The First International Conference on Government Education Management and Tourism (ICoGEMT)
Bandung, Indonesia, January 9th, 2021

Effectiveness and Emphasis of the Concept Physical Activity in the Fundamental Movement Skills of Primary Education Students.

Dea M.S Kurniawan[1], Agus Mahendra[2], Ucup Yusup[3]

[1] *Department of sports educationt* / School of Postgraduate, Indonesian University of Education, *Bandung*
[2] *Department of sports educationt* / School of Postgraduate, Indonesian University of Education, *Bandung*
[3] *Department of sports educationt* / School of Postgraduate, Indonesian University of Education, *Bandung*

Author's email: deakurniawan15@gmail.com ; ucupyusup01@gmail.com; amahendra63@gmail.com
Corresponding author: deakurniawan15@gmail.com

Abstract. *Fundamental movement skills (FMS) of elementary school age children in physical learning at school are still limited. Physical education learning programs in Indonesia generally still emphasize learning sports branching, where elementary school children have been given basic sports branching techniques, as a result the child's locomotor, non-locomotor and manipulative movement abilities do not develop optimally. There are several factors that can develop basic movement skills, one of which is the physical activity program. Basic movement skills (FMS) obtained through physical activity in physical education learning are not only useful and aim to master certain sports, but these movement skills are useful for carrying out physical activities and tasks in everyday life. This scientific work aims to determine how the effectiveness and emphasis of the concept of physical activity on the fundamental movement skills of elementary school students. The method used in this scientific paper is to use the method of systematic literature reviews. The results of this review provide insight into the relationship between FMS competence and physical activity. Based on the analysis of the article, it is interpreted thoroughly that the magnitude of the relationship between FMS competence and physical activity in the conceptual model, as well as the relationship between FMS and low physical activity in early childhood, moderate in middle to late childhood, and strong in adolescence.*

Keywords: *Effectiveness, Concept of Physical Activity, Fundamental Movement Skills, Elementary School Students*

1. INTRODUCTION

Fundamental movement skills (FMS) or basic movement skills are important for children. Basic movement skills are movement patterns that form the basis for more complex movement dexterity. So that these movements occur on the basis of reflex movements related to the body, are innate and occur without going through training, but can be refined better with practice. The positive contribution given from fundamental movement skills will support the competence of social, cognitive and affective skills. By having good fundamental movement skills, a person can do various sports well so that children's participation will increase and create an active lifestyle. In addition, sports achievements can be achieved if athletes have a good foundation of basic movement skills.

Fundamental movement skills are part of a more complex movement and fall into three categories: stability (for example, balancing and turning), locomotor (for example, running and jumping), and object control (for example, catching and throwing). Basically, what is included in the locomotor movement is the movement of walking, running, jumping, hop, gallop, skip, slide and so on. Meanwhile, non-locomotor movements are movements that do not move places such as bending, bending, bending, pulling, pushing, stretching, turning, swinging, twisting, lifting, stretching,

lowering the body, etc. Then manipulative movements are usually described as movements that play with certain objects as the medium, or skills that involve a person's ability to use their body parts to manipulate objects outside of themselves.

In Indonesia, parents' knowledge of movement skills is very low, so it does not rule out that children at elementary school age have poor movement skills. Not to mention the learning programs that students get at school often do not facilitate children to move with good intensity. One reason is that the majority of physical education teachers in Indonesia use a lot of content in the sports education model, especially in elementary schools, which results in reduced intensity and frequency of movement in children.

Physical education learning programs in Indonesia generally still emphasize learning about sports, where elementary school children have been given basic sports techniques, such as passing and dribling in soccer or basketball games. So that learning will tend to be monotonous and exacerbated by limited facilities and infrastructure, so that children's needs in the learning process are not fulfilled. Automatically physical education learning in such circumstances limits the space for students to move. And as a consequence, the locomotor, non-locomotor and manipulative ability of children does not develop optimally and causes the majority of Indonesian children at elementary school age to be less good at developing their movements.

Primary school-aged children are in a period of growth and development where elementary school-age children have enormous potential to optimize all aspects of development, therefore special guidance and attention is needed, especially from physical education teachers who are asked to foster students in teaching mobility basic. If a person does not get the opportunity from an early age to develop his motor skills, then at the next stage of age, even into adulthood he will fail more in carrying out the task of movement. On the same hand, fundamental movement skills will cause problems if they cannot be mastered properly, such as a child's lack of confidence to participate in play which results in him becoming less mobile and interaction with friends will be difficult to occur.

There are several factors that can develop basic movement skills, one of which is the physical activity program and motor development in children. Fundamental movement skills obtained through physical activity in physical education learning are not only useful and aim to master certain sports, but these movement skills are useful for carrying out physical activities and tasks in everyday life. Fundamental movement skills can be developed through physical activity in the form of games, because by playing students will be required to develop their creativity to act and or make decisions that will interactively make students think to bring out their movement skills in every decision they make.

2. LITERATURE REVIEW

2.1 *Phisycal Activity*

Physical activity is the physical movement performed by the muscles of the body and their support systems. Physical activity is every movement of the body produced by skeletal muscles that requires energy expenditure, Almatsier, 2003 (in Permana, 2013, p. 34). Furthermore, according to WHO, “Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure” (World Helath Organization, 2016, Physical Activity, http://www.who.int/topics/physical_activity/en/, accessed in February 2019).

McAuley (2007, pg. 83), explains "Physical activity is an umbrella term and it refers to any musculo-skeletal movement that results in energy expenditure. This energy expenditure is more than that normally expended at rest. " That is, physical activity is an activity that causes the body to work harder than usual (normal), which is meant by more than normal, namely activities that are outside of the daily routine, such as sitting, standing, walking and climbing stairs.

Physical activity, according to Thomas, Nelson, & Silverman (2005, pg. 305) "Physical activity includes all forms of movement done in occupation, exercise, home and family care, transportation, and leisure settings", meaning that physical activity contains everything. forms of movement performed when working, training, activities

at home (sweeping, washing), transportation (walking, bicycles, motorbikes) and recreation (sports, outbound, dancing). concluded that physical activity is an activity generated by the skeletal muscles from every body movement that requires energy expenditure.

Types of physical activity according to Brown (2012) are divided into two, namely: Aerobic activity, which mostly uses muscles continuously and rhythmically, such as arm or leg muscles; and Anaerobic activity, namely 'no oxygen' activity that is usually performed for a very short duration. The energy obtained is from the muscles that contract regardless of the inhaled oxygen, an example of anaerobic activity is sprinting short distances. Factors that influence physical activity according to the British Hearth Foundation (2014), namely, biological factors, demographic factors, social factors and environmental factors.

2.2 Fundamental Concept of Movement Skill or Basic Movement Skills

Fundamental movement skills (FMS) are movement skills that underlie various sports skills needed by children to participate in games, sports, and other physical activities. Apart from being fundamental and irreplaceable in most human abilities and characteristics, the structure of these movements provides a solid basis for the development of more advanced and complex movement skills. (Gallahue & Donnelly, 2003; Payne & Isaacs, 2002.).

According to Hands (2012, p. 11): “The importance of fundamental movement skills for children with a high level of competence in a range of FMS are able to confidently participate in a wide variety of activities. They also benefit from many physical, social and emotional health outcomes in both the short and long term. ”. That is, the importance of basic movement skills for children with a high level of competence in various Fundamental Movement Skills (FMS) to be able to confidently participate in various activities.

According to Burstiando and Kholis (2017, p. 169) "Fundamental basic motion is defined as a pattern of learning basic movements that do not occur naturally and suggest to be the basis for more complex physical activities and sports". With a meaning similar to Cohen, et al. (2014, p. 2) "Fundamental movement skills (FMS) are considered the building blocks for movement and provide the foundation for specialized and sport-specific movement skills required for participation in a variety of physical activities". That is, basic motion or fundamental motor skills are considered as building blocks or building blocks for specific movement skills and sports required to participate in various physical activities.

Fundamental basic motion is a basic movement pattern that forms the basis for a physical activity or physical activity in more complex sports movement skills. It is felt that fundamental movement skills need to be mastered by all children, especially elementary school students because these movement skills will become their basis for participating in and taking an interest in the sport they are interested in when they grow up.

Developing basic movement skills is very important in the physical education curriculum for early childhood and elementary schools, considering that basic movement skills play a role in building children's physical, cognitive and social skills as expressed by Payne and Isaacs (in Cliff et al., 2009) "The develop- ment of FMS proficiency is prominent in early childhood and primary school physical education curricula because of the importance FMS play in children's physical, cognitive and social development '. Locomotor skills are one part of basic movement skills which are very important for the development of children's movements. The skills of running, galloping, tiptoe, leap, jump and shift are locomotor movement skills. Bjornson, 2005; Simons, 2012 (in Capio, 2012) explains "Locomotor skills require overall movement of the body and may include running, galloping, hopping, leaping, jumping, and sliding".

The components of motion in the motion education model are locomotor movement, non-locomotor movement, and manipulative movement, according to Mahendra (2017, pp. 21-22). One of the locomotor movement skills that are very often performed by students is the basic movement skills of running. Related to the

development of basic running movements at the age of Elementary School (SD) children in the 2013 curriculum, it is one of the learning objectives of the Physical Education, Sports and Health (PJOK) subjects.

3. RESEARCH METHODS/METHODOLOGY

The method used in this research is Systematic literature review which is a literature review method that identifies, assesses, and interprets all findings on a research topic, to answer research questions that have been previously determined (Kitchenham et al. 2007).

Research design is a method that is used tocollect research data so that research results can be proven. The author in this study uses a design, Systematic literature review, which is a method that allows evaluation and interpretation of all research that can be accessed in a relevant way with research questions, subject matter, or interesting events. Making a Systematic literature review consists of 4 steps, namely: (1) identification of journals that will be included in the meta-analysis (2) selection, namely assessing the quality of research reports, (3) abstraction, in the form of quantifying the results of each study to be combined and (4) analysis, namely the incorporation and reporting of SLR results.

Journal Search Based on search results on Google Schooler, EBSCO, SAGE, Springer and Taylor & Francis with the keywords Physical Activity, and Fundamental Movement Skill. Researchers found from 500 journals that match these keywords, then screened them. 183 journals were excluded because there were the same titles and not available full text articles and 317 journals were produced for Abstract screening and 50 journals were obtained. The feasibility assessment of 50 full text journals was carried out, 43 journals that were duplicated and did not meet the inclusion criteria were excluded, so that 31 full text journals were reviewed.

The type of data used is in the form of secondary data obtained from various sources such as books, magazines, journals, newspapers, and other literature relevant to the object of research, but in this study researchers used secondary data taken from journals. The secondary data collected will then be analyzed to answer problems based on the facts and data that the authors obtained.

Research instruments are tools used to obtain, manage, and interpret information from respondents using the same measurement pattern. According to Gulo (in Thalha Alhamid and Budur Anufia, 2019, p. 6) The research instrument is a written guideline for interviews, or observations, or a list of questions, which are prepared to obtain information.The instrument is called an observation guide or interview guide or questionnaire or documentary guide. , according to the method used.

Data collection techniques in this study the author will do Identification of documentation, namely journals that are relevant to the research to be carried out, accessed from existing databases, namely from: Google Scooler, EBSCO, SAGE, Taylor & Francis, Springer. Data analysis is the simplification of data into a form that is easy to understand, read and interpret. According to (Fraenkel 2015) what is meant by data analysis is as follows: "Data analysis is an activity after data from all respondents or other data sources are collected.

This research was conducted using qualitative research methods, namely the efforts made by working with data, organizing data, sorting them into units that can be managed, synthesizing, looking for and finding patterns, finding what is important and what is learned and deciding what can be told to others (Cruz 2017). The data analyzed is the result of library research data from journals taken from 5 available databases, namely Google Schooler, EBSCO, SAGE, Springer and Taylor & Francis, then the researcher conducts an analysis to draw conclusions.

4. RESULTS AND DISCUSSION

In this study, the researchers found several findings in the analyzed articles, including the definition of Physical Activity, the definition of Fundamental Movement Skills, the effect of Physical Activity on Fundamental Movement Skills, and the application of Physical Activity to Fundamental Movement Skills in the learning of Physical Education. Of the 31 articles analyzed, there are 3 articles that define Physical Activity

and 9 articles that discuss the definition of Fundamental Movement Skills. Some of these definitions are:

According to the magazine entitled "A brief review on correlations of physical activity and sedentary lifestyle in youth" states that:

> Physical activity has significant health benefits in youth. Physical activity is associated with a more favorable profile of biological risk factors for cardiovascular disease in children and adolescents, such as lower blood pressure, better serum levels of lipids and lipoproteins, and decreased adiposity (Der Horst, et al, 2007).

According to the magazine entitled "Fundamental skills of movement, physical activity and motivation towards Finnish school physical education" defines:

> Physical activity such as anybody movement produced by skeletal muscles that require energy expenditure. This can be seen as a continuum from physical exertion to extreme activity. Important parts of PA are intensity, frequency, and duration (Shephard 2003). The intensity of physical activity can be described, for example, in the form of absolute energy expenditure or as a value relative to maximum or peak performance (Kalaja, 2012).

According to the journal entitled "Fundamental Movement Skills and Physical Fitness as Predictors of Physical Activity: A 6-Year Follow-up Study" defines:

> Habitual physical activity is defined as "any body movement that results in an expenditure of energy" (Caspersen et al., 1985, 126) and can be classified into a variety of formats. Meaning: Ordinary physical activity is defined as "any movement of the body that results in an expenditure of energy" (Caspersen et al., 1985, 126) and can be classified into various formats.

According to the journal entitled "Relationship between fundamental movement skills and physical activity in preschool children: a systematic review" defines FMS that:

> FMS are defined as learned basic movement patterns that do not occur naturally and are suggested to be the basis for more complex and advanced physical and sports activities. Meaning: FMS is defined as a learned basic movement pattern that does not occur naturally and is suggested to be the basis for more complex and advanced sports and physical activities (Barnett, 2016).

According to the magazine entitled "The role of gender, enjoyment, perceived competence in physical activity and fundamental movement skills as correlations of participation in physical activity of Finnish physical education students", it is defined that:

> Fundamental movement skills include balance, manipulation skills, and locomotives. Balance refers to a body that remains in place and moves around a horizontal or vertical axis (Gallahue and Donnelly 2003) and processes to maintain postural stability (Wescott, Lowes, and Richardson 1997). More specifically, Wescott et al. defines static balance as "the ability to maintain posture, such as balance in a standing or sitting position", and dynamic balance as "the ability to maintain control of posture during other movements, such as when reaching for an object or you walk on the lawn. "

According to the magazine entitled "The relationship between fundamental movement skills and self-reported physical activity during Finnish high school" he defines that: According to the literature on motor development, FMS includes locomotor skills, balance and manipulation (Gallahue and Cleland-Donnelly 2007). Specific skills within FMS include; locomotor, manipulative and balance skills.

According to the journal entitled "Getting the basics of movement: a meta-analysis of the effectiveness of motor skills interventions in children." defines that:

> FMS requires the activation of large muscle groups and is generally classified as object control and locomotor skills (Haywood & Getchell 2009). Object control skills involve carrying, intercepting, or projecting objects such as throwing, catching, dribbling, kicking, rolling, and hand striking. Locomotive skills include running, jumping, hopping, hopping, running, and gliding as different movements to move a person from one place to another (Ulrich 2000).

According to the journal entitled "Relationship between fundamental motor competence and physical activity during childhood and adolescence: a systematic review". defines that: FMS is operationally defined as movements that involve large muscles that generate force in the torso, arms, and legs (Clark, 1994, p. 245). FMS is generally divided into two types: object control and locomotive skills.

According to the journal entitled "Exploring the relationship between fundamental interventions in motor skills and levels of physical activity in children: a systematic review and a meta-analysis." defines that: Fundamental Motor Skills (FMS) are the building blocks for the complex set of movements required for a variety of sports and recreational activities, including playground games and organized sports.

According to the magazine entitled "Fundamental Movement Skills: An Important Focus" defines that:

> FMS (also called fundamental motor skills) is defined as a learned basic movement pattern that does not occur naturally and is suggested to be the foundation for more complex sports and physical activities. They can be classified into three different categories: locomotion (involving body movements, eg running), object control (eg manipulative skills, catching a ball), and stability skills such as balance (Barnett, 2016).

According to the journal entitled "Fundamental Movement Skills and Health-Related Outcomes: A Narrative Review of Longitudinal and Intervention Studies Directed to Typically Developing Children." defines that:

> Movement skills are an essential element of a child's overall development and play an important role in influencing physical, psychosocial, and mental health. Movement skills can be broadly classified into the gross and fine skill domains that can be observed, such as those required for running, capturing, writing / printing, or dressing (Bramerr, 2016).

According to the magazine entitled "Fundamental skills of movement, physical activity and motivation towards Finnish school physical education". defines that:

> Fundamental Movement Skills (FMS) consist of locomotor, manipulative, and balance skills. Locomotive skills refer to a body that moves from one point to another in vertical or horizontal dimensions. Activities such as walking, running, jumping, jumping, running, sliding, jumping, and climbing are representative examples of locomotor movement skills (Kalaja, 2012).

The relationship between physical activity and health has been clearly demonstrated in many studies. Physical activity or physical activity is also an important correlation with basic movement skills or fundamental movement skills, especially in children. By having good fundamental movement skills, a person can play various sports well so that children's participation increases and creates an active lifestyle. The foundational movement skills gained through physical activity in physical education learning are not only helpful and aim to master certain sports, but these movement skills are helpful in performing physical activities and tasks of everyday life.

Fundamental movement skills can be developed through physical activity in the form of games, because playing games will require students to develop their creativity to act and / or make decisions that will make them think interactively to highlight their skills in movement in every decision you make.

Of the 31 journal articles analyzed, there were 15 journals that stated that physical activity was highly influential for fundamental movement skills. It is hypothesized that the relationship between physical activity and the fundamental ability of movement differs according to the age and stage of development of the child. Physical activity is also discussed extensively in several articles that are very important for the normal growth and development of children of preschool age to adolescents.

The results of the analysis of several articles also suggest that physical activity requires constant exercise to maintain FMS gains or more time of exercise is needed to stabilize the body's balance performance. Also, body balance (both static and dynamic) through physical activity can be affected by growth rate. It was also discussed in several articles that the level of basic movement skills or FMS in childhood will affect physical activity later in life. The ability to perform a variety of fundamental movement skills increases the likelihood that children will participate in different physical activities throughout their lives. In line with this, an article stated that the study showed that children with advanced basic movement skills were 10-20% more likely to engage in physical activity 6 years later.

It has also been observed in several articles that adolescents with more developed basic motor skills may find it easier to be physically active and may pursue a wider variety of sporting interests than their peers who have lower basic mobility skills. Basic movement skills through physical activities should serve as a basic building block in the prerequisite for ongoing medical care for all people.

Some articles discuss that high basic movement skills alone may not be sufficient to sustain participation between physical activities in adolescence. Low motivation towards physical education can lead to disinterest in continuing to engage in school-based physical activities. Pedagogically important, schools maintain a clear focus on physical education and the physical activity environment, to provide positive experiences and motivate children to engage in moderate to vigorous physical activity.

In addition, several articles reveal that physical activity behavior is influenced by complex demographic interactions, such as the sex of the child who is more active and therefore greatly influences physical activity; sociopsychology, eg support from others, self-competence, and physical activity. Additionally, fitness has been recognized to be related to physical health, which is formulated as a result of cardiorespiratory endurance, muscular endurance, muscular strength, body composition, and flexibility as a core function supporting physical activity behavior.

CONCLUSION

According to the research results of several reviewed journal articles, physical activity has a significant effect on fundamental movement skills. Physical activity should be done from an early age, because it is very influential in increasing physical activity later in life. Children with competent fundamental movement skills have 20% more activity capacity compared to children who do not have fundamental movement skills. The level of physical activity can also be affected by the growth of children. Basic movement skills through physical activity should serve as a basic building block in a prerequisite for ongoing medical care for all people. Therefore, basic movement skills through physical activity must be trained and fostered in sustainable time. The application of physical activity in the development of fundamental movement skills in elementary school students can be done by learning physical education that is structured in a systematic way. Systematic learning will motivate students to be physically active. Also, applying physical activity to increase fundamental movement skills can be done through sports. Sports games are very popular with students, and through sports games, students can systematically train all their movement skills.

REFERENCES

A.Fisher,J.J.Reilly,L.A.Kellyetal.,(2005)"Fundamental movement skills and habitual physical activity in young children,"Medicine & Science in Sports & Exercise, vol.37,no.4,pp.684–688.

Aguirre, R. T. P., & Bolton, K. W. (2014). Qualitative interpretive meta-synthesis in social work research : Uncharted territory. https://doi.org/10.1177/1468017313476797

Aristha, G. P., (2017). Pengembangan *Keterampilan Gerak dasar Anak Sd melalui Permainan tradisional*. Bandung: Prodi Pendidikan Olahraga SPS UPI.

Barnett, L. (2016). "Fundamental Movement Skills: An Important Focus". Journal of Teaching in Physical Education. http://dx.doi.org/10.1123/jtpe.2014-0209

Boulianne, S. (2009). Does Internet Use Affect Engagement ? A Meta-Analysis of Research A Meta-Analysis of Research, (September 2013), 37–41. https://doi.org/10.1080/10584600902854363

Brammer. (2016). "Fundamental Movement Skills and Health-Related Outcomes: A Narrative Review of Longitudinal and Intervention Studies Targeting Typically Developing Children". DOI: 10.1177/1559827616640196

Brereton, Pearl et al. 2007. "Lessons from Applying the Systematic Literature Review Process within the Software Engineering Domain." 80(4): 571–83. http://dx.doi.org/10.1016/j.jss.2006.07.009.

B. W. Timmons, A. G. Leblanc, V. Carson et al., (2012) "Systematic review of physical activity and health in the early years (aged 0 4years), "Applied Physiology,Nutrition,and Metabolism,vol. 37,no.4,pp.773–792.

Decoster, J. (2009). Meta-Analysis Notes.

Decoster, J. (2014). Meta-Analysis Notes, (January 2004).

Engel, A, dkk. (2018). "Exploring the Relationship Between Fundamental Motor Skill Interventions and Physical Activity Levels in Children: A Systematic Review and Meta-analysis". Journal of Sport Medicine. (https://doi.org/10.1007/s40279-018-0923-3)

Fisher,A, dkk. (2005). "Fundamental Movement Skills and Habitual Physical Activity in Young Children". DOI: 10.1249/01.MSS.0000159138.48107.7D

Gallahue, D. L. (1996). "Development Physical Education for Today's Children." Chicago: Brown & Benchmark

Kalaja, dkk. (2011). "Development of junior high school students' fundamental movement skills and physical activity in a naturalistic physical education setting". Jounal of Physical Education and Sport Pedagogy. DOI: 10.1080/17408989.2011.603124

Kementrian Kesehatan Republik Indonesia. (2012). *Pedoman Pencegahan dan Penanggulangan Kegemukan dan Obesitas pada Anak Sekolah.* Jakarta: Kementerian Kesehatan RI.

Lai, Samuel, dkk. (2013). "Do School-Based Interventions Focusing on Physical Activity, Fitness, or Fundamental Movement Skill Competency Produce a Sustained Impact in These Outcomes in Children and Adolescents? A Systematic Review of Follow-Up Studies". DOI 10.1007/s40279-013-0099-9

Logan, dkk. (2011). "Getting the fundamentals of movement:a meta-analysis of the effectiveness of motor skill interventions in childrencch". Journal health and development.

Logan S, dkk. (2015). "Relationship Between Fundamental Motor Skill Competence and Physical Activity During Childhood and Adolescence: A Systematic Review". Journal Human Kinestics. http://dx.doi.org/10.1123/kr.2013-0012

Logan S, Robinson L, Webster E, et al. (2014) "The relationship between motor competence and physical activity engagement during childhood: a systematic review." Kinesiol Rev;4;416–26.

Mahendra, A. (2007). *Teori Belajar Mangajar Motorik*. Bandung: Prodi PJKR FPOK UPI.

Mahendra, A. (2015). *Filsafat Pendidikan Jasmani*. Bandung: Bintang Warli Artika.

Nilsen, dkk. (2020). "Bi-directional prospective associations between objectively measured physical activity and fundamental motor skills in children: a two-year follow-up". https://doi.org/10.1186/s12966-019-0902-6

Okely A, Booth M, Chey T. (2004) "Relationships between body composition and fundamental movement skills among children and adolescents." Res Q Exerc Sport 75:238–47.

Okely A, Booth M, Patterson J. (2001) "Relationship of cardiorespiratory endurance to fundamental movement skill proficiency among adolescents." Pediatr Exerc Sci 13:380–91.

Okely A, Booth M. (2004) "Mastery of fundamental movement skills among children in New South Wales: prevalence and sociodemographic distribution." J Sci Med Sport 7:358–72.

Pengantar, Sebuah. "SYSTEMATIC REVIEW SEBAGAI METODE PENELITIAN UNTUK MENSINTESIS HASIL-HASIL PENELITIAN." (i).

World Health Organization. (2010). "Global Recommendations on Physical Activity for Health." Switzerland: WHO Press.

World Helath Organization. (2016). "Physical Activity". Diambil dari http://www.who.int/topics/physical_activity/en/.