weight training with pyramid system against leg and back muscle strength, grip strength, pull and push strength. This research uses experimental method with design of the one group pretest-posttest design. The population of this research is the Sports Science (IKOR) student class of 2013. The sample in this research involves all students of IKOR FIK UNY concentration of fitness as many as 11 people. The instrument used is back/ leg dynamometer, hand grip dynamometer, pull and push dynamometer. The data analysis technique uses the normality test to find out whether the data has normal distributed distribution. Test homogeneity variant to test the similarity of experimental group data variance. Test t to find out whether there are differences of variables between pretest and posttest in the experimental group. Based on the result of t test analysis, it can be concluded that there is significance difference of less than 0.05 ($p < 0.05$), it can be concluded that there are significant differences in the four variables during pre test and post test. The increase can be seen on percentage increase of leg muscle strength increased 7,43%, back muscle strength equal to 22,15%, right grip strength 41,42%, left grip strength 10,67%, pull equal to 8,15% and Push strength of 11.14%.

Keywords: Weight training, Pyramid System, Muscle Strength

INTRODUCTION

Muscular strength is the ability of a muscle or group of muscles to be able to do a maximum contraction. Muscle strength will only be obtained through the correct weight training, measurable, orderly and hard-wired. By the time of weight training there should be attention to the basic principles of training in order to achieve maximum physical performance for someone. Sukadiyanto (2008:21-22), says that the principles of the training include: (1) individual, (2) adaptation, (3) overload (overload), (4) the burden of being progressive, (5) specification (specificity), (6), (7) heating and cooling (warm-up and cooling down), periodization (8), (9) contrast (reversible), (10) moderate load (no excess), and (11) the trainings should be systematic.

In addition to the principle of the training, the other thing to note at the time of training is the component of the training. Components of training can exert influence to the quality of a workout. The success rate of a training program can be viewed from the arrangement of the components of this training. As for the components are important in training intensity is (1), (2), (3) volume recovery interval, (4), (5) reps, (6), (7) sets of series or circuit duration, (8), (9), density (10), (11) the beat frequency, and (12) of the session or units (2008: Sukadiyanto, 33).

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Muscular strength trainings can be done with a method of weight training. Weight training is a training that is done systematically by using the load as a tool to increase the strength of the muscle function in order to improve the physical condition, prevent the occurrence of injury or for health purposes. Weight training can be done using the load of its own weight (load) or use external loads, namely free weights such as dumbell, barbell, or gym machines. Most widely forms of training using own weights used are chin-ups, push-ups, crunches, or back-up, while training using external loads is very numerous and vary according to the purpose of the training. There are several methods that are often used when doing weight training that is super sets, compound set, set system, sets block, tri sets, giant sets, pro set, pyramid, and its circuit weight training system.

Pyramid method training is a training by way of raising the load when done doing a set. Along with the addition of the load, the number of repetitions is reduced. Husein *et al.* (2007:60) argue that the pyramid is one of the methods of the system of strength training that is considered to have the best effect in increasing strength. On this system the athletes lift weights from lower intensity with Deuteronomy much then gradually headed to higher intensity with Deuteronomy. Mochamad Sajoto (1989:119) argues that the method or the system pyramide system is a method of practice that is given by the addition of a load of each set and followed by a reduction in the number of repetition.

Weight training will be more benefitial to increase the strength and endurance of muscles. Much research has proven weight training about the influence of the strength and endurance of muscles. According to Baechle (2014:1) weight training will be able to increase muscular strength, muscular endurance, neuromuscular (nerve-muscle) coordination, and bone density (helps prevent osteoporosis). Weight training can increase a deciding factor of performance by improving strength athletes, vertical jumping ability without increasing total body mass and compromising development of VO_2-max (Ronnestad, 2012:2341). According to Kalapotharakos (2007:109) strength training programme is essential for the maintenance of the functional performance of muscle strength and self-reliance in adults. After a period of training, strength training improves significantly ($p < 0.001$) knee extension 1 RM (32%) and the strength of the flexi (28%).

Muscle strength is one of the components of physical fitness associated with health. Muscle strength should be owned by every person so that he is able to do maximum movement or force against resistance. Therefore, researchers are interested in providing a study by giving a treat in the form of weight training with a pyramid system of the muscle strength of IKOR students class 2013.

RESEARCH METHODS

The type of research used in this study was quasi-experiment with quantitative approach. Experimental research can be defined as a method of research used to

locate a particular treatment influence against the other in controlled conditions (Sugiyono, 2013:109). The design of the research in this study is the one-group pretest-posttest design.

The treatment given was weight training with the pyramid system. Weight training with a pyramid system is training by ways of raising the load after completing a set and reducing the number of repretion. As for the dosage form of workout frequency: 3 times per week, intensity: 90-100% 1RM, 2-5 sets: the number of reps: 1-6 repetitions, and performed using the tools of Chest press, Pull down, Butterfly, Rowing, Leg extension, leg curl, Seated Leg press, leg Lying curl, Arm curl, Triceps pushdown, Low pulley curl, Triceps extension, Abdominal, Lower Back, High Pulley Crunches and Deadlifts.

RESULTS

The data of this research were obtained from the result of measurements of the influence of weight training a pyramid systems on the the strengths of the muscles, leg muscles, back muscles, grip strenght, and pull and push force of the IKOR students class 2013. Measurements were performed twice before treatment (pre-test) and after the treatment (post-test).

A descriptive analysis of the study data include a description of the minimum and maximum scores, mean, median, mode, and standard deviation of each of the research data. The results of the descriptive analysis on the data sub this research can be seen in the following table.

TABLE 1: THE RESULTS OF THE DESCRIPTIVE ANALYSIS OF THE STUDY DATA

Data	*Min.*	*Max.*	*Mean*	*Median*	*Modus*	*Std. Dev*
The strength of leg muscles (pre test)	146.00	265.00	211.59	216.50	179.00	44.70
The strength of leg muscles (post test)	180.00	278.00	227.32	225.50	270.00	37.14
The strength of back muscles (pre test)	79.00	115.00	97.64	98.50	79.00	11.77
The strength of back muscles (post test)	106.50	136.00	119.27	115.50	106.50	10.92
Right grip (pre test)	35.00	46.00	29.89	38.10	36.20	3.90
Right grip (post test)	34.50	47.90	42.27	42.30	34.50	3.67
Left grip (pre test)	29.10	44.90	36.07	34.10	29.10	5.12
Left grip (post test)	32.80	48.50	39.92	40.90	32.80	5.02
Pull (pre test)	10.00	33.00	25.64	26.00	30.00	6.83
Pull (post test)	16.00	36.00	27.73	27.00	24.00	6.08
Push (pre test)	12.00	30.00	22.00	22.00	22.00	4.75
Push (post test)	14.00	32.00	24.45	25.00	22.00	4.48

1. Hipotesis Testing

The first hypothesis of this research states that there are significant effects with weight training with a pyramid systems on the strength of the muscles of leg, back, grip strenght, and pull and push on IKOR students class of 2013. Hypothesis testing

used Paired Sample t-tests. The results of the data analysis for this research hypothesis testing is as follows.

(a) The T-test Results on the Data of the Strength of Leg Muscles

TABLE 2: T-TEST RESULTS ON THE STRENGTH OF LEG MUSCLES

Data	*Test*	*Mean*	*t count*	*p*	*Category*
The Strength of Leg Muscles	Pre test	211.59	2.836	0.018	Significant
	Post test	227.32			

Source: processed primary data

The results of the analysis of the t-test show the value of t count of 2.836 with the significance value of 0.018. Because of the significance value of 0.018 is smaller than 0.05 ($p < 0.05$), it can be concluded there is a significant difference in the strength of leg muscles on the pre test and on the post test. This can be interpreted that there was significant influence on weight training with pyramid systems on the strength of the leg muscles on IKOR students class 2013, so the hypothesis of this research is acceptable.

(b) The T-test Results on the Data of Back Muscles Strength

TABLE 3: THE T-TEST RESULTS ON THE DATA OF BACK MUSCLES STRENGTH

Data	*Test*	*Mean*	*t count*	*p*	*Category*
The strength of back muscles	Pre test	97.64	13.670	0.000	Significant
	Post test	119.27			

Source: processed primary data

The results of the analysis of the t-test determine the value of t-count of 13.670 with the significance value of 0.000. Because of the significance value of 0.000 smaller than 0.05 ($p < 0.05$), it can be concluded there is a significant difference in back muscle strength on the pre test and on the post test. This result can be interpreted as there is a significant influence of weight training with pyramid systems on the strength of back muscles of IKOR students class 2013, so the hypothesis of this research is acceptable.

(c) The T-test Results on the Data of Right Grip Strenght

TABLE 4: THE T-TEST RESULTS ON THE DATA OF RIGHT GRIP STRENGHT

Data	*Test*	*Mean*	*t count*	*p*	*Category*
Right Grip Strenght	Pre test	39.89	3.753	0.004	Significant
	Post test	42.27			

Source: processed primary data

Based on the results of the analysis of the t-test, it is shown that the value of t-count was 3.753 with the significance value of 0.004. Because of the significance

value of 0.004 is smaller than 0.05 ($p < 0.05$), it can be concluded there is a significant difference in right grip strenght on the the pre test and on the post test. It can be interpreted that there was a significant influence on weight training with the pyramid system on the right grip strenght of the IKOR students class 2013, so the hypothesis of this research is acceptable.

(d) The T-test Results on the Data of Left Grip Strenght

TABLE 5: THE T-TEST RESULTS ON THE DATA OF LEFT GRIP STRENGHT

Data	*Test*	*Mean*	*t count*	*p*	*Category*
Left Grip Strenght	Pre test	36.07	5.613	0.000	Significant
	Post test	39.92			

Source: processed primary data

Based on the results of the analysis of the test t, it is shown that the value of t count was 5.613 with the significance value of 0.000. Because of the significance value of 0.000 smaller than 0.05 ($p < 0.05$), it can be concluded that there is a significant difference in grip strenght left on the the pre test and the post test. This result can be interpreted as a significant influence on weight training with the pyramid system on the left grip strenght of IKOR students class 2013, so the hypothesis of this research is acceptable.

(e) Results of T-test on the Data of Pull

TABLE 6: RESULTS OF T-TEST ON THE DATA OF PULL

Data	*Test*	*Mean*	*t count*	*p*	*Category*
Pull	Pre test	25.64	4.394	0.001	Significant
	Post test	27.73			

Source: processed primary data

Based on the results of the analysis of the test t, it is shown that the value of t count was 4.394 with the significance value of 0.001. Because of the significance value of 0.001 is smaller than 0.05 ($p < 0.05$), it can be concluded there is a significant difference of pull on the the pre test and on the post test. This result can be interpreted as there is a significant influence on weight training with the pyramid system on the pull force of IKOR students class 2013, so the hypothesis of this research is acceptable.

(f) Results of T-test on the Data of Push

TABLE 7: RESULTS OF T-TEST ON THE DATA OF PUSH

Data	*Test*	*Mean*	*t count*	*p*	*Category*
Push	Pre test	22.00	3.766	0.004	Significant
	Post test	24.45			

Source: processed primary data

Based on the results of the analysis of the test t, it is shown that the value of t count was 3.766 with the significance value of 0.004. Because of the significance of 0.004 value smaller than 0.05 ($p < 0.05$), it can be concluded there is a significant difference of push on the pre test and on the post test. This result can be interpreted that there is a significant influence on weight training with the pyramid system on the the push force of IKOR students class 2013, so the hypothesis of this research is acceptable.

The percentage increase of muscles strength of leg, back, grip strenght, and pull and push as the results of weight training with the pyramid system can be seen in Table 8.

TABEL 8: THE INCREASE PRECENTAGE OF RESULTS OF WEIGHT TRAINING USING THE PYRAMID SYSTEM

Data	*Pre test*	*Post test*	*Increase*
Strength of Leg Muscles	211.59	227.32	7.43%
Strength of Back Muscles	97.64	119.27	22.15%
Right grip strength	29.89	42.27	41.42%
Left grip strength	36.07	39.92	10.67%
Pull	25.64	27.73	8.15%
Push	22.00	24.45	11.14%

Based on the table above it is shown that right grip strength is of the greatest increase of 41.42% and the strength of the back muscles of 22.15%. The ability increased with the lowest level was strength of leg muscles of 7.43%.

DISCUSSION

Muscular strength is the ability to exert maximum force against resistance (Werner, 2011:214). Neiman (1993:28) says that muscle strength is the maximum strength as one effort that performed against resistance. In other words muscle strength is the ability of a muscle or a group of muscles to perform a one-time maximum contraction against a lifted load.

Muscle strength is the maximum force or tension generated by a muscle or a group of muscles (Deuster, 1997:6). Sadoso Sumosardjuno (1997:6), argues that muscle strength is the ability of muscles to use maximal or near-maximal effort, to lift the load. Mechanically muscle strength is defined as the force that can be generated by a muscle or a group of muscles in doing maximum contraction against a lifted load.

The results of t-test analysis of strength of leg muscles show the value t count of 2.836 with the significance value of 0.018. As the significance value of 0.018 is smaller than 0.05 ($p < 0.05$), it can be concluded there is a significant difference in the strength of leg muscles on the pre test and on the post test. This result can be interpreted that there is a significant influence of weight training with pyramid

systems on the the strength of the leg muscles of IKOR students class 2013. The increase in the strength of leg muscles with weight training results pyramid system was from 211.59 becoming 227.32.

On the strength of the back muscles, it is obtained the value of t count of 13.670 witht the significance value of 0.000. As the significance value of 0.000 is smaller than 0.05 ($p < 0.05$), it can be concluded there is a significant difference in the strength of back muscles on the pre test and on the post test. This result can be interpreted as a significant influence on weight training with pyramid systems of the strength of back muscles of IKOR students class 2013. The increase in the strength of the back muscles with weight training using the pyramid system was from 97.64 becoing 119.27.

The results of the analysis on the t-test of right grip strenght show the value of t count of 3.753 with the significance value of 0.004. As the significance value of 0.004 is smaller than 0.05 ($p < 0.05$), it can be concluded there is a significant difference in right grip strenght on the pre test and on the post test. This result can be interpreted as a significant influence of weight training with the pyramid system on the right grip strenght of IKOR students class 2013. The increased of right grip strenght after weight training using the pyramid system was of 39.89 becoming 42.27.

The results of the analysis on the t-test of left grip strenght show the value of t count of 5.613 with the significance value of 0.000. As the significance value of 0.000 is smaller than 0.05 ($p < 0.05$), it can be concluded there is a significant difference in left grip strenght on the pre test and on the post test. This result can be interpreted as a significant influence of weight training with the pyramid system on left grip strenght of IKOR students class 2013. The increased left grip strenght as the results of weight training with a pyramid system is of 36.07 becoming 39.92.

On the strength of pull, it is determined the value of t count of 4.394 with the significance value of 0.001. Because of the significance value of 0.001 is smaller than 0.05 ($p < 0.05$), it can be concluded there is a significant difference of pull on the pre test and on the post test. This result can be interpreted as a significant influence of weight training with the pyramid system on the pull strength of IKOR students class 2013. The increase in the pull strength after weight training with the pyramid system is from 25.64 becoming 27.73.

The t-test analysis results of push strength obtain the value of t count of 3.766 with the significance value of 0.004. As the significance value of 0.004 is smaller than 0.05 ($p < 0.05$), it can be concluded there is a significant difference of push strength on the pre test and on the post test. This result can be interpreted as a significant influence of weight training with the pyramid system on the push strength on IKOR students class 2013. The increased push strenghth after weight training with the pyramid system is from 22.00 becoming 24.45.

In terms of the percentage increase among muscle strength, the strength of leg muscles, back muscles, grip strenght, and pull and push as the results of weight training with the pyramid system it is determined that right grip strength is of the greatest increase of 41.42% and the strength of the back muscles of 22.15%. The ability increased with the lowest level was strength of leg muscles of 7.43%.

Weight training can provide a significant influence on the strength of the muscles. This is in accordance with research conducted by Arazi and Asadi (2011:112) entitled the influence of weight training for 8 weeks with the same volume and frequency of training maximum strength differently to, and durability. Thirty-nine healthy males were devided into four groups; total body endurance training (12 trainings for one session per week) (I = 10), total body resistance training (12 trainings for two sessions per week) (part II = 10), training of the lower body, upper body, and resistance training on the upper body (12 trainings for three sessions per week) (part III = 9), and the control group (CG = 10). Measurements of strength (one maximum reps in the bench press and leg press) and durability (bench press and leg press) were determined before and after 8 weeks of training. The result is one maximum repetition on bench press and leg press was increased significantly on all training groups ($P < 0.05$).

CONCLUSSION

Based on the results of hypothesis testing, it can be concluded that the overall significance values were smaller than 0.05 ($p < 0.05$). Thus, it can be concluded that there is a significant difference in the variables of muscle strength, leg and back muscle strength, grip strenght, and pull and push on the pre test and on the post test. The increase can be seen in the percentage leg muscle strength that is increased 7.43%, the strength of the back muscles 22.15%, right grip strength 41.42%, left grip strength 10.67%, and 8.15% for the pull and 11.14% for the push.

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DEVELOPMENT OF LEARNING MEDIA *MACAPAT* WITH SOLFEGIO TECHNIQUE IN ANDROID APPLICATIONS

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This paper is an implication of research and development. The purpose of this learning paper to develop learning media *tembang macapat* with solfegio techniques in android applications for junior and senior high school students in Yogyakarta. This needs to be done supported by the conditions in the field, namely: (a) lack of learning media *tembang macapat* in junior and senior high schools; (b) teachers have difficulty developing *tembang macapat* material by reading *titilaras* and cakepan; (c) teachers have difficulty in packing learning materials with *macapat tembang* media mobile; (d) students' ability to sing *tembang macapat* low; and (e) the need for the development of learning media *macapat* song with solfegio techniques in applicationandroid.

To realize the development of learning *macapat* using selfigio techniques in android applications implemented in two stages. This year is the first year with the following stages: (a) needs analysis by looking at aspects of the Java language curriculum especially on *macapat* song material, teachers, and junior and senior high school students in Yogyakarta; (b) designing media design and *macapat tembang* material with solfegio techniques; (c) develop *macapat tembang* learning media in the form of a titillas and harmonized reading videos which are harmonized with saron in android applications; (d) analysis and assessment of products by experts (expertjugdment); and (e) product revisions. Stage applications and editing in android apps. Performed after paying attention to the advice of media experts.

Keywords: selfigio, macapat, android, and learning.

INTRODUCTION

This article intends to provide an overview of the development of *macapat* learning media using selfigio techniques in the form of android applications. It is also at the same time to complement the research conducted Sutiyono, published in the international journal scopus indexed in 2015, but has not used selfigio techniques and android applications. Moreover, his research is only limited to *macapat* called barrel madya, which is associated with aspects of Islam, so it has not been specializing in aspects of learning.

More specifically, Suwarna (2014) has also been researching the development of learning media *tembang macapat* web-based is made with the help of software Moodle 2.1.2 + and XAMPP Control Panel v3.2.1 for web server configuration in SMP 5 Depok. However, this kind of *macapat* learning media is considered not much motivate students who want to learn *macapat*. *Macapat* who originally berbabsis oral literature, full of memorizing it is necessary to be taught using a new model, among others with android-based solfigio. In this way, students will easily learn *macapat*, either as oral literature or literature.

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From these two studies, it is necessary to develop *macapat* learning media at junior and senior high school level, which is able to motivate students to learn *macapat* more easily and fun. So this article provides an understanding how the ins and outs of learning *macapat* selfigio model with android application, which pragmatically will facilitate the communication of oral literacy *macapat* on students. Because many students still need the intensity of *macapat* learning more interesting. *Macapat* learning that rely solely on memorizing oral literature, without *titilaras* (selfigio) alone and accompanied by android applications, may be less interesting students.

It is given that the *tembang macapat* material taught in the competence melagukan and *tembang macapat*. Meskipun so, based on observations and discussions in the MGMP forum Java language junior and senior high school in Yogyakarta was the ability of students listening and melungkukan *tembang macapat* still low.Hal is due to student motivation to learn *tembang macapat* low.Siswa consider *macapat tembang* material is a difficult material.In addition, students also lack the learning facilities independently.Hal is not independent of the ability of teachers to manage material *tembang macapat* still limited. Teachers have difficulty in packing material *macapat tembang* into learning media. The condition is worsened by the fact that there are still many teachers who are unable to develop the *macapat* song in accordance with the existing *titilaras*. Various problems indicate the need for the development of media that packs learning materials *macapat tembang* in junior and senior high schools, especially in terms of reading or melungkukan *tembang macapat*.Media learning is very helpful for students to master the material studied. This is in accordance with research Suwardi (2014: 8) which stated that the learning media helps students to understand, explore, and reconstruct the material through various senses. Development of instructional media needs to be done in line with the development of technology and information so that there is no distance between the material with the students. Furthermore, the way to learn *macapat* as oral literature that tends to be memorized, will be further reduced. *Macapat* as oral literature has been often staged in various rituals, but in this global era clearly required a variety of interesting tricks and techniques for many *macapat* variations.

Oral literature such as *tembang macapat* pocung, often become memorized the students. However, students often experience difficulties when replacing other *tembang* pocung. Therefore, the presence of learning *macapat* selfigio model and android application is expected to overcome the problem. It is remembered that, the real *macapat* including cultural treasures that can still be utilized up to now. Through *tembang macapat*, both oral and written literature, will facilitate the seeding of character education. *Tembang macapat* often used by the Javanese poets to convey the teachings, piwulang, advice about the tatacata live life in order to become the main human. Banyak oral literary works in Javanese culture are composed in

the form of *tembang macapat*. It is one way for authors to keep the person who is advised not to feel patronized.

The role of *tembang* as a form of Javanese culture in the present life is also still relevant. This is in accordance with the results of research Suwardi (2009: 1) that *tembang* has an important role in conveying moral values. *Tembang macapat* is one of the materials taught in learning Javanese language as a mandatory local content in Daerah Istimewa Yogyakarta.*Tembang macapat* in the curriculum subjects of Java language are taught in the competence of reading and listening *tembang macapat*. Competence of reading *tembang macapat* in this case reading cakepan or *tembang macapat* poem in accordance with *titilaras*. Thus the competence of reading *tembang* is synonymous with singing *tembang macapat*. For students in Java, especially in Yogyakarta, the competence of reading *macapat* song is very important to master.Magagukan *tembang macapat* or nembang is the main competence that must be possessed by learners of Javanese subjects as a skill.Thus learning melagukan *tembang macapat* expected to produce students who have nembang *macapat* skills in accordance with the *titilaras*nya. That is why the learning effort of selfigio model with android application becomes an offer that deserves to be put forward.

Through the self-centered model of android, students will develop *macapat* as oral literature into literature. At this level literasi *macapat* increasingly reliable. Students who master the competence of nembang *macapat* with selfigio model android applications, in turn these competencies will be utilized on various occasions. In relation to the learning process students have provision of skills to teach nembang, or follow various traditional events held with the form nembang *macapat*. Furthermore, if viewed from the content of moral values contained in the song, then nembang can be used as a means of character building (character building) for students.

The problem, is (1) How to develop learning media *tembang macapat* with solfegio technique in android application for junior and senior high school students in DIY? And (2) How is teacher and student response to learning media *tembang macapat* with solfegio technique in android application for junior and senior high school students in DIY? The second answer to this problem, can provide assertion that one form of development of *macapat* media with solfegio techniques in android applications will open opportunities for student interest in *macapat* either as oral literature or literature. The use of solfegio techniques in teaching *tembang macapat* material guides students to practice gradual notation from simple difficulty level to the most difficult, ie from syllables with two notations, three notations, and so on. If the students have mastered the notation or *titilaras* then when faced with various *tembang* students can melagukannya appropriately.

The application of material in android allows students to learn independently. This is important because singing *tembang macapat* is a skill that requires intensive

practice to be able to sing songs according to their titillas. The time available for learning Java in school is also limited to an average of just 40 minutes per week . Android app allows students to learn and practice nembang independently anywhere, whenever not limited to learning in the classroom. Teachers as facilitators can also facilitate students with multimedia learning that contains how to read *titilaras* (notation), both berlarasslendro and pelog with various variations of the barrel (basic tone). These conditions will enable the emergence of student motivation to learn *tembang macapat*. For teachers who have limited ability in terms of developing *tembang macapat* also more easily by utilizing the media *tembang* in android application to guide students melondukan *titilaras* and then followed his cakepan.

DEVELOPMENT OF *MACAPAT* LEARNING MEDIA

The word media according to Sadiman, *et al.* (2007: 6) comes from the Latin "medius" and is the plural of the word medium which can literally be interpreted as an intermediary or introduction. Media in the learning process refers to an intermediary or messenger message delivery with the recipient of the message, stimulating thoughts, feelings, attention and willingness to be encouraged and involved in learning. The term of learning media according to Fleming (Arsyad, 2009: 3) is a tool that connects the two parties of teachers and students to occur an effective relationship with the content or learning messages in the learning process. Learning process is basically also a communication process, so the media used in learning is called learning media.

Learning media according to Arsyad (2009: 5) relating to everything that people use to channel messages or information by utilizing technology not only present as a learning tool but also related to attitudes and deeds related to the application of science. Some of these exposures indicate that learning media is a component of learning resources or physical vehicle (hardware) that contains instructional materials (software) to stimulate student learning activities. The development of existing technology and curriculum ch*anges* require teachers to be more creative. Teachers as professionals must quickly adjust and reposition their roles. Teachers should be able to become learning facilitators and managers of learning resources for their students. Learning resources categorized materials (matterials) and tools (devise) known as soft ware and hard ware in learning. Unification of soft ware and hard ware in learning is a form of learning media. *Macapat* learning can be done with multimedia, among others with android applications.

Understanding multimedia in learning is simply presented by Arsyad (2009: 170) that multimedia is a medium that is a combination of two or more types of media that use the main control through the computer as a driver of the overall merger of the media. The use of multimedia in learning according to Mayer (2009: 21) not only activate the students understanding through the presentation of the

material that kohenren in the presentation of various media. Multimedia presentation in learning is intended to present information and guide how to process the information presented.Multimedia must direct the things that must how to recognize it mentally, and how to relate it to previous knowledge. Thus multimedia is used to help students construct knowledge. Multimedia helps students not only develop an understanding of the material but also finds and uses it. Media provides student facilities for exercises and applications knowledge.

Multimedia commonly used in learning according to Arsyad (2009: 172) is usually a combination of graphics, text, sound, video, and animasi.Berbagai combination is a unity that together display information, messages, or learning content.Use of multimedia in learning aims to present information in a form that is fun, interesting, easy to understand, and clear. Information will be easier to understand because multimedia allows many senses to engage in absorbing information, especially the ears and eyes.

The use of multimedia in learning to achieve meaningful learning according to Mayer (2009: 80) includes five steps, namely as follows: (1) choose words that are relevant for processing in verbal work memory; (2) selecting relevant images for processing in visual working memory; (3) organizing selected words into verbal mental models; (4) arranging selected images into visual mental models; and (5) integrate verbal and visual representations with pre-existing knowledge. In this case the multi media will be developed is to use adobe flash.

The use of multimedia in *tembang macapat* learning can have a positive impact. This is in accordance with the results of research Prihandoko (2013: 6) states that learning *tembang macapat* using multimedia to provide a conducive learning impact.Siswa feel interes learn *tembang macapat* with the existence of various facilities in multimedia. The development of *macapat* learning media with selfigio techniques and android applications, will attract more students. Android is a Linux-based operating system designed for touchscreen mobile devices such as smart telephones and tablet computers. Android allows software to be freely modified and distributed by device makers, wireless carriers and app developers (http:// en.wikipedia.org/wiki/Android) .Android apps can be used in learning. This is supported by the availability of applications that can be used as multimedia. Utilization of android in *macapat tembang* learning can be done with the support of the feature to sing (*http://aplikasiandroid.com/multimedia/*).

Utilization of android in learning Java language has been done by Arismadhani, *et al.* (2013: 1). The research is applying android to learn to write Java script. Java and XML programming has been able to apply Java script in handheld android device.

In relation to the design of learning media especially those using the software need to pay attention to the various criteria of the quality of instructional media. According to Walker and Hess (Arsyad, 2009: 175) the quality of media can be reviewed from several aspects, namely:

1. Quality of content and purpose, including: (a) accuracy, (b) interests, (c) completeness, (d) equilibrium, (e) interest and attention;
2. Instructional quality, including: (a) providing learning opportunities, (b) providing assistance for learning, (c) motivational qualities, (d) flexible instructional, (e) relating to other learning programs, (f) the quality of tests and assessments , (g) can have a positive impact on students, and (h) impact teachers in learning;
3. Technical quality, including: (a) legibility, (b) easy to use, (c) display / display quality, (d) quality of response handling, (e) quality of the program's processing, and (e) quality of documentation.

DEVELOPMENT OF LEARNING MEDIA *MACAPAT* SELFIGIO MODEL

This paper is a dissemination of research results development of learning media *macapat* selfigio model through the implementation of several stages. Currently has come to the development of products. The definition of product development is the making of story board, validation, recording, and editing. Through seligio techniques and android applications, will enable students to sing *tembang macapat*. But also need to pay attention to standard rules *tembang macapat*. The *macapat* song is governed by certain rules called as follows.

First, the *Panca purba. Panca Purba* it must be followed, to make it more comfortable melagukannya. *Purba tembang macapat* there are five things are standard, then called the ancient *Panca*, which includes. (1) *Laras* (barrel), sound barrel which remains vibration and high low (Atmadarsana1956: 10). The barrel is a steady order of sound. The barrel is also called the tone. The barrel is divided into two, namely: (a) Slendro (more) and (b) pelog (young), but this opinion is uncertain, still need to be traced again. If in the gamelan can be distinguished between the barrel slendro pelog funds, for example saron wilahan clearly different. The barrel if played will be different. As for *tembang macapat* for those who have not been able to understand will bother. The barrel will control the rhythm. The rhythm is the speed, the short length, and the steady state of the sound. Rhythm is similar to tempo.

(2) *Titilaras*. For the barrel to be easily controlled, does not change at any time, then t*titilaras* is made. Titi barrel, that is how to write *tembang* using a barrel. Titi barrel is useful for: (a) writing *tembang*, (b) aligning a crook, (c) learning *tembang*. Titi barrel also exist which call Java notation or solemization bot. It will be useful to lift the height of the sound. Titi barrel is also called a notation. *Titilaras* were used to continue poetry *macapat*. *Titilaras* was held so as not easy to happen exchange of voice that is not barrel (blero);

(3) *Pedhotan*, is a place of dismissal (andheging song) to rest (breathing, respiration), so as not to impressed krenggosan. Good *pedhotan*, falling sound at

the end of the gatra, or not forcibly breaking the word, so as not to easily tucked, and its meaning is more intact. *Pedhotan* is divided into two forms: (a) kendho *pedhotan*, the *pedhotan* which is at the end of the word, and (b) *pedhotan* kenceng is *pedhotan* in the middle of the word is not intact;

(4) *Andhegan* is the final *tembang* ing gatra stop. *Andhegan* is also divided into two, namely: (a) *andhegan cilik*, meaning if the stopping of a voice on a certain gatra, can one gatra or two gatra, even more important meaning has been understood, (b) *andhegan ageng*, meaning the dismissal of *tembang* at the end of the stanza . In addition, there are also distinguishes into: (a) *andhegan wantah*, namely the dismissal of *tembang* at the end of gatra whose meaning is not yet intact, (b) *andhegan alit* (*seleh*), meaning the cessation of the song at the end of gatra and its meaning has been clear, (c) *andhegan ageng* (repeat), is the dismissal of the *tembang* at the end of the stanza;

(5) *Pathet* is a small, low in height, in tone order. *Pathet* as a benchmark of the barrel or tonika (raras tuntunan) *tembang*, to determine the high and low sound. Ups and downs, punctuated by *pathet*. So the *pathet* put a song / song. *Pathet* is the key in singing song. *Pathet* is associated with the *tembang* barrel. While the Javanese voice experts consider that the *pathet* is a good benchmark of *tembang*. *Pathet* is the voice limitation. *Pathet* as a means of "lift" (miwiti) sound If erroneously raised the sound, usually unfinished in song *tembang* often not strong.Not voiced because it may be too high or too low raised the voice.

The ups and downs of the song are determined by the *pathet*. So the *pathet* as a benchmark intone. Prawiradisastra (1988: 316-317) concludes that the *pathet* is a means of: (a) determining the height of the song's order based on tonics. Tonika is the parent's voice (the basic tone); (b) determines the rise and fall of the tone region (ambitus), (c) every slendro and pelog barrel order there are three *pathet*: *pathet* nem, *pathet* sanga and *pathet* manyura. The order of the *pathet* can be observed in the following example.

No	*Laras slendro*			*Laras Pelog*		
1.	pathet sanga	:	5 6 1 2 3 5 1 2 • •	Pathet barang	:	6 7 2 3 (4) 5 6
2.	pathet nem	:	2 3 5 6 1 2 3 5 6	Pathet lima	:	5 6 1 2 3 (4) 5
3.	pathet manyura	:	6 1 2 3 5 6 1 2 3	Pathet nem	:	2 3 (4) 5 6 1 2

Second, *Panca Gupita* are the five rules for melagukakan gupita (*tembang*). The beauty of people singing songs at least if it is woven into five things called *Panca gupita*:

(1) *Cengkok. Cengkok* means different colors of songs. Each type of song has a variety of crooked. The crook is a song song, so it is free to assemble *titilaras*,

which is important beautiful. If a developer controls one to two crookes, it would be enough. Crooked with each other sometimes there are similarities. Some *cengkok tembang macapat*, eg *Dhandhanggula Sida Asih, Dhandhanggula Penganten Anyar, Dhandhanggula Pasowanan, Dhandhanggula Lik Suling. Dhandhanggula Kanyut, Dhandhanggula Semarangan* and so on. *Cengkok* will create more beautiful song (moncer). According to Marwanto and Mawardi (1995: 28) the crook is volatile (rongeh). There is also a mention of crook as a sanggit or improvisation. If there are people without a crook called *tembang* innocent (plain, milah, mbalung), whereas if using a crook called *tembang sengsem* (working on). Short of *cengkok* is a form of creativity of song art. The crook will decorate the song.

(2) *Gregel. Gregel*'s the easy thing that creates a mentuling sound bending. *Gregel* can also be called a embat. Through *gregel*, the sound can feel more dhekung and ngungkung. *Gregel* will gradually embellish *macapat*, will be deeply embedded in the heart. If chanting *gregel*, preferably on *andhegan* and dhong-dhinging sound. *Gregel* is an additional voice, which will bring up the flavor of the song. *Gregel* r*anges* up to three sound waves, if too much less good. *Gregel* must also be limited, not all gatra use *gregel*.

(3) *Nges. Nges* are better *gregel* sung. *Nges* it will create sound ngeres-kleses and hard soft voice. *Nges* including cloth macahan duck. *Nges* means the beauty of the sound, the wrenching. Sound *nges*; will be affected by the parent vote. The important thing, *nges* not ngelik once. Then the sound of dhadha can be reduced, down to the sound of the stomach. *Nges* can be worked from vocal.

(4) *Sengsem. Sengsem*, it will appear through a smiley, charming face. Sound that matches *macapat* (cakepan), can cause a sense of emotion. *Sengsem* that will touch the taste, not bland, not light, spicy salty, tasted.

(5) *Luk*, is the sound waves influenced by the concoction of titillas. *Luk* has more than three titillas. But the most, *luk* less than three. *Luk* will decorate the song. Songs that play a lot of *luk*, will be nice to hear. There are three kinds of *Luk*; namely: (a) *luk* nduduk, meaning the paint which *titilaras*nya sequence (adjacent, for example: 23, 45, 61: (b) *luk* niba, meaning from *titilaras* high to low, eg: 53, 54, 76; (c) paint tangi , means the paint of low titillas to high, eg 256, 367, 135, etc. (d) paint njeklek, is a paint that jumps from low to high titillas or vice versa, for example: 2567, 7532,

Noteworthy in melalgukan *tembang macapat* solfigio techniques and android applications require step.

METHOD

This article is preceded by research and development (learning and development) *macapat* learning media selfigio model and android applications. The steps taken using R & D are in accordance with the theory developed by Borg & Gall through Mulyatiningsih (2011: 147). The steps are as follows: (1) research and information

collection; (2) planning; (3) develop preliminaryform of product; (4) preliminary field testing; (5) main product revision; (6) main field testing; (7) operational product revision; (8) operational field testing; (9) final product revision; and (10) dessemination and implementation.

Through the first year stage includes the following steps: (1) Needs analysis by looking at aspects of the Java language curriculum, especially on *macapat tembang* material, teachers, and junior and senior high school students in Yogyakarta; (2) Designing media and material designs in *tembang macapat* with solfegio technique begins with a simple titi barrel reading to read titi *macapat* tunas in 2.3.4 titillas and ½, titillas; (3) Developing learning media *tembang macapat* in the form of alignment video titillas "notation" with the reading. Titial alignment using saron. Further alignment is also performed when singing *tembang macapat tembang*; (4) Pack media *tembang macapat* in the form of video melagukan *tembang* in android applications. The results of this packaging are referred to as the initial product of the media; (5) Analysis and assessment of the initial product by the expert (expert jugdment); (6) Product revisions. Subsequent stages are required to be tested. Trial is limited to junior and senior high school students in DIY as users are required for the development of this targeted media.

Data collection in this study using several methods, namely: observation, questionnaires, interviews, tests, and documentation. Observations are made to observe the application of media in the classroom. Skills and interviews are needed to find out the responses of students and teachers in media usage. The tests are conducted to measure the effectiveness of the developed media. The research instruments used in this study include: test grilles, interview guides, and observation guidelines. The various instruments are carefully prepared to produce accurate data.

RESULT AND DISCUSSION

From the development of learning media *macapat*, can be obtained significant results. The theory used to provide a framework for developmental assessment is the concept of *macapat*. *Tembang macapat* by Suwarna (2008: 70) is a *tembang* whose way of reading four- four (maca papat-papat); meaning the pause of reading every four syllables of the initial syllable of the line, followed by the next syllable, on each line. The example can be observed in the following Pocung song.

bapak pocung/ dudu watu/ dudu gunung/ : 4- 4- 4
asal saka/ plembang/ : 4- 2
ngon- ingone/ sang bupati/ : 4- 4
yen lumampah/ si pocung lam/ beyan grana // : 4- 4- 4

Tembang macapat is a Javanese *tembang* and belongs to Javanese cultural tradition which way of melagukannya based on barrel and titi barrel which boils

down to Javanese gamelan sound. As in the gamelan, rhythm or *cengkok tembang macapat* based on sound or barrel Slendro and pelog. What is meant by crook is a certain type of style or type of song. Each *tembang macapat* has several variations of their respective *cengkok*, for example in pucung *tembang*, there are pelae tunjung seta that larasslendro *pathet* sanga, dhengklung pucung barrel slendro *pathet* manyura, gliyung puri melas pelog *pathet* nem, and so on. Thus pula*tembang-tembang macapat* other, such as Sinom, Dhandhanggula, and so forth also have variations of their respective *cengkok* (Widayat, 2011: 142-146).

In this study the *cengkok tembang* that will be developed media is chosen based on the existing curriculum. It does not entirely restrict the probability of achieving students' abilities, limited to mediated songs only, as the media to be developed begins with a reading of titi laras (notations), both slendro and pelog, either slendro sanga, manyura, pelog goods, pelog nem, and so on. With the guidance of reading this titi barrel, if the student has mastered it, then surely he will be able to read titi tunas *tembang* tunes other songs, even for all Java *tembang* sourced on titi barrel gamelan.

Macapat Learning Development Step with Android Application.

This article is a development research which implementation through several stages. Currently has reached the stage of product revision post expert judgment or expertjugment. The details of the research results obtained are as follows.

(1) Development of learning media macapat tembang with solfegio techniques in android applications for junior and senior high school students in Yogyakarta, covering the following stages.
   (a) Need analysis by looking at aspects of junior high school curriculum of junior high and high school in DIY known that tembang material taught include Asmaradana, Kinanthi, Maskumambang, Pangkur, Dhandhanggula, and Sinom. The material was subsequently adopted to be developed in the learning media macapat tembang with solfegio technique. Needs analysis on the aspects of teachers and students is known that: teachers difficult to teach tembang macapat, many teachers who can not sing tembang macapat, students need instructional media as a means of independent learning, and teachers need learning media to teach tembang macapat. In relation to the tools used in learning, singing tembang macapat is limited to power points, and audio media. Teachers tend not to use instructional media, or often use lecture methods. Based on these conditions it is necessary to develop learning media melagukan tembang macapat with solfegio techniques in android applications for junior and senior high school students in Yogyakarta.
   (b) Designing media and material designs in macapat songs with solfegio techniques begins with a simple titi barrel reading to read titi macapat

tunas macapat in 2, 3, 4 titillas and ½, titillas. The song material is divided into two: macapat tembang simple and tembang macapat complicated. The tembang macapat material is simple, including: Asmaradana, Kinanthi, Maskumambang, Pangkur, Dhandhanggula, and Sinom. Tembang macapat material is complicated, including: Asmaradana, Pangkur, and Sinom.

(c) Developing learning media tembang macapat in the form of alignment video titillas "notation" with the reading. Tune alignment using gender thinthing. Further alignment is also done when singing tembang macapat song.

(d) Pack media tembang macapat in the form of video melagukan tembang in android application. The results of this packaging are referred to as the initial product of the media;

2. Analysis and assessment of the initial product by the expert (expert jugdment). The experts who assess the resulting product are: Dr. Purwadi, M. Hum. He is a lecturer in Maek Maek Language Schools Department of Language Education FBS UNY, and also practitioners of Javanese culture. Assessment of the quality of media conducted includes 3 aspects, namely: sound quality, media display quality, and programming quality. The details are as follows.

(a) The result of sound quality assessment is 100% with very good category. The details are: sound alignment with titilaras get score 4 with very good category; sound alignment with barrel get score 4 with very good category; and the harmony of the future with titilaras get score 4 with very good category.

(b) Results of media display quality assessment of 81% with very good category. As for the details, namely: the color composition get a score of 3 with good category, image suitability or animation get score 3 with good category, text clarity get score 3 with good category, and suitability of video get score 4 with very good category.

(c) Results of programming quality assessment of 100% with very good category. The details, namely: media use flexibility get score 4 with very good category, clarity of usage guidance get score 4 with very good category, and material meaningful get score 4 with very good category.

Overall total score obtained is 37, with an ideal score of 40. Thus the percentage of final assessment results of 37/40 x 100% = 92.5% with very good category. The final result of the product assessment by the expert gets very good category and is worthy of trial with revision. The revisions include: spelling mistakes on the forehead of the Asmaradana tembang row to five less one wanda.

CONCLUSSION

Based on the above discussion it can be concluded that solfegio is a technique for reading tone or tone sequences, gradually from the simplest to the most difficult degree, from syllables to two notations, three notes, and so on. On this occasion the theory will be used to pack *macapat* song material based on the difficulty level of reading gamelan music notation, which is slendro or pelog tone, ie from the simplest, harder, to the most difficult.

Tembang macapat, which mostly pauses in four-four syllables, most of which also consist of only four pitches (titi barrel). For example, in the first row of slatsro *pathet* sanga pachung sanga: 5 5 3 2/6 6 6 i / 5 5 3 2, which can be distinguished difficulties with other parts, for example in *tembang-tembang* which contains two, three or four barrel, which in the *macapat* song is a smoothing of *tembang*, It shows that *tembang macapat* can also be sung by solfegio technique. The composition can be sung by a solfegio technique by reading two tones first to four tones or four syllables in the whole notation until the line finishes. Therefore, in this media development research will be designed the development of reading titillas ranging from two tone two beats, three tones three beats, and so on up to the tone that one tap contains several tones, according to the needs of *tembang*, but with the variations that menyahai, and will be continued by reading titi barrel on *macapat tembang* lines intactly. The development steps taken are:

First, preliminary study in the field. Results of field studies found curriculum 2013 and KTSP applicable. Based on the curriculum then adopted *tembang macapat* material include: Asmaradana, Kinanthi, Maskumambang, Pangkur, Dhandhanggula, and Sinom;

Second, the needs analysis in the field (SMP) of Sleman, Kulon Progo, Bantul, Gunung Kidul, and Kota.Kegiatan is done to collect data related to: (1) Java Language Curriculum in junior high, (2) choose the types of *tembang* taught, (3) difficulties encountered in learning, and (4) needs analysis in schools in relation to learning *tembang*, (5) analysis of equipment needs that help learning *tembang*. The results of the needs analysis in the field at the junior high level, namely: teachers difficult to teach *tembang macapat*, many teachers who can not melungkukan *tembang macapat*, students need learning media as a means of independent learning, and teachers need learning media to teach *tembang macapat*. In relation to the tools used in learning, singing *tembang macapat* is limited to power points, and audio media. Teachers tend not to use instructional media, or often use lecture methods;

Third, the needs analysis in the field (SMA) Sleman district, Kulon Progo, Bantul, Gunung Kidul, and Kota. This activity is conducted to collect data related to: (1) Java Language Curriculum in SMA, (2) choosing the types of *tembang* taught, (3) difficulties encountered in learning, and (4) needs analysis in school in relation with learning of *tembang*, (5) needs analysis of equipment that helps

learning *tembang*. Hasil needs analysis in the field at high school level, namely: teachers difficult to teach *tembang macapat*, many teachers can not melungkukan *tembang macapat*, students need instructional media as a means of independent learning , and teachers need learning media to teach *tembang macapat*;

Fourth, the composition of the song (material) song Selfigio: peyusunan materials with respect to the curriculum and materials *tembang* taught. *Titilaras* made more simple, in order to facilitate learning *tembang* with selfigio.

Fifth, FGD Javanese Junior High School Curriculum, teaching material *tembang*, and selfigio preparation. FGD Curriculum of Javanese High School of Java, teaching material of *tembang*, and preparation of selfigio. FGD story board creation to be validated on material experts and media experts.

Sixth, revised Story board and revamping titillas. Recording of *tembang* with solfigio. Setup of media validation tools (currently planned). Media Validation (currently planned). Setting up dat and trial analysis (currently being planned).

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