

## The relationship between the level of physical fitness and the level of depression in elderly age based on gender and marital status

### La relación entre el nivel de aptitud física y el nivel de depresión en la vejez según el sexo y el estado civil

\*Panggung Sutapa, \*Agum Yuda Septajati, \*Prijo sudibjo, \*Rizki Mulyawan, \*Deni Hardianto, \*\*Syed Kamaruzaman Syed Ali, \*\*Manil Kara Kauki, \*\*\*Kukuh Wahyudin Pratama

\*Universitas Negeri Yogyakarta (Indonesia), \*\*University of Malaya (Malaysia), \*\*\*Universitas Garut (Indonesia)

**Abstract.** Depression can affect anyone, without discrimination. Therefore, this study aims to determine the relationship between the level of physical fitness and the level of depression in the elderly according to gender and marital status. The sample used for this study consisted of 110 men and women aged 60 to 90 years. The instrument used to assess physical fitness was a modified senior fitness test with 6 test items: 1) 30-second chair stand test, 2) arm curl test (30-second arm curl), 3) 2-minute step test, 4) chair sit and reach test, 5) back scratch test, 6) foot rise and walk test. Level of depression with the Geriatric Depression Scale -15 (GDS -15). For gender and marital status with a questionnaire. The analysis of the data used in this study was done with chi-square tests with acceptance and rejection limits of 5%. The results show that there is a significant relationship between the level of physical fitness and the level of depression with  $P > 0.05$ , there is a significant relationship between gender and the level of depression with  $P > 0.05$  and there is a relationship between marital status and the level of depression with  $P > 0.05$ .

**Key Words:** physical fitness, level of depression, elderly, gender, marital status.

**Resumen.** La depresión puede afectar a cualquier persona, sin discriminación. Por tanto, este estudio tiene como objetivo determinar la relación entre el nivel de aptitud física y el nivel de depresión en personas mayores según género y estado civil. La muestra utilizada para este estudio estuvo compuesta por 110 hombres y mujeres con edades comprendidas entre 60 y 90 años. El instrumento utilizado para evaluar la aptitud física fue una prueba de aptitud para personas mayores modificada con 6 ítems de prueba: 1) prueba de soporte en silla de 30 segundos, 2) prueba de flexión de brazos (curvatura de brazos de 30 segundos), 3) prueba de pasos de 2 minutos, 4) prueba de sentarse y alcanzar una silla, 5) prueba de rascado de espalda, 6) prueba de elevación y caminata del pie. Nivel de depresión con la Escala de Depresión Geriátrica -15 (GDS -15). Por género y estado civil con cuestionario. El análisis de los datos utilizados en este estudio se realizó con pruebas de chi-cuadrado con límites de aceptación y rechazo del 5%. Los resultados muestran que existe una relación significativa entre el nivel de condición física y el nivel de depresión con  $P > 0.05$ , existe una relación significativa entre el género y el nivel de depresión con  $P > 0.05$  y existe una relación entre el estado civil y el nivel de depresión con  $P > 0,05$ .

**Palabras clave:** condición física, nivel de depresión, edad avanzada, género, estado civil.

Fecha recepción: 24-10-23. Fecha de aceptación: 03-01-24

Panggung Sutapa  
panggung\_s@uny.ac.id

## Introduction

The term physical fitness is often used in connection with various activities that involve physical exercise. Physical fitness is the ability to perform daily activities without significant fatigue (Hoeger et al., 2018). The components of physical fitness consist of cardiovascular endurance, pulmonary endurance, skeletal muscle strength, muscle and joint flexibility, and body composition (Nugroho et al., 2021). The higher a person's level of physical fitness, the higher their physical work capacity (Nasrulloh et al., 2020). Physical fitness can reduce the risk of contracting a number of diseases and is a component of good productivity (Sutapa et al., 2020).

Physical fitness is influenced by several factors, one of which is routine physical activity (Nasrulloh et al., 2021). Physical activity is body movement that results in skeletal muscle contractions which require energy and can produce benefits for maintaining and maintaining progressive health (Kristiyanto et al., 2020). For the elderly, the right type of physical activity to improve fitness and reduce the tendency to suffer from depression is through aerobic exercise such as walking, cycling, gardening and swimming and can also be done regularly by dancing 3-5 times per week for 30 - 60 minutes (Nigg, 2014; Douka, 2019; Nasrulloh et al., 2022).

Physical fitness is influenced by several factors, one of which is regular physical activity. Physical activity is movement of the body that leads to contractions of skeletal muscles, which require energy and can provide benefits for maintaining and preserving progressive health. For older people, Yudhistira (2021) stated that the right type of physical activity to improve fitness and reduce the tendency to depression is through aerobic exercise such as walking, cycling, gardening, and swimming, and can also be done through regular dancing 3-5 times per week for 30-60 minutes.

Age is the length of a person's life from birth to the present, and age is determined in years (Listyarini et al., 2021). One of the health problems that is common with increasing age is mental disorders (Sukendro et al., 2021). The older a person is, the greater the risk of developing mental health problems due to age factors, older people experience changes, one of which is depression (Ilham et al., 2021). Elderly people are people who are entering the last phase of life, whose aging process begins with a decrease in physical abilities and who are prone to various types of disease attacks, which is due to a decrease in the structure and function of cells, organs and tissues (Sutapa et al., 2021). Aging is not a disease that can be cured, but it is avoided because aging is a natural process that affects everyone (Saifu

et al., 2021).

Aging is a natural process that cannot be avoided, it will continue continuously (Nopembri et al., 2022). This leads to changes in the physical and mental condition of a person experiencing the aging process (Hastuti et al., 2021). In addition, there are changes in the social environment, the status of the household in marriage, and the elderly also experience economic incapacity, the absence of children and relatives who can provide assistance, the loss of family members, the occurrence of various types of diseases, and the cessation of work, which affects the declining family income (Hardianto et al., 2022). These various changes in life circumstances cause older people to become more susceptible to depression (Pratama et al., 2022). Older people are less active in physical activities, have less self-confidence, withdraw from social interactions due to declining physical function, and impact decreased physiological function, which is one of the highest causes of mortality (Adji et al., 2022). According to World Population Aging 2020 data, the number of older people aged 60 years and older worldwide is 727 million people, and this number will continue to increase until it doubles by 2050, reaching as many as 1.5 billion. In 2017, it was 8.97 percent or 23.4 million people in Indonesia, in 2018 it increased to 9.27 percent or 24.49 million people, in 2019 it increased again by 9.6 percent (25 million), in 2020 it increased by 9.92 percent (26.82 million), and in 2021 it will increase again to 10.82 percent or 29.3 million people. Elderly people are people who have reached the age of 60 and above. Worldwide, the elderly population currently accounts for more than 7% of the total population. The percentage of the elderly population that has reached 7% shows that the structure falls into the category of the elderly (Jufrianis et al., 2021).

Depression is a condition whose symptoms are expressed in the form of a persistent feeling of sadness, followed by a decrease in the ability or even loss of interest in performing routine activities, helplessness, and a sense of hopelessness (Kaplan, 2010; Yuniana et al., 2023). The age-related decline in activities can cause feelings of isolation, being alone, and uselessness, leading to depression (Salafi et al., 2022). Depression is common in the elderly and is a psychosociogeriatric problem that requires special attention (Utami et al., 2023). Depression in the elderly is sometimes undiagnosed and inappropriately treated because the symptoms that occur are considered part of the normal aging process (Kogoya et al., 2023).

Depression is one of the problems of older people (Nugroho et al., 2022). They are considered normal mental development and are usually not recognised, so treatment is rarely given (Trisnadi et al., 2023). As older people grow older, various impairments in physical and psychosocial functions occur (Amran et al., 2023). Declines in physical function include decreased strength and endurance caused by loss of muscle mass and bone density, leading to osteoporosis; psychosocial changes include fear of death and fear of loss, all of which can lead to depression (Kauki et al.,

2024). Depression is a common mental disorder (Trisnadi et al., 2024). Symptoms can range from mild to severe, the most important being the presence of constant sadness (Pratama et al., 2024). Depression can be chronic or recurrent, occurring in a single episode caused by the burden of severe life events, the occurrence of internal conflicts, and a troubled atmosphere (Arifin et al., 2024).

Depression is a leading cause of disability across the disabled population and is also the largest contributor to death by suicide, accounting for nearly 800,000 deaths per year. Depression is more prevalent in females at 5.1% than males at 3.6% (Basic Health Research 2018), indicating that the prevalence of depression in Indonesia is very high. Depression is a mood disorder characterized by depressed loss of interest and rapid fatigue, as well as decreased concentration, decreased self-confidence, a sense of uselessness, and even self-harming actions such as suicide. The development of depressive symptoms can easily result from the high pressures of life in old age. One way to prevent depression is to be physically active (Mammen & Faulkner: 2013). Laziness in terms of physical activity is a bad move because it can worsen a person's level of depression (Sund, Larson, Wichstrom, 2011). Physical activity can affect a person's mental health through three mechanisms, physiologically, psychologically, and immunologically. First, physiologically, these include the increase of endorphin hormones, which are related to sensitive feelings, so they can improve mood, the increase of body temperature, especially in the brainstem, which reduces muscle tension, resulting in relaxation, the increase of mitochondria, mitochondria playing a role in neuroplasticity, which provides adaptation to stress, and the increase of neurotransmitters such as serotonin and dopamine, which have the same effect, namely selective serotonin reuptake inhibitors (SSRI), ie.that is, it acts as an antidepressant. Secondly, physical activity can improve mental health by distracting negative thoughts and creating high self-confidence. Third, immunity can improve mental health with the mechanism that physical activity can reduce inflammation as one of the pathogenesis of depression through the mechanism of altered release of cytokines, reduction of visceral fat mass, downregulation of Toll-like receptors, and increase of vagal tone. (Mikkelsen, et al. 2017; Salafi et al., 2023). Depression can be categorised into 3 groups: mild depression, depressive disorders (dysthymia) where symptoms last longer, and major depression (National Institute of Mental Health, 2017).

## Materials and Methods

### Participant

The participants in this study were 110 elderly people in Sleman Regency, Yogyakarta, 70 men and 40 women with different educational and economic backgrounds. The age of the participants ranged from 60 to 90 years.

### Measurements

#### *The Level of Physical Fitness*

Physical fitness was measured using a modified Senior Fitness Test (SFT) consisting of 6 items (Langhammer & Stanghelle, 2015). The following are the test items and their classification:

1) 30 Second chair stand test,

Table 1.

Men's Results			
Age	Below average Score 1	Average Score 2	Above average Score 3
60-64	< 14	14 to 19	> 19
65-69	< 12	12 to 18	> 18
70-74	< 12	12 to 17	> 17
75-79	< 11	11 to 17	> 17
80-84	< 10	10 to 15	> 15
85-89	< 8	8 to 14	> 14
90-94	< 7	7 to 12	> 12

Table 2.

Women's Results			
Age	Below average Score 1	Average Score 2	Above average Score 3
60-64	< 12	12 to 17	> 17
65-69	< 11	11 to 16	> 16
70-74	< 10	10 to 15	> 15
75-79	< 10	10 to 15	> 15
80-84	< 9	9 to 14	> 14
85-89	< 8	8 to 13	> 13
90-94	< 4	4 to 11	> 11

2) Arm curl (30 second arm curl) test,

Table 3.

Men's Results			
Age	below average Score 1	Average Score 2	above average Score 3
60-64	< 16	16 to 22	> 22
65-69	< 15	15 to 21	> 21
70-74	< 14	14 to 21	> 21
75-79	< 13	13 to 19	> 19
80-84	< 13	13 to 19	> 19
85-89	< 11	11 to 17	> 17
90-94	< 10	10 to 14	> 14

Table 4.

Women's Results			
Age	below average Score 1	Average Score 2	above average Score 3
60-64	< 13	13 to 19	> 19
65-69	< 12	12 to 18	> 18
70-74	< 12	12 to 17	> 17
75-79	< 11	11 to 17	> 17
80-84	< 10	10 to 16	> 16
85-89	< 10	10 to 15	> 15
90-94	< 8	8 to 13	> 13

3) 2- Minute step test,

Table 5.

Men's Results			
Age	below average Score 1	average (inches) Score 2	above average Score 3
60-64	< -2.5	-2.5 to 4.0	> 4.0
65-69	< -3.0	-3.0 to 3.0	> 3.0
70-74	< -3.5	-3.5 to 2.5	> 2.5
75-79	< -4.0	-4.0 to 2.0	> 2.0
80-84	< -5.5	-5.5 to 1.5	> 1.5
85-89	< -5.5	-5.5 to 0.5	> 0.5
90-94	< -6.5	-6.5 to -0.5	> -0.5

Table 6.

Women's Results			
Age	below average Score 1	average (inches) Score 2	above average Score 3
60-64	< -0.5	-0.5 to 5.0	> 5.0
65-69	< -0.5	-0.5 to 4.5	> 4.5
70-74	< -1.0	-1.0 to 4.0	> 4.0
75-79	< -1.5	-1.5 to 3.5	> 3.5
80-84	< -2.0	-2.0 to 3.0	> 3.0
85-89	< -2.5	-2.5 to 2.5	> 2.5
90-94	< -4.5	-4.5 to 1.0	> 1.0

4) Chair sit and reach test,

Table 7.

Men's Results			
Age	Below average Score 1	Average (inches) Score 2	Above average Score 3
60-64	> 6.5	6.5 to 0	< 0
65-69	> 7.5	7.5 to -1.0	< -1.0
70-74	> 8.0	8.0 to -1.0	< -1.0
75-79	> 9.0	9.0 to -2.0	< -2.0
80-84	> 9.5	9.5 to -2.0	< -2.0
85-89	> 10.0	10.0 to -3.0	< -3.0
90-94	> 10.5	10.5 to -4.0	< -4.0

Table 8.

Women's Results			
Age	Below average Score 1	Aaverage (inches) Score 2	Above average Score 3
60-64	> 3.0	3.0 to 1.5	< 1.5
65-69	> 3.5	3.5 to 1.5	< 1.5
70-74	> 4.0	4.0 to 1.0	< 1.0
75-79	> 5.0	5.0 to 0.5	< 0.5
80-84	> 5.5	5.5 to 0	< 0
85-89	> 7.0	7.0 to -1.0	< -1.0
90-94	> 8.0	8.0 to -1.0	< -1.0

5) Back scratch test

Table 9.

Men's Results			
Age	Below average Score 1	Average Score 2	Above average Score 3
60-64	> 5.6	5.6 to 3.8	< 3.8
65-69	> 5.7	5.7 to 4.3	< 4.3
70-74	> 6.0	6.0 to 4.2	< 4.2
75-79	> 7.2	7.2 to 4.6	< 4.6
80-84	> 7.6	7.6 to 5.2	< 5.2
85-89	> 8.9	8.9 to 5.3	< 5.3
90-94	> 10.0	10.0 to 6.2	< 6.2

Table 10.

Women's Results			
Age	Below average Score 1	Average Score 2	Above average Score 3
60-64	> 6.0	6.0 to 4.4	< 4.4
65-69	> 6.4	6.4 to 4.8	< 4.8
70-74	> 7.1	7.1 to 4.9	< 4.9
75-79	> 7.4	7.4 to 5.2	< 5.2
80-84	> 8.7	8.7 to 5.7	< 5.7
85-89	> 9.6	9.6 to 6.2	< 6.2
90-94	> 11.5	11.5 to 7.3	< 7.3

6) Foot up and go test .

Table 11.

Men's Results			
Age	Below average Score 1	Average Score 2	Above average Score 3
60-64	< 87	87 to 115	> 115
65-69	< 87	86 to 116	> 116
70-74	< 80	80 to 110	> 110
75-79	< 73	73 to 109	> 109
80-84	< 71	71 to 103	> 103
85-89	< 59	59 to 91	> 91
90-94	< 52	52 to 86	> 86

Table 12.

Women's Results			
Age	Below average Score 1	Average Score 2	Above average Score 3
60-64	< 75	75 to 107	> 107
65-69	< 73	73 to 107	> 107
70-74	< 68	68 to 101	> 101
75-79	< 68	68 to 100	> 100
80-84	< 60	60 to 91	> 91
85-89	< 55	55 to 85	> 85
90-94	< 44	44 to 72	> 72

a. The Level of Depression

The Geriatric Depression Scale -15 (GDS -15) is one of the instruments used to measure the degree of depression in the elderly. The Geriatric Depression Scale -15 is a screening instrument that consists of 15 questions that take an estimated 5 minutes to complete, the questions are related to mood, answered yes or no. There are 3 types of interpretive categories: 1 - 4 = Mild Depression, 5 - 9 =

Moderate Depression, and 10 - 15 = Severe Depression. This instrument has a sensitivity of 91% and a specificity of 89%. (New England Research Institutes 1991).

There are two forms of the GDS, namely the long form with 30 questions and the short form with 15 questions. In this study, the short form with 15 questions was used.

Questions No. 1, 5, 7, 11, and 13 receive a score of zero (0) if answered by YES, while you receive a score of one (1) if answered by NO. Questions # 2, #3, #4, #6, #8, #9, #10, #12, #14, and #15 will receive a score of one (1) if you answer YES, while you will receive a score of zero (0) if you answer NO (Aikman and Oehlert, 2000).

b. Gender

Gender in this study is distinguished only in two, namely the male and female sex, resulting from the socio-cultural construction, or from the differences in the form of biological characteristics and functions between men and women, which determine the role in the performance of the work of descent collected by questionnaire.

c. Marital Status

The marital status in this study is marriage, which

describes the relationship of one person to another, consisting of husband and wife, unmarried, married, divorced by death and divorced not-remarried, both widows and widowers. Data were collected using a questionnaire.

Results

The total number of participants in this study was 110 people, consisting of men and women aged 60 to 90 years, with the status of widows, both dead and alive, widowers, divorced and divorced and still intact as husband and wife.

Table 13. Classification Based on Age

No	Age	Number
1	60 – 65	48
2	66 – 70	33
3	71 – 75	20
4	80 - 85	7
5	86 - 90	2

Table 14. Classification of Elderly Based on Marital Status

Widow		Widower		Husband Wife	Number
By Death	Not Remarried	By Death	Not Remarried		
25	13	10	8	54	110

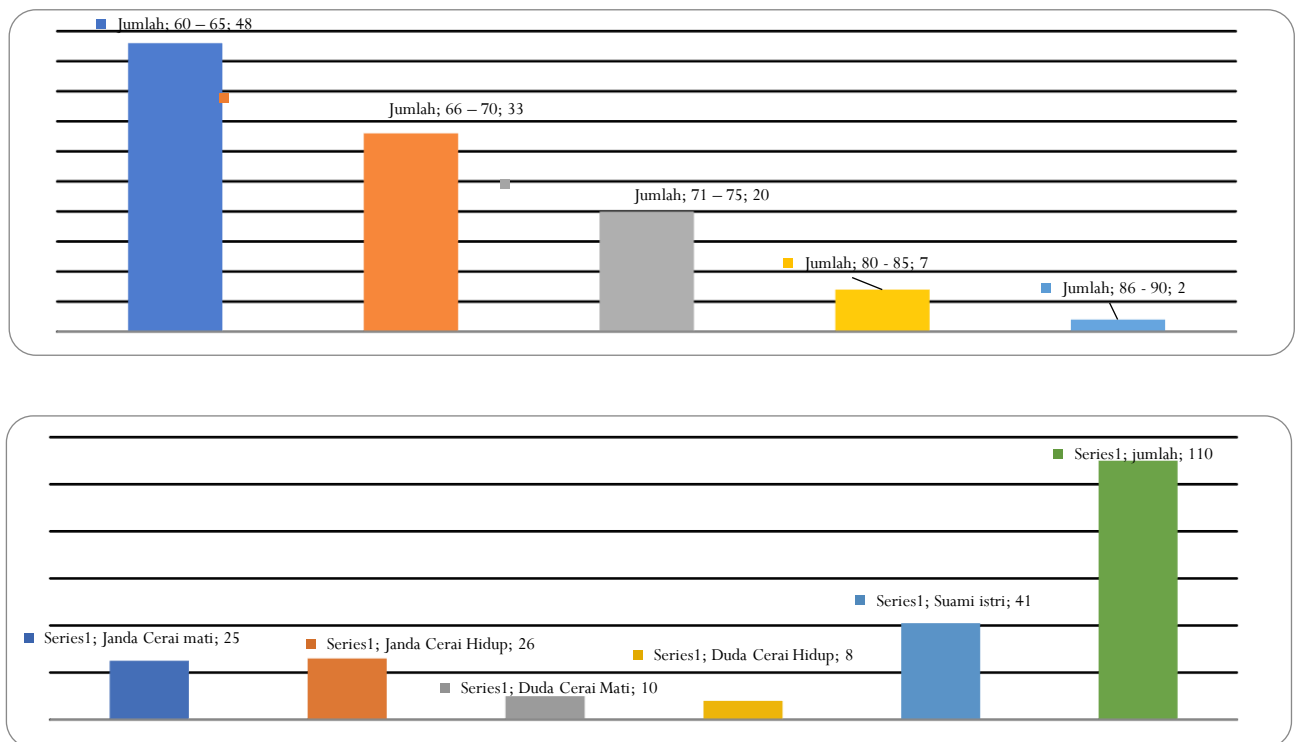


Figure 1. Classification Based on Age. Klasifikasi berdasarkan umur

**The Relationship Between the Levels of Fitness And Depression**

The results show that there is a relationship between fitness status and the degree of depression, this is based on data analysis.

Table 15. Crosstab

		Depressive Status			Total	
		Light	Medium	Weight		
Fitness Status	Excellent	Count	43	0	0	43
		% of Total	39.1%	0.0%	0.0%	39.1%
	Medium	Count	0	31	0	31
		% of Total	0.0%	28.2%	0.0%	28.2%
	Pure	Count	0	0	36	36
		% of Total	0.0%	0.0%	32.7%	32.7%
Total		Count	43	31	36	110
		% of Total	39.1%	28.2%	32.7%	100.0%

Table 16.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	220.000 <sup>a</sup>	4	.000
Likelihood Ratio	239.722	4	.000
Linear-by-Linear Association	109.000	1	.000
N of Valid Cases	110		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.74.

There is a significant/meaningful relationship between the levels physical fitness and depression with the significance value of 0.000 (sig. 0.000 < 0.05)

### *The relationship between the levels gender and depression*

There is a significant/meaningful relationship between the levels gender and depression with the significance value of 0,006 (sig. 0,006 < 0,05)

Table 17.

		Depressive Status			Total	
		Light	Medium	Weight		
Gender	Women	Count	20	16	29	65
		% of Total	18.2%	14.5%	26.4%	59.1%
	Man	Count	23	15	7	45
		% of Total	20.9%	13.6%	6.4%	40.9%
Total		Count	43	31	36	110
		% of Total	39.1%	28.2%	32.7%	100.0%

Table 18.

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.393 <sup>a</sup>	2	.006
Likelihood Ratio	11.024	2	.004
Linear-by-Linear Association	9.005	1	.003
N of Valid Cases	110		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.68.

### *The relationship between marital status and the level of depression*

There is a relationship between marital status and the level of depression with the significance value of 0,000 (sig. 0,000 < 0.05)

Table 19.

		Depressive Status			Total	
		Light	Medium	Weight		
household status	Husband and wife	Count	41	13	0	54
		% of Total	37.3%	11.8%	0.0%	49.1%
	Widow	Count	1	8	29	38
		% of Total	0.9%	7.3%	26.4%	34.5%
	Widower	Count	1	10	7	18
		% of Total	0.9%	9.1%	6.4%	16.4%
Total		Count	43	31	36	110
		% of Total	39.1%	28.2%	32.7%	100.0%

Table 20.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	82.580 <sup>a</sup>	4	.000
Likelihood Ratio	101.472	4	.000
Linear-by-Linear Association	46.059	1	.000
N of Valid Cases	110		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.07.

## Discussion

The relationship between the levels of physical fitness and depression

The relationship between the level of physical fitness and the level of depression is inversely proportional, meaning that older people who have high levels of physical fitness due to regular physical activity have low levels of depression and, conversely, older people who have low levels of physical fitness due to infrequent physical activity have high levels of depression. (Paulo, et al. 2016). Older people who engage in regular physical activity can have a great impact on improving their mood, distracting their thoughts and receiving positive feedback from others, socialising, and increasing their self-confidence. (Danielson et al 2013). This is consistent with the thermogenic theory, which states that an increase in body temperature after exercise can reduce depression because an increase in body temperature in the brainstem area can cause relaxation and reduce muscle tension as blood circulation becomes smoother, meeting the need for oxygen. Low intensity physical activity is significantly related to lower depressive symptoms (Lage et al, 201). Frequent physical activity increases fitness levels, which may ultimately reduce a person's level of depression and anxiety and is the most economically effective intervention. (Bell et al, 2019).

Physical activity causes the release of B-endorphin, which can elevate mood. This hormone acts as a natural painkiller comparable to pethidine and is responsible for creating feelings of pleasure. Meanwhile, Craft and Perna (2004) found that routine activities such as walking, cycling and jogging can stimulate the brain by increasing the protein BDNF (Brain Derived Neurotrophic Factor), which increases the availability of neurotransmitters such as dopamine, serotonin and norepinephrine and can reduce depression. Emotions become more stable.

Physical activity or exercise has been shown to be effective in treating mild to moderate depression and symptoms of major depression, but is rarely used in clinical practice. (Chen et al. 2022). Exercise has been shown to be very effective in reducing mortality and treating symptoms of major depression, but is underutilized in clinical practice because of the misconception that exercise is only useful from the neck down, when in fact it can be useful and effective in treating the core symptoms of depression from the neck up. (Murri et al 2019). Physical activity can increase fitness and physical activity is useful for improving symptoms of depression, anxiety, and people suffering from mental disorders for managing depression, anxiety, and psychological stress (Singh et al 2022). Physical activity correlates highly with the level of depression. The higher the level of fitness, the lower the level of depression and vice versa, the lower the level of physical fitness, the higher the level of depression, (Shi et al: 2022), as also shown by the results of research (Shimamoto, Suwa, Mizuno: 2021), which states that there is a positive correlation between physical activity and the level of depression.

Physical fitness can improve mood, meaning mood can not only increase endorphin hormones, but also divert the attention raging inside you. Exercise can produce various parameters such as hormones, neurotransmitters, pro-inflammatory cytokines and neutrons, BDNF, VEGF and IGF-1 in the hippocampus, thus reducing depression. To achieve high fitness in the elderly, there is no other way than physical activity to maintain physical function, so that the level of depression can be reduced. → The reason for this is that during physical activity, the body responds with an increase in sympathetic nerves and eventually with the release of norepinephrine. The release of norepinephrine is a neurotransmitter that is excitatory, but also inhibitory. Norepinephrine is released from the locus ceruleus in the pons and transmitted to the brain, reducing depression. Older people need more positive social support that makes them feel mentally well, which ultimately reduces depression. High levels of physical fitness increase physical strength, which improves mood. In addition, a good mood can reduce the level of depression. Physical exercise at any intensity can reduce depression (Harvey et al, 2018).

Relationship between levels of depression based on gender in the elderly

Sex is the difference between biologically male and female that a person is born with. The male sex produces sperm, while the female sex produces eggs and is biologically capable of menstruation, pregnancy, and breastfeeding. Depression tends to be more common in women than in men due to biological changes, particularly hormonal changes. (Colangelo, 2013). Women are more likely to experience depression symptoms due to deterioration in physical condition, in addition to physiological changes related to hormonal changes in women due to early onset menopause. A woman's responsibility to take care of the household is much greater than a man's, so women are at greater risk of developing depression (Carayanni et al 2012). Depression is more common in women than in older men, although there is no conclusive theory that can fully explain this. The difference between the level of depression in childhood and adulthood is the smaller (Ubaidi, 2019). (Ubaidi, 2019). Depression in the elderly is more commonly associated with a decrease in physical function and the function of the body's organs (Chu et al 2019). Women are more susceptible to experiencing depression than men, (Masconcin et al 2022).

The relationship between the level of depression and marital status. The relationship between the level of depression and marital status is highly significant (Pan et al, 2022). The marital status of deceased and divorced widows and widowers is closely related to a person's level of depression. This is due to the social support they receive and being able to share problems with their partner. Elderly people who live together in a complete family that includes their partner can receive attention, which makes them feel loved and cared for, which ultimately leads to a happy life (Moeini et al 2018).

Elderly people are people who are entering the last

phase of life, whose aging process begins with a decrease in physical abilities and who are prone to various types of disease attacks, which is due to a decrease in the structure and function of cells, organs and tissues. Aging is not a disease that can be cured, but is avoided because aging is a natural process that affects everyone. A person's marital status can be disrupted by death or incompatibility in the household, which eventually leads to divorce and the person eventually decides not to remarry or remarry. Widows and widowers, on average, decide not to remarry for a variety of reasons due to their advanced age. Depression is more common in people who are divorced, dead or alive. This is most likely due to the feeling of loneliness that comes from being divorced from their partner.

## Conclusion

Depression in the elderly may be influenced by several factors, including level of physical fitness, gender, and marital status. The higher the level of physical fitness, the lower the level of depression, and conversely, the lower the level of physical fitness, the higher the level of depression. The female gender tends to have a higher rate of depression. This is possible because hormonal changes and marital status also play a role in influencing the rate of depression, which is most likely influenced by the loneliness of coping with all problems.

## References

- Adji, T. P., Mansur, Putro, K. H., Pratama, K. W., & Mustapha, A. (2022). Analysis of the Influence of Service Quality and Audience Loyalty Interest in the Volleyball Tournament Events: A Case Study of Tulungagung Regency. *In Human-Centered Technology for a Better Tomorrow: Proceedings of HUMENS 2021* (pp. 299-311). Springer Singapore.
- Aikman, G. G. & Oehlert, M. E. (2000). Geriatric depression scale: Long versus short form. *Clinical Gerontology*. Vo 22 (3/4). The Haworth Press, Inc All rights reserved
- Amran, Suherman, W. S., Graha, A. S., Rizqie, A., Riyana, A., Astuti, A. T., Utami, D. Y., Pratama, K. W., Sonjaya, A. R., Permadi, A. A., Arifin, Z. Karakauki, M., Ali, S. K. S., Trisnadi, R. A., Asmuddin, Utami, D. (2023). Developing Learning Media for an Online Learning-Based Big Ball Game at Class XI Vocational High School Students: Feasibility and Efficacy. *Retos*, 50, 724-736. DOI: 10.47197/retos.v50.99235
- Arifin, Z., Mulyana, R. B., Sutresna, N. ., Subarjah, H. ., Sawali, L. ., Pratama, K. W., Sonjaya, A. R., Ali, S. K. S., Hasan, S. N., Hasan, S. N., Mustapha, A. ., Razali, M. N., Sutapa, P. ., Karakauki, M. ., & Hardianto, D. (2024). The effect of modification of movement in training on students' swimming competence. *Challenges*, 51, 949-954. <https://doi.org/10.47197/retos.v51.101338>

- Bell, S. L., Audrey, S., Gunnell, D., Cooper, A., & Campbell, R. (2019). The relationship physical activity, mental wellbeing and symptoms of mental health disorder in adolescents: A Cphort Study. *International Journal Of Behavioral Nutrition Physical Activity*, 16 (1), 1 – 12. <https://doi.org/10.1186/S12966-019-0901-7>
- Carayanni, V., Stylianopoulou, C., Koulterakis, G., Babatsikou, F., & Koutis, C. (2012). Sex Differences in depression among older adults: are older women more vulnerable than men in social risk factors? The case of pen care centers for older people in Greece. *European Journal of Aging*. Doi: 10.1007/s10433-012-0216-x
- Colangelo, L. A. (2013). Association of sex hormones and SHGB with depression symptom in post-menopausal women: Multethnic study of atherosclerosis NIH public Aauthor Manuscript. 19 (8) 877-885. doi:10.1097/gme.06013e3182432de6
- Chen, C., Beaunoyer, E., Guitton, M. J., & Wang (2022). Physical activity as a clinical tool against depression: Opportunitien and Challenges. 21(5), 132; <https://doi.org/10.31083/j.jin2105132>
- Chu, W., Chang, R. N., Fang, S., Ho, R. N., & Hsiang, L. (2019). Therelationship between depression and frailty in community –dwelling older people: A sistematic review and meta-analysis of 84,351 older adults. *Journal of Nurshing Scholarship* 51 (5), 547 – 559. Doi:<http://dx.doi.org/10.1111/jnu.12501>
- Craft, L. L & Perna, F. M. (2004) The benefits of exercise for the clinically depressed. 6 (3). 104 -111. Doi: 10.4088/pcc.v06n0301
- Danielson, L., Noras, A. M., Waern, M., & Carlsson, J. (2013). Exercise in the treatment of major depression: A systematic review grading. The quality of evidence. Doi: 10.3109/09593985.2013.774452
- Douka, s., Zilidou, V, I., Lilou, O., & Manou, V. (2019). Traditional dance improves the physical fitness and well-being of the elderly. *Frontiers in Aging Neuroscience*. 1-9. <https://doi.org/10.3389/fnagi.2019.00075>
- Hardianto, D., Budiningsih, C. A., Pratama, K. W., Ali, S. K. S., & Karakauki, M. (2022). Assessing the Experience-Sharing Parenting Method through Online Learning during Covid-19 Pandemic. *International Journal of Instruction*, 15(4).
- Harvey, B. S., Overland, S., Hatch, S., Wessely, S., Mykletun, A., & Hotopf, M. (2017). Exercise and the prevention of depression: Results of the HUNT cohort Study. *The American Journal Psychiatry*. <https://doi.org/10.1176/appi.ajp.2017.16111223>
- Hastuti, T. A., Jatmika, H. M., Pratama, K. W., & Yudhistira, D. (2021). The Level of Understanding of Pedagogical Competence of Physical Education, Health and Recreation Students of Sports Science Faculty. *Physical Education Theory and Methodology*, 21(4), 310-316.
- Hoeger, W. W. K., Hoeger, S. A., Hoeger, C. I., & Fawson, A. L. (2018). Lifetime physical fitness and wellness A personalized program (15th edition) Wadworth Cengage Learning.
- Ilham, M., Iqroni, D., Karakauki, M., Ali, S. K. S., Kristiyanto, A., Nasrulloh, A., ... & Phytanza, D. T. P. (2021). Effects of resistance band exercise on student's freestyle swimming skills. *Sport Science*, 15(1).
- Jufrianis, J., Henjilito, R., Hernawan, H., Sukiri, S., Sukur, A., Abidin, D., ... & Wahyudin Pratama, K. (2021). The Effect of Knowledge Level (IQ) and Physical Conditions (Power, Flexibility and Coordination) on Smash Technique Learning Skill in Sepak Takraw. *Physical Education Theory and Methodology*, 21(3), 264-272.
- Kauki, M. K., Prasetyo, Y., Rismayanthi, C., Asmuddin, A., Saman, A. ., Razali, M. N., Mustapha, A., Ali, S. K. S., Hutkemri, H., Sutapa, P. ., Hardianto, D., Auliana, R., Utami, D. ., Utami, D. Y., Riyana, A. ., Amran, A., Pratama, K. W., Trisnadi, R. A., & Astuti, A. T. . . (2024). Effect of Basic Water Confidence, Flexibility, and Technique on Freestyle Swimming Skill among Elementary School Pupils. *Challenges*, 51, 1415–1423. <https://doi.org/10.47197/retos.v51.101599>
- Kogoya, T., Mutohir, C., Pramono, M., Kristiyanto, A., Putro, B. N., Ali, S. K. S., ... & Trisnadi, R. A. (2023). Developing the Value of Peace in Sport, Health, and Physical Education Lecture through Traditional Games. *International Journal of Human Movement and Sports Sciences*, 11(2), 268-275.
- Kristiyanto, A., Prasetyo, Y., Pratama, K. W., Karakauki, M., Mustapha, A., & Idrus, S. Z. S. (2020, April). Access to The Utilization of Science and Technology of Sports and Familiarity of the Sports Community towards Technologically Based Devices. In *Journal of Physics: Conference Series* (Vol. 1529, No. 2, p. 022099). IOP Publishing.
- Langhammer, B. & Stanghelle, J. K. (2015). The Senior Fitness Test. *Journal of Physiotherapi*. <https://doi.org/10.1016/j.jphys.2015.04.001>
- Lage, A., Carrapatoso, S., Neto, S. Q., Gomes, S., Miranda, L. S., & Born, L. (2021). Associations between depression symptoms and physical activity intensity in an older adult population during covid-19 lockdown. *Front Psycho*. <https://doi.org/10.3389/fpsyg.2021.644106>
- Listyarini, A. E., Oktaviani, A. D., Alim, A., Putro, K. H., Kristiyanto, A., Margono, A., & Pratama, K. W. (2021). ВЗАЄМОЗВ'ЯЗОК ВИКОРИСТАННЯ ЦИФРОВИХ МЕДІА ТА ФІЗИЧНОЇ АКТИВНОСТІ З ФІЗИЧНОЮ ПІДГОТОВЛЕНІСТЮ УЧНІВ 4-ГО ТА 5-ГО КЛАСІВ ПОЧАТКОВОЇ ШКОЛИ. *Theory and Methods of the Physical Education*, 21(3), 281-287.
- Mammet, G., Faulkner, G. (2013). Physical activity and the prevention of depression: a systematic review of prospective studies. *Am J Prev Med* 45 (5) 649
- Marconcin, P., Werneck, A. O., Peralta, M., Ihle, A., Gouveia, E. R., Sarmento, H., & Marques, A. (2022)The association between physical activity and

- mental health during the first year of the covid-19 pandemic: A Systematic Review. *Bmc Public Health* 22(1), 1 – 14. <https://doi.org/a10.1186/S12889-022-12590-6>
- Maslim. R. (2013). Buku saku diagnosis gangguan jiwa, rujukan ringkas dari PPDGJ-III dan DSM-5. Bagian Ilmu Kedokteran Jiwa FK UAJ. Jakarta
- Mikkelsen, K., Stojanovska, L., Polenakovic, M. Bosevski, M., & Apostolopoulos, V. (2017). Exercise and Mental Health. *Maturitas*, 106 : 48 – 56. <https://doi.org/10.1016/j.maturitas.2017.09.003>
- Moeini, B., Barati, M., Farhadian, M., & Ara, M. H. (2018). The association between social support and happiness among elderly in iran. *Korean Journal of Family Medicine*, 39 (4), 260 – 265. <https://doi.org/10.4082/kjfm.17.0121>
- Murri, M. B., Zampogna, D., Serafini, G., Ekkekakis, P., Cattedra, S., Calcagno, P., Mogagnoli, M., Capobianco, L., Zanetidou, S., & Mario. (2019). Physical Exercise in Major Depression: Reducing the Mortality Gap While Improving Clinical Outcomes. <https://doi.org/10.3389/fpsy.2018.00762>
- Nasrulloh, A., Deviana, P., Yuniana, R., & Pratama, K. W. (2021). The Effect of Squat Training and Leg Length in Increasing the Leg Power of Volleyball Extracurricular Participants. *Physical Education Theory and Methodology*, 21(3), 244-252.
- Nasrulloh, A., Prasetyo, Y., Nugroho, S., Yuniana, R., Pratama, K. W., Mustapha, A., & Idrus, S. Z. S. (2020, April). Tricet Method to Increase the Hypertrophy Muscle. In *Journal of Physics: Conference Series* (Vol. 1529, No. 3, p. 032006). IOP Publishing.
- Nasrulloh, A., Prasetyo, Y., Nugroho, S., Yuniana, R., & Pratama, K. W. (2022). The effect of weight training with compound set method on strength and endurance among archery athletes. *Journal of Physical Education and Sport*, 22(6), 1457-1463.
- National Institute of Mental Health. (2017). Older Adults and Depression: Learn the Signs and Find Treatment. <https://www.nih.gov/sites/default/files/documents/health/publications/older-adults-and-depression/19-mh-8080-olderadultsanddepression.pdf>.
- Nigg, C. R. (2014). ACSM's behavioral Aspek of physical activity and exercise. Lippincott Williams and Wilkins.
- Nopembri, S., Rismayanthi, C., Putro, K. H., Kristiyanto, A., Margono, A., Karakauki, M., & Pratama, K. W. (2022). Improvement of HOTS method in basketball game through TGFU learning. *Physical Education Theory and Methodology*, 22(1), 85-91.
- Nugroho, S., Hidayat, R. A., Komari, A., Pratama, K. W., Karakauki, M., & Ali, S. K. S. (2022). Effect of Plyometric Exercise and Leg Muscle Endurance on the Agility and VO<sub>2</sub>max of Badminton Athletes. *Physical Education Theory and Methodology*, 22(3s), S71-S78.
- Nugroho, S., Nasrulloh, A., Karyono, T. H., Dwihandaka, R., & Pratama, K. W. (2021). Effect of intensity and interval levels of trapping circuit training on the physical condition of badminton players. *Journal of Physical Education and Sport*, 21, 1981-1987.
- Pan, L., Li, L., Peng, H., Lilian, F., Liao, J., Wang, M., Tan, A., & Zhang, Y. (2022). Association of depressive symptoms and marital status among the middle-aged and elderly in Rural China-Serial mediating effects of sleep time, pain life satisfaction. *Journal of Affective Disorder*. 303, 52 – 57. <https://doi.org/10.1016/j.jad.2022.01.111>
- Paulo, T., Tribess, S., Sasaki, J. E., Meneguci, J., Martins, C. A., Freitas, I. F., Perez, V. R., & Virtuoso, J. S. (2016). A Cross-sectional study of the relationship of physical activity with depression and cognitive deficit in older adults; *Journal of Aging and physical activity*, 24 (2), pp 311 – 321. doi: 10.1123/japa.2014-0253.
- Pratama, K. W., Aman, M. S., Sutoyo, E., Karakauki, M., Ali, S. K. S., Mustapha, A., ... & Nasrulloh, A. (2022). An Alternative Soft Set Approach for Identifying Football Conflict: A Case Study of Indonesian Football Super League. *International Journal on Advanced Science, Engineering and Information Technology*, 12(4), 1351-1364.
- Pratama, K. W., Suharjana, S., Nasrulloh, A., Sabrin, L. O. M. ., Pranata, D. ., Pambayu, S. H. ., Hardianto, D. ., Sutapa, P. ., Auliana, R. ., Karakauki, M. ., Utami, D. ., Riyana, A. ., Astuti, A. T. ., Utami, D. Y. ., Trisnadi, R. A. ., Amran, A., Ali, S. K. S. ., Mustapha, A. ., Razali, M. N. ., Sonjaya, A. R. ., Permadi, A. A. ., & Arifin, Z. . (2024). RED-S Identification on Female Athlete. *Challenges*, 51, 1055–1061. <https://doi.org/10.47197/retos.v51.101322>
- Riset Kesehatan Dasar. (2018). Badan penelitian dan pengembangan kesehatan kementerian Republik Indonesia
- Saifu, M. K., Ali, S. K. S., Mustapha, A., Muslim, B. A., Ismiyati, F., Sundara, C., ... & Yudhistira, D. (2021). The Effect of Small Game Exercise on Freestyle Swimming Speed: A Case Study of Halu Oleo University Sport Science Student. *International Journal of Human Movement and Sports Sciences*, 9(6), 1040-1045.
- Salafi, M. I. E., Suherman, W. S., Suhartini, B., Antoni, M. S., & Pratama, K. W. (2022). Effect of the Eight-Week Sand Surface Exercise, Water Surface Exercise, and Power Leg Muscles Training Methods Toward Agility of Basketball Players for Adolescent Players. *Physical Education Theory and Methodology*, 22(3), 353-359.
- Salafi, M. I. E., Suherman, W. S., Suhartini, B., Antoni, M. S., Pratama, K. W., Nurfadhila, R., Nugroho, W., & Miftachurohmah, Y. (2023). Design, Validation, and Reliability of a Basketball Skill and Performance Test Instrument in Adolescent Players. *Physical Education Theory and Methodology*, 23(5), 668–677. <https://doi.org/10.17309/tmf.2023.5.03>
- Shimamoto, H., Suwa, M., & Mizuno, K. (2021). Relation between depression, daily physical activity, physical fitness, and daytime sleepiness among Japanese University Students. *International Journal Environmental Research and Public Health*. 18



- (15):8036. Doi: 10.3390/ijerph18158036
- Shi, C., Yan, J., Wang, L., & Shen, H. (2022). Exploring the self-reported physical fitness and self-rated health, mental health disorders, and body satisfaction among Chinese adolescents: A cross-sectional study. *Health Psychology* 13. <https://doi.org/10.3389/fpsyg.2022.1003231>
- Singh, B., Olds, T., Curtis, R., Virgara, R., Watson, A., Szeto, K., Connor, E. O., Ferguson, T., Eglitis, E., Miatke, A., Simpson, C., & Maher, C. (2022). Effectiveness of physical activity interventions for improving depression, anxiety and distress: an overview of systematic reviews. *Journal of Sports Medicine*. <http://dx.doi.org/10.1136/bjsports;2022-106195>
- Sukendro, S., Karakauki, M., Ali, S. K. S., Kristiyanto, A., Pratama, K. W., Nasrulloh, A., ... & Phytanza, D. T. P. (2021). THE RELATIONSHIP BETWEEN NUTRITIONAL STATUS AND PHYSICAL HEALTH LEVELS OF STUDENTS AT THE MODERN ISLAMIC BOARDING SCHOOL. *Sport Science*, 15(1).
- Sund, A. M., Larson, B., Wichstrom, L. (2011). Role of physical and sedentary activities in the development of depressive symptoms in early adolescence. *Soc Psychiatry Psychiatr Epidemiol.* 46 (5) 431
- Sutapa, P., Prasetyo, Y., Pratama, K. W., Karakauki, M., Mustapha, A., & Idrus, S. Z. S. (2020, April). Motor Development Index (MDI) Based on Combination of Human Development Index (HDI) and Sport Development Index (SDI) as a Success Parameter of Motor Development among Preschool Children: An Observational Study. In *Journal of Physics: Conference Series* (Vol. 1529, No. 3, p. 032003). IOP Publishing.
- Sutapa, P., Pratama, K. W., Rosly, M. M., Ali, S. K. S., & Karakauki, M. (2021). Improving motor skills in early childhood through goal-oriented play activity. *Children*, 8(11), 994.
- Trisnadi, R. A., Kushartanti, B. M. W., Ambardini, R. L., Trisnadi, S., Trisnani, S. M., Ulayatilmiladiyyah, N., Karakauki, M., Amran, Rizqie, A., Utami, D., Utami, D. Y., Riyana, A., Astuti, A. T., Sutapa, P., Ali, S. K. S., Pratama, K. W., Sonjaya, A. R., Permadi, A. A., Arifin, Z. (2023). Effect of Chia Seed Extract (*Salvia Hispanica* L) On Current Blood Sugar Levels and MDA Levels. *Retos*, 50, 826-830. DOI: 10.47197/retos.v50.99237
- Trisnadi, R. A., Ambardini, R. L., Kushartanti, B. W., Hardianto, D., Sutapa, P., Manil, K., Amran, A., Auliana, R., Utami, D., Utami, D. Y., Riyana, A., Astuti, A. T., Trisnadi, S., Widiyanto, B., Trisnani, S. M., Ulayatilmiladiyyah, N., Sarosa, H., Wahyudin Pratama, K., Ali, S. K. S., Sonjaya, A. R., Permadi, A. A., & Arifin, Z. (2024). El efecto del extracto de semilla de *Salvia Hispánica* L sobre los niveles de azúcar en sangre en ratas con actividad física moderada (The Effect *Salvia Hispanica* L Seed Extract on Blood Sugar Levels in Rats with Moderate Physical Activity). *Retos*, 51, 117–123. <https://doi.org/10.47197/retos.v51.99236>
- Ubaidi, B. A.A. (2019). Gender relationship with depressive disorder. Kingdom of Bahrain. Doi: 10.33309/2638-7719.010206
- Utami, D., Sukarmin, Y., Widiyanto, Pribadi, A., Kristi, P. D., Utami, D. Y., Amalia, I. G., Pinandita, W. W., Amran, Auliana, R., Trisnadi, R. A., Astuti, A. T., Karakauki, M., Riyana, A., Pratama, K. W., Naufal, R. M. (2023). Reducing the feelings of work fatigue for women kindergarten teachers by implementing circulo massage. *Fizjoterapia Polska*, 23(2); 168-174.
- Yudhistira, D., Suherman, W. S., Wiratama, A., Wijaya, U. K., Paryadi, P., Faruk, M., ... & Pratama, K. W. (2021). Content Validity of the HIIT Training Program in Special Preparations to Improve the Dominant Biomotor Components of Kumite Athletes. *International Journal of Human Movement and Sports Sciences*, 9(5), 1051-1057.
- Yuniana, R., Tomoliyus, B. M., Nasrulloh, A., Pratama, K. W., Rosly, M. M., Karakauki, M., & Ali, S. K. S. (2023). The Effectiveness of the Weight Training Method and Rest Interval on VO2 max, Flexibility, Muscle Strength, Muscular Endurance, and Fat Percentage in Students. *International Journal of Human Movement and Sports Sciences*, 11(1), 213-223.

Panggung Sutapa  
Kukuh Wahyudin Pratama  
Aida Mustapha

[panggung\\_s@uny.ac.id](mailto:panggung_s@uny.ac.id)  
[kukuh.pratama@uniga.ac.id](mailto:kukuh.pratama@uniga.ac.id)  
[aidam@uthm.edu.my](mailto:aidam@uthm.edu.my)

Traductor/a  
Traductor/a  
Traductor/a