

Early childhood motor health index

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Abstract:

Introduction: Health is the basic foundation every human must have to support the continuation of life in the world. The United Nations Development Programme (UNDP), places health problems as part of the criteria for successful human resource development in a country through the measurement of the human resources index (Human Development Index). HDI is developed based on three basic dimensions, namely (1) the Dimension of Longevity, (2) the Dimension of Knowledge and (3) the Dimension of Decent standard of living. The Dimension of Longevity, with indicators of (i) health and (ii) population, are very closely related to human behavior in maintaining health, lead to better life expectancy. **Problem statement:** The purpose of the study is to make a Health Index for children. **Approach:** The Health Index for children has been developed using a theoretical development research involving experts. **Material and Method:** Focus Group Discussion (FGD) using Zoom. The subjects as many as 20 people consisting of experts are Sports Sciences, Physical Educator, the Health Office, the Education and Culture Office, the Youth and Sports Service, and Public Health experts. **Results:** The implication of the research is the realization of the product in the form of an early childhood motor health index, which consists of 3 dimensions, namely consist of: 1) Passive Physical Dimensions of Children; consist of: a) Height; b) Weight; c) Organ health; 2) Physically Active Dimensions, consist of: a) Motor Abilities: (i) Accuracy; (ii). Agility; (iii). Speed; (iv). Length Power; b). Physical fitness (endurance); and 3) Dimensions of Concern for Parents and Teachers of Physical Education, consist of: a) Sports extracurriculars; b) Sports clubs; c). Parental Participation and Care.

Keywords: Human resources, Motor health index, early childhood

Introduction

The United Nations Development Programme (UNDP), places health problems as part of the criteria for successful human resource development in a country through the measurement of the human resources index (Human Development Index). HDI is developed based on three basic dimensions, namely (1) the Dimension of longevity, with indicators being (i) *health* regarding (a) *infant mortality*, (b) *under-five mortality*, (c) *children's mortality (up-five mortality)*, (d) *juvenile mortality*, (e) *adult mortality* and (f) *parental mortality*, and (ii) *population*, including (a) *life expectancy*, (b) residents who do not *have a life expectancy until the age of 60*, and others. (2) The Dimension of knowledge (knowledge) with its indicators is a problem (i) *education*; which includes (a) *educational participation rate (enrolment ratio)*, (b) *literacy rate (literacy rate)*, (c) *literacy rate*, (d) *children who are educated until elementary school*, (e) *the number of children educated until junior high school*, (f) *the number of children educated until high school*, and others and (3) dimensions Decent standards of living, with indicators, (i) economic problems; including (a) *relating to the poverty index*, (b) *income of the population (salary index)* (Saikia et al., 2018).

In the 2018 report on the success of Human Resources Development, Indonesia entered the middle level, which is in the position of over 100 out of 175 countries worldwide (Saikia et al., 2018). When compared to countries in the ASEAN region, Indonesia's Human Development Index (HDI) figures are far below countries in the Asian region except for Timor Leste. Malaysia is 55-58, Singapore is 25th, Brunei is 33rd, Thailand is 75th, and the Philippines is 83rd. There is an increase in the index from the previous year, although it is not too noticeable and still enters the range above 100. Improvements achieved are education development index in the area of reading and writing skills in the 15-year-old population, which increased by 90%. As well as in the health sector, there was a decrease in infant mortality, in children under-fives mortality rate, possibly due to improved nutritional intake in toddlers (Saikia et al., 2018).

With a low level of health in early childhood, it is suspected that one of them is less active physical activity. The essential health research report conducted by the Ministry of Health in 2013 shows that the proportion of physical activity of the population in Indonesia is classified as less active. In general, those who carry out active physical activity are only (26.1%). In the age group of ≥ 10 years, who did 3-6 hours of physical activity (42%),

while those who did physical activity ≥ 6 hours per day as much as (24.1%). Based on age groups, there is a tendency to get older, and the proportion of physical activity behaviour decreases (RISKESDAS, 2013).

The Lack of physical activity carried out by early childhood, adolescents has an impact on increasing several diseases related to lack of physical activity, including Diabetes Mellitus and Obesity. There was an increase in the number of Diabetes Mellitus. The results of the 2013 Basic Health research report the number of sufferers of this disease was 6.9%, while the results of the 2019 Basic Health research report the number of sufferers increased by 8.5%, there was an increase in Diabetes mellitus by 1.6%. Likewise in Obesity, the results of the 2013 Basic Health research report the number of sufferers was 26.6%, while the 2019 Basic Health Research Report results increased by 31.0%, there was an increase in Obesity by 5.6% (KEMENKES RI, 2018). A study by Very et al (2016) states the role of School Health Programs (UKS) in childhood obesity. From the results of this study, it can be concluded that the School Health Programs (UKS) Primary school (SD) Negeri Lamper Kidul 02 Semarang has not prioritized efforts to overcome obesity in students. In other words, a lack of concern for external impacts Early childhood Education Programs (PAUD). In fact, according to Syamsuddin et.al., good motor skills are related to children's cognitive, affective and health abilities, besides the need for public awareness of malnutrition, including obesity in children (Munif et al., 2019). According to Risnah et al (2018) the need for public concern for the increasing condition of malnutrition and obesity among children. This statement is shown by research Permata et al (2019) results show that as many as 40% of mothers do not understand enough about the stage of motor development of children. Based on a survey, it was found that respondents conducted examinations to check the growth and development of children regularly at Integrated Health care Centers/hospitals. However, based on the results of the questionnaire assessment, only 60% of mothers understood the child's motor development stage. Other research conducted by Prasetyo Agung Nugroho et al (2017) found that early childhood care for personal health in Clean and Healthy Life Behavior (PHBS) in Boyolali Regency was included in the excellent category. The study results concluded that children could identify several diseases that had been experienced and explain the causes of the illness.

Increased diseases associated with lack of activity/movement, such as diabetes mellitus, and obesity (obesity), will reduce human health rates. The impact of this decrease in health rates will undoubtedly affect the increase in the mortality rate of adolescents. Of course, this will result in a decrease in human life expectancy. The increase in the human health dimension affects the decline in the Human Development Index. One way to improve health care is to encourage children to do sports activities regularly. If sports activities are carried out regularly, following the principles of correct sports practice, it will increase physical freshness (body fitness). In general, what is meant by physical fitness is physical fitness, which is a person's ability to do daily work efficiently without experiencing significant fatigue so that he is still able to enjoy his free time (KEMENPORA, 2021)

Physical fitness includes several components, which are grouped in two aspects, as follows: 1. Physical fitness is related to organ health, including Strength (Strength), Flexibility (Flexibility), Endurance (endurance), Components and classification, Endurance (endurance), 2. Physical fitness is related to skills (psychomotor). Among them are Power Speed (power), Agility (agility), Balance (balance), Coordination (coordination), Reaction speed (reaction / speed)(Corbin, 2021).

Krutsevich Tatiana et. al (2019) These factors, together with insufficient volume and intensity of motor activity, negatively affect the indicators of physical, mental and social health, which leads to a reduction in the life expectancy of the population of Ukraine. Sitovskiy Andriiet. et. al. (2019) differentiated approach to allocating educational time to develop motor skills of seventh-graders is an effective means for differentiated physical education of adolescents, which is reflected in the increase in the level of physical fitness and performance in seventh-graders during the pedagogical experiment.

According to (Tra & Oliver, 2022), The latest concept in the 21st century about physical fitness is a combination of HRF (Health Related Physical Fitness) and SRF (Skill Related Physical Fitness). Health-related fitness components are vital for achieving optimal well-being, helping people maintain a healthy lifestyle through correct and appropriate functioning in their daily activities, The components are Body composition, Cardiorespiratory endurance, Flexibility, Muscular strength and Muscular endurance and Skill-related fitness components are associated with abilities necessary in sports performance. Although such components also support lifestyle functions necessary for a healthy and active lifestyle, they are more prominent in athletic, recreational, and rhythmic performance, The components are Balance, Coordination, Speed, Agility, Reaction time and Power.

Method

Research Methods using Research and Development of Conceptual Development models. The research subjects of the Development of the Index of motor health in early childhood involved a variety of experts and practitioners as many as 20 people, consisting of Bachelor of Sports, Physical Education Teachers, Health Office, Education and Culture Office, Youth and Sports Office, and Public Health Expert.

The collection used the FGD (Focus Group Discussion) method online using a Zoom meeting which was attended by 20 experts in the field 2 times. The first FGD explores the opinions of experts and practitioners about the importance of developing an index of early childhood motor health. The first FGD will be analyzed with descriptive statics to further formulate an early childhood motor health index. The results of the draft

formulation of the early childhood motor health index will be brought as a topic of discussion in the second phase of the FGD. The results of the second phase of the FGD will produce proposals about their dimensions and parts, which will then be used as the basis for researchers to formulate the Early Childhood Motor Health index.

Result

Early Childhood Motor Health Index

The motor health index is developed based on passive and active physical conditions. Passive physical conditions consist of a. Age, b. Height, c, weight, d. Pulse, e. Health of the lungs and heart, while the active physical condition consists of a component of motor abilities, consisting of a. accuracy, b. agility, c. speed, d. power and e. physical fitness component (endurance), as well as the concern factor of parents and physical education teachers. Passive physical dimensions are divided into elements, weight, height and organ health. Boot values are seen in table 1.

Table 1. Value and weight of Passive Physical Dimensions

A	Passive Physical Dimensions	25
1	Weight	10
2	Height	10
3	Organ health	5

Each element of the passive physical Dimension is given the weight of assessment based on the child's average growth and physical development. It is described as (i) Height with a maximum value of 10, monitored for increasing height according to the age level, here is monitored the growth of height of children in, so that the value of each child's growth and development will appear, there are five categories, with each having its value. The detailed criteria and values listed in table 2.

Table 2. Height criteria and values

No.	Height growth	Information	Value
1	Very Good	2 standard deviations (SD) above average	10
2	Good	1 standard deviation (SD) above average	8
3	Enough	Average (ushered a 1 SD up and down mean)	6
4	Less	1 standard deviation (SD) below average	4
5	Less once	2 standard deviations (SD) below average	2

The description for weight, monitored by gaining weight according to the age level, here is monitored the occurrence of early childhood weight growth, weight measurement based on the BMI (Body Mass Index) formula so that the value of each child's growth and development will appear, there are four categories, with each having its value (Table 3).

Table 3. Weight Criteria and Grades

No.	Weight Growth	Information	Value
1	Ideal/Normal	Calculated Proposition with height using the formula Body Mass Index (BMI)	10
2	Good	1 level above ideal and 1 level below ideal	8
3	Enough	2 levels above ideal and 2 levels below ideal	6
4	Lack/ obesity	3 levels above ideal and 3 levels below ideal	2

The description of student organ health is monitored by measuring student heart and lung health so that the value of the health of the heart, lung, and sensory organs will appear for each child's growth and development. There are five categories, with each having its value.

Table 4. Heart, Lung, and Sensory Organ Health Criteria

No.	The health of the heart, lung, and sensory organs	Information	Value
1	Ideal/Normal	Good condition and physiologically healthy heart, lung, and sensory organs	5
2	Good	Good condition and physiologically healthy heart and lung organs	4
3	Enough	Good condition and physiologically healthy, one of the three organs	3
4	Less	Poor condition and physiologically healthy heart, lung, and sensory organs	2
5	Less once	Very poor condition and physiologically healthy heart, lung, and sensory organs	1

Active physical dimensions are divided into elements, motor abilities, a. accuracy. b. agility c. Speed, d. Length Power and e. Endurance, values are seen in table 5.

Table 5. Values and weights of active physical dimensions

B	Active physical dimensions	60
1	Accuracy	12
2	Agility	12
3	Speed	12
4	Length Power	12
5	Endurance	12

Each element of the active physical Dimension is given the weight of assessment based on the development and progress of motor abilities described into:

- a. Motor Ability Accuracy is the ability of motion that uses reflex motion and motion that uses the neuromuscular ability of children, here is monitored the growth of reflex motion by conducting measurements of early childhood accuracy tests so that the value of each motor ability of children's accuracy will appear, there are five categories of children.

Table 6. Criteria for Motor Ability Accuracy

No.	Accuracy Category	Information	Value
1	Very Good	2 standard deviations (SD), 2 levels above the average	12
2	Good	1 standard deviation (SD), 2 levels above average	9
3	Enough	Average (ushered a 1 SD up and down mean)	6
4	Less	1 standard deviation (SD), 1 level below average2	3
5	Less once	2 standard deviations (SD), 2 levels below average2	2

- b. Motor Ability Agility is the ability of movement that uses reflex motion and motion that uses the neuromuscular ability of the child. Here is monitored the growth of reflex motion by conducting an early childhood Agility test measurement.

Table 7. Agility Motor Ability Criteria

No.	Agility Categories	Information	Value
1	Very Good	2 standard deviations (SD), 2 levels above the average	12
2	Good	1 standard deviation (SD), 1 level above the average	9
3	Enough	Average (ushered a 1 SD up and down mean)	6
4	Less	1 standard deviation (SD), 1 level below average	3
5	Less once	2 standard deviations (SD), 2 levels below average	2

- c. Speed Motor Ability is the ability of motion that uses reflex motion and motion that uses the neuromuscular ability of the child. Here is monitored for the growth of reflex motion by conducting an early childhood Speed test measurement.

Table 8. Speed Motor Ability Criteria

No.	Speed Categories	Information	Value
1	Very Good	2 standard deviations (SD), 2 levels above the average	12
2	Good	1 standard deviation (SD), 1 level above the average	9
3	Enough	Average (ushered a 1 SD up and down mean)	6
4	Less	1 standard deviation (SD), 1 level below average	3
5	Less once	2 standard deviations (SD), 2 levels below average	2

- d. The ability of the motor power of the lengths is the ability to move using the ability of the body's organs in the form of large muscle fibres of the child. Here the growth of muscle fibres is monitored to maximize work in supporting muscle function to use its energy optimally. To determine the Length Power ability of PAUD children, researchers need to use the Length Power test measurement so that the motor ability value of each Length Power child will appear. There are five categories, each of which has a maximum value of 12.

Table 9. Criteria for Motor Ability of Lengths Power

No.	Category Length Power	Information	Value
1	Very Good	2 standard deviations (SD), 2 levels above the average	12
2	Good	1 standard deviation (SD), 1 level above the average	9
3	Enough	Average (ushered a 1 SD up and down mean)	6
4	Less	1 standard deviation (SD), 1 level below average	3
5	Less once	2 standard deviations (SD), 2 levels below average	2

- e. Endurance Motor Ability is the ability to move that uses the ability of body organs, in the form of heart and lung organs (cardiorespiratory), which in early childhood are still not functioning optimally. To determine the ability of endurance, measurements of the early childhood Endurance test will appear so that the value of each child's Endurance motor ability will appear. There are five categories, with each having its value. The maximum value is 12.

Table 10. Criteria for Physical Fitness Ability (Endurance)

No.	Category Durability	Information	Value
1	Very Good	2 standard deviations (SD), 2 levels above the average	12
2	Good	1 standard deviation (SD), 1 level above the average	9
3	Enough	Average (ushered a 1 SD up and down mean)	6
4	Less	1 standard deviation (SD), 1 level below average	3
5	Less occasionally	2 standard deviations (SD), 2 levels below average	2

Dimensions of The Dimension of Concern of parents and Teachers Physical education is divided into elements, a. Extracurricular sports. b. Sports clubs c. Parent participation table 11.

Table 11. Values and weights Dimensions of Concern for parents and Teachers Physical education and sports

C		Dimensions of Concern for Parents and Teachers Physical education and sports	15
1	Sports extracurriculars		5
2	Sports Clubs		5
3	Parent Participation		5

Each element of the Dimension of concern for parents and teachers Physical education and sports are given the weight of assessment based on the concern of the study and teachers. Physical education and sports are described as:

- a. Sports extracurricular activities at school are indicators that support children's motor skills because, in sports extracurricular activities, children will get a good training program from the coach. Besides that, there is also good supervision and monitoring of exercise development to support motor skill development.

Table 12. Criteria for extracurricular activities in school sports

No.	Category Sports extracurriculars	Information	Value
1	Very Good	a. At least ten sports are used as extracurricular sports in schools. b. There are certified coaches from each sport c. There is a structured exercise program d. School facilities are available for extracurricular sports according to sports	5
2	Good	a. At least seven sports are used as extracurricular sports in schools. b. Some certified coaches from each sport c. There is a structured exercise program in each branch. d. School facilities are partially available for sports extracurriculars according to sports	4
3	Enough	a. There are at least four sports used as extracurricular sports in schools. b. Several certified coaches from each sport c. The exercise program is less structured in each branch. d. School facilities are partially available for sports extracurriculars according to sports	3
4	Less	a. There are at least two sports that are used as extracurricular sports in schools b. few certified coaches from each sport c. The exercise program is less structured in each branch. d. School facilities are partially available for sports extracurriculars according to sports	2
5	Less once	a. There is a minimum of 1 sport that is used as an extracurricular sport in schools b. Uncertified coaches of each sport c. There is no exercise program from each branch. d. School facilities are not available for sports-based sports extracurriculars	1

- b. Sports club activities in schools are indicators that support children's motor skills to be good. Because in sports extracurricular activities, children's training will be programmed by coaches, there is also supervision and monitoring of children's sports development, which will support the development of motor skills.

Table 13. Kriteria School Sports Club Activity

No.	Category Olahraga Club	Information	Value
1	Very Good	a. School Sports Clubs with criteria following the regulations of the central ministry of education and culture b. There is a minimum of 1 sport that is used as a sports club activity in schools c. Fully supported by the school committee	5
2	Good	a. School Sports Clubs with criteria following the regulations of the central ministry of education and culture b. There are at least seven sports that are used as sports club activities in schools c. Fully supported by the school committee	4
3	Enough	a. School Sports Clubs with criteria following the regulations of the central ministry of education and culture b. There are at least five sports that are used as sports club activities in schools c. Not fully supported by the school committee	3
4	Less	a. School Sports Clubs with criteria not fully complying with the regulations of the central ministry of education and culture b. There are at least two sports that are used as sports club activities in schools c. Not fully supported by the school committee	2

5	Less once	<ul style="list-style-type: none"> c. School Sports Clubs with criteria not fully complying with the regulations of the central ministry of education and culture c. There is a minimum of one sport that is used as a sports club activity in schools c. Not supported by the school committee 	1
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c. Parents' concern in supporting school sports activities with a score of 5. Parental participation is one indicator that supports children's motor skills to be good because parental participation will provide significant benefits to the course of club activities as well as extracurricular activities at school. In addition, parental participation will provide high encouragement and motivation for children. So that the child can practice well, and the spirit is high because the child feels happy, which is parental support.

Table 14. Criteria of Parent Participation.

No.	Parents' Concern for their children	Information	Value
1	Very Good	<ul style="list-style-type: none"> a. As a school committee administrator b. Contributing to financing activities c. Actively monitor every time their child exercises d. Take part in every match held 	5
2	Good	<ul style="list-style-type: none"> a. As a school committee administrator b. Less contribution to financing activities c. Less actively monitor whenever the child exercises d. Less Participation in every match held 	4
3	Enough	<ul style="list-style-type: none"> a. As a school committee administrator b. Less contribution to financing activities c. Less actively monitor whenever the child exercises d. Not Participating in any matches held 	3
4	Less	<ul style="list-style-type: none"> a. Not a school committee administrator b. less Contribute to financing activities c. Less actively monitor whenever the child exercises d. Not Participating in any matches held 	2
5	Less once	<ul style="list-style-type: none"> a. Not a school committee administrator b. Do Not Contribute to the financing of activities c. Very accurate do not actively monitor every time her child practices d. Do not participate in any matches held at all 	1

From the description carried out above, the early childhood motor health index is an accumulation of the sum of each Dimension with its elements, to be further poured into the equation of the early childhood motor health index as follows in table 4:

Table 15. Overall table of Motor Health Index for children

Early childhood Motor Health Index		Maximum Value
A	Physical Dimensions	25
1	Weight	10
2	Height	10
3	Organ health	5
B	Motor Dimensions	60
1	Accuracy	12
2	Agility	12
3	Speed	12
4	Lengths Power	12
5	Endurance	12
C	Environmental dimensions and concerns	15
1	Sports extracurriculars	5
2	Sports Clubs	5
3	Parent Participation	5
Total Value		100

Discussion

The early childhood health index must consider various internal and external factors. Internal factors are closely related to the physical physiology of the student, while external factors are related to the environmental concern of the student. Internal factors are more emphasized in passive and active physical aspects. A study on essential health conducted by the Ministry of Health of the Republic of Indonesia in 2013 concluded that obesity rates in early childhood were caused by a lack of child movement (KEMENKES RI, 2013). Do not demand that children live healthy if the parents themselves do not provide a balanced nutritional menu for their food intake. Because sometimes parents are busy at work, they cannot monitor their children's food intake, from here most parents only give fast food to their children. Besides, parents do not encourage children to move actively, exercise, and even more games that do not require movement.

In a study in elementary schools on the role of School Health (UKS) on childhood obesity concluded that School Health (UKS), in this case, the school showed that the School Health (UKS) Public Primary school (SD) Lamper Kidul 02 Semarang had not prioritized efforts to overcome obesity in its students, in other words, lack of concern for early childhood external aspects (Very et al., 2016a). In fact, according to Munif et al (2019) good motor skills are related to the cognitive, affective and health abilities of children. The need for public awareness of malnutrition, including obesity in children. So, cross-professional collaboration training on handling malnutrition affects changes in the recruitment of health workers (Risnah et al., 2018). There is a difference in changes in malnutrition knowledge and collaboration across professions before and after training.

Research Conducted By Permata et al (2019) the results of the research of 40% of mothers do not understand enough about the stage of motor development of children. Based on the survey results, it is known that they routinely carry out child development checks regularly at the Integrated Public Health Service (Posyandu). However, based on the results of the questionnaire assessment, only 60% of mothers understand the stages of children's motor development, so respondents need regular counselling twice a week with assistance from officers.

Prasetyo Agung Nugroho et al (2017) found that early childhood care for personal health in Clean and Healthy Life Behavior (PHBS) in Boyolali Regency included in the excellent category, the statement is based on the results of research which concludes that children can identify several diseases that have been experienced and can explain the causes of the illness. The diseases that respondents often suffer from are digestive disorders and respiratory disorders. With their knowledge, respondents can also explain the meaning of health and efforts to maintain health, mention the criteria for eating healthy foods, explain PHBS that must be done, do physical activity regularly, and apply adequate rest patterns.

Handayani et al (2017) study results showed no significant relationship between parenting and growth, parenting and development, the status of working parents and growth, the status of working parents and development, the time parents worked and growth, time parents work and development. The absence of this relationship does not mean that there are no problems but must still be maintained and maintained the growth and development of children according to age.

Almatsier (2009) also argues that a good or optimal nutritional status will affect physical development, brain, workability and health. Poor nutritional status can cause a lack of energy to move and do activities, so children become lazy and weak due to malnutrition. The results of the study conducted by Jamhari (2013) the calculation results obtained a relationship between nutritional status and motor ability.

Horníková and colleagues (2019) in their study found that it is desirable to merge age groups with one-year difference in diagnostics of reaction abilities. However, the differences between groups are more distinct in agility test including also a motor component. It seems that the age between 11 and 12 years is an important period in the development of movement speed or also decision-making in more difficult tasks.

Brodani and colleagues (2015) suggested that the frequency of physical activity in a week in monitored sample was depending on the level of sport performance. The results did not show differences in the level of quality of life in a group of adolescents with different level of sport performance. The number of interactions between quality of life and frequency of physical activity in a week was very low, with higher number of negative interaction. We found positive interaction between physical activity and physical well-being only in adolescents who are registered athletes with high frequency of physical activity in a week.

Romanova and colleagues (2022) The pedagogical technology proposed by us for joint training of children and parents in the methods of correction and prevention of the pathology of the musculoskeletal system turned out to be more effective than the traditional health-improving lesson only with children. Snezhitsky and colleagues (2022) conducted a study which the results of the study proved that the proposed method is effective. This technique consists of publicly available and quite informative methods of pedagogical diagnostics of motor activity components for most representatives of the rural community: individual daily motor regime, physical development, functional state, physical fitness, taking into account gender and age differentiation (Snezhitsky et al., 2022). In other study, Zawi Khairi Mohd and colleagues (2022) provided substantial insight with regards to the influence of fundamental motor skills development towards the attainment of better physical performance levels among early school children. Based on results of the present study, it can be concluded that there were no notable disparities in terms of fundamental movement capabilities pertaining locomotor skills across the three

groups. This is a crucial finding since locomotor skills form the basis for children to acquire more complex motor skills as they approach puberty

Fatriansari (2018) found that there are a meaningful relationship between nutritional status and children's gross motor development. With the provision of playing facilities, it is hoped that it can help stimulate children's motor and psychological development. Besides that, it is also necessary to increase health education counselling to the community about the nutritional needs of toddlers so that the nutritional status of toddlers can be achieved and malnutrition in toddlers can be prevented and handled appropriately. According to Saripudin (2016), motor development occurs because the progress of movement growth and motion maturity are needed for a child to perform a skill. Each age period will make the child's skills increase. The purpose and function of motor development for early childhood is the mastery of the most graphic skills in the development of solving specific motor tasks. Graphics means that there is better development progress. Motor qualities are seen from how far the child can display the motor tasks with a certain degree of success. Several research results show that internal and external factors must be considered to develop motor health indexes for early childhood.

CONCLUSION

The motor health index of early childhood must pay attention to various aspects, internal and external. Internal is related to passive and active physique while external is related to the child's environment, that is, the parents of teachers and schools. Early childhood motor health index has been formulated involving several elements, which are consist of several dimensions: 1) Passive Physical Dimensions (involving height, weight, and the health of body organs); 2) The Active Physical Dimension (consists of the following element: Motor Ability, Accuracy, Agility, Speed, Limb Power b. Physical fitness [endurance]) and 3) The Dimension of Concern for Parents and Teachers of Physical Education (consists of elements: Extracurricular sports, sports clubs, and Participation and concern of parents).

The growth and development of physical, as well as motor children is strongly influenced by the habit of doing movements outside of school hours, Monitoring growth and development is an obligation for teachers Physical education, school and the participation of children's parents.

By being well monitored the growth and development of children's physical, motor skills, will contribute to the improvement of Human Development Index in dimation **longevity**, on children's health indicators which will ultimately be able to reduce the up-five mortality rate, as well as the adolescent mortality rate

References:

- Almatsier, S. (2009). *Prinsip Dasar Ilmu Gizi*. Gramedia. http://ucs.sulsellib.net/index.php?p=show_detail&id=67050
- Brod'ani, J., Spišiak M., Paška, L., (2015), The interaction of physical activity and quality of life of adolescents, *Journal of Physical Education and Sport (JPES)*, 15(3), Art 78, pp. 518 - 524, 2015. Published online: September 28, 2015, (Accepted for publication september 12, 2015) DOI:10.7752/jpes.2015.03078
- Corbin, C. B. (2021). Conceptual physical education: A course for the future. *Journal of Sport and Health Science*, 10(3), 308–322. <https://doi.org/10.1016/J.JSHS.2020.10.004>
- Fatriansari, A. (2018). HUBUNGAN STATUS GIZI DENGAN PERKEMBANGAN MOTORIK KASAR ANAK. *Babul Ilmi Jurnal Ilmiah Multi Science Kesehatan*, 9(1). <https://doi.org/10.36729/BI.V9I1.896>
- Handayani, D. S., Sulastris, A., Mariha, T., & Nurhaeni, N. (2017). Penyimpangan Tumbuh Kembang Anak dengan Orang Tua Bekerja. *Jurnal Keperawatan Indonesia*, 20(1), 48–55. <https://doi.org/10.7454/JKI.V20I1.439>
- Horníková, H., Doležalová, L., Krasňanová, I., Lednický, A. (2019), Differences in reaction time and agility of 11-14-year-old schoolboys, *Journal of Physical Education and Sport (JPES)*, Vol.19 (3), Art 227, pp. 1565 – 1569, Published online: September 30, 2019 (Accepted for publication: August 20, 2019), DOI:10.7752/jpes.2019.03227
- Jamhari, J. (2013). HUBUNGAN STATUS GIZI DENGAN KEMAMPUAN MOTORIK SISWA KELAS BAWAH DI SD NEGERI GUMULAN KECAMATAN PANDAK KABUPATEN BANTUL. *Lubung Pustaka Universitas Negeri Yogyakarta*. <http://eprints.uny.ac.id/id/eprint/15182>
- KEMENKES RI. (2013). *Riset Kesehatan Dasar 2013*. Badan Penelitian Dan Pengembangan Kesehatan Kementerian Kesehatan RI. https://drive.google.com/file/d/10GpXuonD5h6OIIIF_Z5X7kHdnOdJFNVsB/view
- KEMENKES RI. (2018). Laporan Nasional RISKESDAS 2018. In *Badan Penelitian Dan Pengembangan Kesehatan Kementerian Kesehatan RI*. <https://dinkes.kalbarprov.go.id/wp-content/uploads/2019/03/Laporan-Riskesdas-2018-Nasional.pdf>
- KEMENPORA. (2021). Laporan Nasional Sport Development Index Tahun 2021: Olahraga Untuk Investasi Pembangunan Manusia. In A. Maksun (Ed.), *Kementerian Pemuda dan Olahraga RI*. https://www.researchgate.net/publication/359443662_Laporan_Nasional_Sport_Development_Index_Tahun_2021_Olahraga_Untuk_Investasi_Pembangunan_Manusia

- Munif, Pudyaningtyas, A. R., & Parwatiningsih, S. A. (2019). KOMPETENSI MOTORIK ANAK USIA DINI: KETERKAITANNYA DENGAN KOGNITIF, AFEKTIF DAN KESEHATAN. *Jurnal Ilmiah Visi*, 14(2), 123–132. <https://doi.org/10.21009/JIV.1402.5>
- Permata, A., Yulita, N., & Juwita, S. (2019). PENGARUH PEMAHAMAN IBU TENTANG PERKEMBANGAN MOTORIK ANAK TERHADAP PERKEMBANGAN MOTORIK ANAK. *Jurnal Ilmiah Fisioterapi*, 2(2), 44–49. <http://jurnal.univrab.ac.id/index.php/jif/article/view/1009>
- Prasetyo Agung Nugroho, K., Dian Anggraheni, S., Kedokteran dan Ilmu kesehatan, F., Kristen Satya Wacana, U., & Kartini, J. (2017). PERSEPSI ANAK USIA SEKOLAH TERHADAP KESEHATAN DIRI DAN UPAYA PHBS DI KABUPATEN BOYOLALI. *MEDIA ILMU KESEHATAN*, 6(3), 249–259. <https://doi.org/10.30989/MIK.V6I3.215>
- RISKESDAS. (2013). *Indonesia Basic Health Research 2013*. Publishing Institute for Health Research and Development Agency (LPB). <https://ghdx.healthdata.org/record/indonesia-basic-health-research-2013>
- Risnah, Rosmah, Mustamin, & Sofingi, I. (2018). PENGARUH PELATIHAN TERHADAP PENGETAHUAN TENTANG GIZI BURUK DAN INTERPROFESSIONAL COLLABORATION PETUGAS PUSKESMAS. *Jurnal Kesehatan*, 11(1), 61–71. <https://doi.org/10.24252/KESEHATAN.V11I1.5030>
- Romanova, E., Kolokoltsev, M., Vorozheikin, A., Baatar, B., Khusman, O., Purevdorj, D., Garov, S., Starshova, N., Kiseliv, Y. (2022), Comprehensive program for flat foot and posture disorders prevention by means of physical education in 6-year-old children, *Journal of Physical Education and Sport (JPES)*, Vol. 22 (issue 11), Art 337, pp. 2655- 2662, November 2022. Published online: November 30, 2022 (Accepted for publication November 15, 2022) DOI:10.7752/jpes.2022.1133
- Saikia, U., Hosgelen, M., Dasvarma, G., Chalmers, J., Anderson, T., Hill, H., Skuse, A., Wigglesworth, A., & Zimmermann, R. (2018). National Human Development Report 2018. In *United Nations Development Programme (UNDP)* (1st ed.). Published for the United Nations Development Programme (UNDP). https://www.ecoi.net/en/file/local/1433876/1226_1527687232_978-92-1-126436-4-web.pdf
- Sitovskiy, A., Maksymchuk, B., Kuzmenko, V., Nosko, Y., Korytko, Z., Bahinska, O., Marchenko, O., Nikolaienko, V., Matviichuk, T., Solovyov V., Khurtenko2, O., Slyusarenko, N., Zhorova, I., Maksymchuk, I (2019), Differentiated approach to physical education of adolescents with different speed of biological development, *Journal of Physical education and Sport (JPES)*, Vol.19 (3), Art 222, pp. 1532 – 1543, 2019 Published online: September 30, 2019 (Accepted for publication: August 15, 2019), DOI:10.7752/jpes.2019.03222.
- Snezhitsky, P., Romanova, E., Kolokoltsev, M., Vorozheikin, A., Smirnov, S., Bolotin, A., Tarasov, A., Aganov, S., Suldin, P. (2022), Complex pedagogical diagnostics of personal motor activity, *Journal of Physical Education and Sport (JPES)*, Vol. 22 (issue 11), Art 341, pp. 2681- 2687, November 2022. Published online: November 30, 2022 (Accepted for publication November 15, 2022). DOI:10.7752/jpes.2022.11341
- Saripudin, A. (2016). PERAN KELUARGA DALAM MENGOPTIMALKAN PERKEMBANGAN MOTORIK ANAK USIA DINI. *AWLADY: Jurnal Pendidikan Anak*, 2(1). <http://orcid.org/0000-0003-1815-9274>
- Krutsevich, T., Pangelova, N., Trachuk, S., Ivanik, O., (2019) Motor activity of the male and female population in modern society *Journal of Physical Education and Sport (JPES)*, Vol.19 (3), Art 231, pp. 1591 - 1598, 2019 online ISSN: 2247 - 806X; p-ISSN: 2247 – 8051; ISSN - L = 2247 - 8051 © JPES Published online: September 30, 2019 (Accepted for publication: August 22, 2019) DOI:10.7752/jpes.2019.03231
- Tra, G. N., & Oliver, G. (2022). New Perspectives on Fitness Concepts and Assessment Reconstructing the concepts and assessment of fitness in the 21st Century. *ICSSH 2022 (International Conference On Sport Science and Health)*.
- Very, D., Galuh, F., & Prameswari, N. (2016a). PERAN UKS (USAHA KESEHATAN SEKOLAH) DALAM UPAYA PENANGGULANGAN OBESITAS PADA ANAK USIA SEKOLAH. *JHE (Journal of Health Education)*, 1(2). <https://journal.unnes.ac.id/sju/index.php/jhealthedu/article/view/18787>
- Zawi, M.L., Wan Pa, W., Osman, M., (2022), Fundamental motor skills as potential physical talent indicators among indigenous, rural and urban children in Malaysian schools, *Journal of Physical Education and Sport (JPES)*, Vol. 22 (issue 11), Art 351, pp. 2770-2776, November 2022, Published online: November 30, 2022 (Accepted for publication November 15, 2022), DOI:10.7752/jpes.2022.11351