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Influence of walking football on decreasing cholesterol and blood glycemic level

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Abstract: The aims of this research to determine the impact of walking football on cholesterol and glycemic management in order to allow people to live healthily. This research is an experimental study with quantitative approach. The research sampling was 12 subjects from different category: (1) International students, (2) Local students, and employed persons. Technique collecting data using playground of futsal to assess variables like glycemic and cholesterol. Data analysis using independent test sample. To evaluate the subjects' health condition, the research proceeded by pre-test first, for the second step a walking football was given during 12 weeks within 3 times per week. After the training a posttest has been provided to check the improvement of the subject's health. The result showed that there is a strong different between pre-test and posttest on glycemic level with P (0.000) inferior to 0.05. Second there was a significant different from pre-test and posttest cholesterol data within P (0.000) inferior to 0.05. The walking football is a strong tool to help people at the different age to maintain their good condition but also to allow good performance for athletes. Walking football is very easy to apply and provide happiness.

Keywords: walking football, cholesterol, glycemic level

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INTRODUCTION

In the case of hypercholesterolemia, the excess cholesterol molecules circulating in the blood (via the LDL and HDL transporters) tend to accumulate on the walls of the arteries. According to the French Cardiology Federation, the total cholesterol level (HDL, LDL and triglycerides) must be less than 2 g / l of blood. The level of bad cholesterol, LDL, becomes dangerous for health if it exceeds 1.6 g / l. A large number of factors may be responsible for an increase in the concentration of bad cholesterol, LDL-cholesterol, in the blood. Gender is a risk factor for high cholesterol and men have higher LDL cholesterol than women (Jeong et al., 2018).

Overall, the set of symptoms that may suggest a cardiovascular disease involving an excess of cholesterol are the following: pain in the calves, chest pain with feeling of tightness, nausea, dizziness, fever, headache, shortness of breath, palpitations. Bad eating habits in the first place (excess of saturated fatty acids in particular), but also stress, genetic predispositions, certain diseases (kidney disease, hypothyroidism), taking certain drugs promote the increase in cholesterol levels in the blood. Regular physical activity increases HDL cholesterol, lowers LDL cholesterol and triglyceride levels. Regular athletes have a "good" cholesterol level up to 30% higher than sedentary people (Sima et al., 2018).

Sugar is everywhere, yet the National Agency for Food, Environmental and Occupational Health Safety (ANSES) recommends limiting its consumption. If glucose-rich foods do promote weight gain, there is also an effect of sugar on the brain. The health effects of sugar, and in particular those of

added sugars and sugary drinks, are the subject of growing consensus in the scientific community. Indeed, a large majority of studies that do not conflict with the agrifood industry show for example a correlation between the high consumption of sugar (and sweet sodas in particular) and weight gain, the risk of gout and cardiovascular problems (Sindhu & Wilson, 2015). Excessive sugar consumption is also directly linked to several metabolic problems and negative health effects, notably promoting certain nutritional deficiencies and the appearance of dental caries (Ahmad et al., 2017)

Walking is the easiest type of physical activity as it is safe and economical. The benefits of walking are also similar to exercise. Furthermore, walking 10,000 steps has been proven to benefit cardiovascular health (Arnold et al., 2015). Walking football is an interesting sport with good impact on health. Players are only allowed to walk and not run around. Walking football game increases the daily step counts for those who play (Reddy et al., 2017). As it is a team sport, player usually gets motivation from their teammates. Such good support and encouragement will help players to move more. Consequently, players will improve their fitness level and body composition, thus preventing obesity related complications (Heil et al., 2018). The study done by Perrone in 2021 showed that physical activity like jogging with moderate intensity showed a significant reduction in HDL (−3%)(Perrone et al., 2021).A systematic review meta-analyze on impact of physical activity on Glycemia variability (GV), showed that 1,825 identified articles tasted that there was a significant reduction of GV(Bennetsen et al., 2020). A similar study showed that physical activity like jogging, running with moderate intensity could control the glucose in the blood(Wake, 2020). A similar systematic review done by Shab et al in 2021 showed that from a total of 21,559 articles were identified through different databases. More than 21559 studies tasted that physical exercises decreased blood glucose(Shah et al., 2021). Physical activity with 16 weeks of moderate-to-high intensity exercise (n = 90) or treatment as usual (n = 82) were analyzed change from baseline for the levels of total cholesterol, LDL-C, HDL-C, TG, glucose, and insulin(Jensen et al., 2020). High Cholesterol and glycemic level are very dangerously on the human health and performance. Many subjects from all age are still suffering from high cholesterol glycemic effect level in worldwide.

Based on the furthermore research which have been done about the negative impact from cholesterol and high glycemic blood. It up now to fix the current issue in order to improve human health. Until now there not yet a scientific study which is related on the benefit from walking football on decreasing cholesterol and glycemic level.

METHOD

This research is an experimental study with a quantitative approach. The research sampling was 12 subjects from different categories: (1) international students, (2) Local students, and employed persons taken by purposive sampling. Technique collecting data using playground of futsal to assess variables like glycemic and cholesterol. Data analysis using independent test sample with SPSS software version 22.

To evaluate the subject's health condition, the research proceeded by pre-test first. The subjects have been taken blood to assess the glycemia, and Cholesterol level., for the second step a walking football was given during 12 weeks within 3 times per week. After the training a posttest has been taken, at this step the subjects have been retaken blood again to evaluate the level of glycemia, cholesterol by using Easy Touch (GCU), the objective was to provide to check the improvement of the subject’s health. The Easy Touch was a medical tool to evaluate Glycemia, Cholesterol, and Acid Uric, it already has validity. Walking football training model is the easiest type of physical activity with ball as it is safe and economical. Players are prevalence allowed to walk in the playground, to run with moderate intensity and sometimes to combine movements walking-run with moderate intensity. The number of players 8, the size of the playground 18 x 24 m, with more than two gates but not up 5 gates. The time of this happy fully game was detected as 4 x 15 minutes. The game is somehow similar to the football except some rulers.

RESULT AND DISCUSSION

The result from this study is firstly presented by the general data provided from the playground.

Table 1. Pre-test and Posttest of Subject Glycemic and Cholesterol

Subjects	Glycemic		Cholesterol	
	Pre-test	Posttest	Pre-test	Posttest
1	180	130	200	150
2	187	140	198	145
3	170	135	187	153
4	150	132	199	152
5	168	140	202	180
6	200	150	210	188
7	177	135	186	150
8	168	140	183	146
9	146	130	190	145
10	157	145	197	153
11	172	143	178	144
12	185	150	188	160

The table 1 presented the pre-test and posttest of Glycemic and cholesterol. According to the standard of Glycemic and Cholesterol it can be concluded that the pre-test data are very high whether the posttest data showed or met normal standard. The program used walking football can be concluded before that it is very benefit on the decreasing glycemic and cholesterol which are not very good for performance athlete but also it can make bad human health.

Table 2. Test Normality of Subject' Glycemic and Cholesterol

Parameters		Pre-Test	Posttest	Pre-Test	Posttest
N		12	12	12	12
Normal Parameters[a,b]	Mean	171.6667	139.1667	193.1667	155.5000
	Std. Deviation	15.62826	7.00433	9.24252	14.15820
Most Extreme Differences	Absolute	.157	.141	.161	.320
	Positive	.084	.141	.134	.320
	Negative	-.157	-.131	-.161	-.208
Test Statistic		.157	.141	.161	.320
Asymp. Sig. (2-tailed)		.200[c,d]	.200[c,d]	.200[c,d]	.001[c]
Monte Carlo Sig. (2-tailed) Sig.		.883[e]	.942[e]	.867[e]	.135[e]

Table 2 showed that the data were normal distributed within P value superior to 0.05. For all data from pre-test and posttest the result showed that the normality was met for each case. Therefore, the last normality allows the researcher to process other test like independent test sample to assess the influence of walking football on glycemic and cholesterol.

Table 3. Homogeneity Test of Glycemia and Cholesterol

Test of Homogeneity of Variances			
Glycemia			
Levene Statistic	df1	df2	Sig.
1.690	3	44	.183

Table 3 showed that P value was greater than 0.05 which mean that the data were normally distributed, and homogeneity. The data analysing has been proceeded by Independent T-test.

Table 4: Compared mean of pre-test and posttest of Blood Glycemic Level

	Parameter	N	Mean	Std. Deviation	Std. Error Mean
Classes	Pre-Test	12	171.6667	15.62826	4.51149
	Posttest	12	139.1667	7.00433	2.02198

The result from table 4 showed that there is a difference between the mean from the pre-test and posttest. Pre-test mean was 171.6667 whether posttest glycemic mean was 139.1667. The last shift tasted that the walking football contribute effectively on decreasing the athlete glycemic. However the high standard deviation (15.62826) showed that the subjects were characteristic different on the glycemic level. After training the SD was highly decreased this tasted the effect from walking football on the subjects' health.

Table 5. Independent T-test Sample of Blood Glycemic Level in mmol / l, mg / dl, mg%

	Levine's Test for Equality of Variances	t-test for Equality			95% Confidence interval of different
	F	Sig.	t	df	Sig. (2-tailed)
Test Equal variances assumed	4.350	.049	-6.574	22	.000
Equal variances not assumed			6.574	15.248	.000

From the data on table 5, it can be conclude that there is a strong significant between pre-test and posttest with P value inferior to 0, 05. It can be seen from the test equal variances (0.000) and test equal variances assumed (0.000). In other hand the walking football has a great influence on decreasing the subjects' glycemic.

Table 6. Compared mean of pre-test and posttest of Cholesterol Level

	Parameter	N	Mean	Std. Deviation	Std. Error Mean
Classes	Pre-Test	12	193.1667	9.24252	2.66809
	Posttest	12	155.5000	14.15820	4.08712

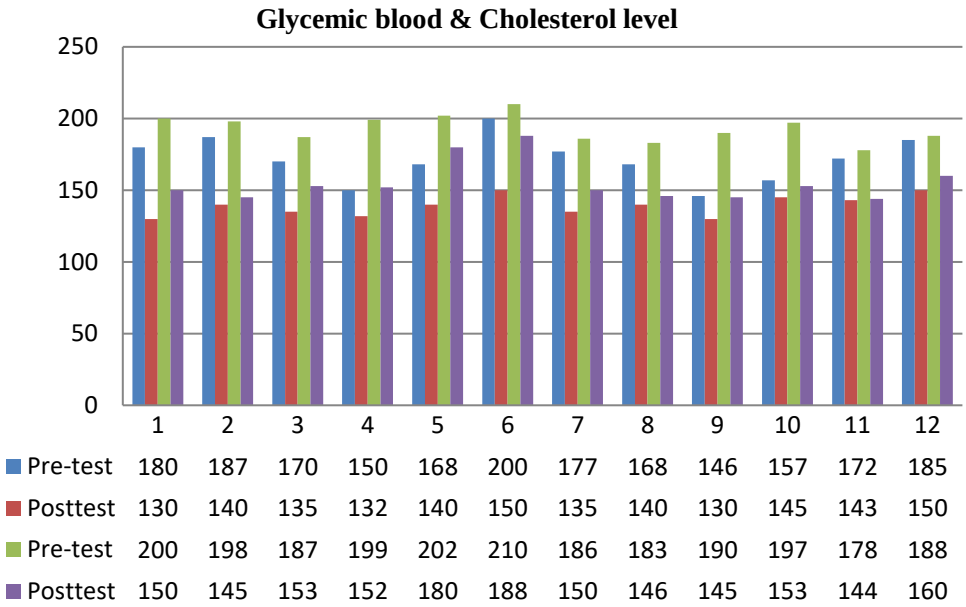
The result from table 6 showed that there is a distinction between the mean from the pre-test and posttest. Pre-test imply was 193.1667 whether posttest cholesterol mean was once 155.5000. The closing shift tasted that the walking football made a contribution efficaciously on lowering the athlete cholesterol. However the moderate trendy deviation (9.24252) confirmed that the athletes have been characteristic different on the cholesterol level. After coaching the SD used to be exceedingly high (14.15820), this tasted the effect from strolling soccer on the subjects 'health. The subjects have a different adaptation on the walking football program. The great thing is that walking football has a good impact on decreasing the cholesterol level.

Table 7. Independent T-test Sample of Cholesterol Level in mmol/L or mg/dl

	Levine's Test for Equality of Variances	t-test for Equality			95% Confidence interval of different
	F	Sig.	t	df	Sig. (2-tailed)
Test Equal variances assumed	.672	.421	-7.717	22	.000
Equal variances not assumed			7.717	18.924	.000

Data on table 7 concluded that there is a sturdy good sized between pre-test and posttest with P fee inferior to 0, 05. It can be considered from the take a look at equal variances (0.000) and check

equal variances assumed (0.000). In other hand the foot soccer has an outstanding have an effect on decreasing the subjects' cholesterol.



- Pre-test of Glycemia with blue color
- Posttest of Glycemia with red color
- Pre-test of Cholesterol with green color
- Posttest of Cholesterol with purple color

Graphic 1. Blood Glycemic and Cholesterol Decreasing During 12 Weeks

The blue and red color indicated the glycemic blood pre-test and posttest while the green and purple color for the cholesterol characteristics level according to the walking football training. The result above showed the progressive influence from walking football on blood glycemic and cholesterol level during 12 weeks. The walking football program was applied with additional time: for the first four (4) weeks the time was 2x15 minutes, three times per week. With the first round the program has been followed with moderate intensity. Remembering that walking football was constituted from (1) 6-8 players each per side, each game was 30 minutes long during 4 weeks; (2) No running or jogging, with or without the ball; (3) Low impact tackling only; (4) No off sides; (5) The ball must not be kicked or defected by any outfield player, or throw (by the goalkeeper) above head height, (6) Rebounds off walls for indoor matches.

The second round the walking football program was afforded within 3x15 minutes. A rest of 2-3 minutes between each session of 15 minutes. In this case the game over about 45 minutes. The last step was applied with 4x15 minutes, the training skills still the same, only the different was observed after 30 minutes the rest was about 5 minutes. Physiologically during the different phases of training, there are changes during exercise and after exercise. During the effort the thermodynamics or the internal heat increases which favors the excessive consumption of glucose in the blood. Cholesterol is also destroyed by metabolism for the production of energy for the athlete. The increased heart rate indicates that the cardio respiratory system was affected. The increasing of endorphin was manifested by the will of players who want to continue playing despite the fact that time is over. The players walk with great joy.

The result from this research showed that walking football during 12 weeks was very effective to manage cholesterol and glycemic level. Increasing the quality of health and functional physical fitness through walking football by achieving best practices in fitness and health. Walking Football for Health – happy obesity is a sport to be embraced nationally and internationally across the various age and gender groups with obesity (Purnama Putra & Siswantoyo, 2019; Kerin, Hons, & Dickens, 2017). Walking football has been used to increase human health (Zainudin et al., 2022). In the study done by

Barbosa et al was about targets to check the effectiveness of walking football exercise on glycemic manipulate and cardiovascular hazard factors in middle-aged and older guys with type 2 diabetes, the result showed that there were a significant decreasing of glycemia and improvement of cardiovascular health (Barbosa et al., 2021). For this study the result showed that during 4 weeks of walking football training the subjects increased the cardio-respiratory system. At the end of fourth week, all the athletes felt good whether during the two first weeks they still have problem of endurance. The best adaptation on the program allowed metabolism system to destroy cholesterol and to use glycemic blood. From the 8th week to the 12th week, it has seen a great reduction of glucose and cholesterol. The result from this study tasted that walking football has been used as a strong tool to fix the further last problem. The graphic1showed that all the subjects have known a significant decreasing of both glycemia and Cholesterol. A systematic review done by Sarmento in 2020 showed that a total of 44 articles met the inclusion standards and had been covered. recreational soccer is proven to the reducing of cholesterol and triglycerides degrees, lower blood stress and resting heart fee, improve cardiac structure and functioning, in addition to growth maximal oxygen uptake in both sexes; (Sarmento et al., 2020)

This study demonstrated positive effects from walking football on fitness health changes and well being of subjects. The findings show that walking football is an excellent alternative way to carried out the cholesterol and glycemic level problems. The cost effectiveness of this activity suggests its feasibility to be implemented nationwide or regionally to combat the rising problems of inactivity and people obesity or people who have cardio vascular diseases. Krustrup et al (2010) found that small-sided football produced high aerobic activity with mean heart rates (HRs) of 80–85% of agerelated maximal. Walking football is very benefit to improve human condition (Paper & Sport, 2016). Nevertheless walking football is a sweet able way to improve metabolism (Heil et al., 2018; Gray et al., 2013). Walking football was used to decrease weight and cholesterol of many children who were lazy for physical activity (Jaafar & Kee, 2018). In the research done by (Kerin et al., 2017) showed that after physical condition improved by walking football but mental also is being positive touched. During the exercise of walking football, the blood sugar was significantly used which tasted a decreasing of glycemia in the blood.

In UK a similar study has been done while many older adults were so lazy to run for kicking ball, the result showed that health benefits of playing football and the importance of exercise and social contact for healthy ageing were well established. Football is popular, flexible in format and draws players into engrossing, effortful and social exercise, playing football inquired much energy which allowed an amount of sugar expenditure (Activity, 2019); Reddy et al., 2017; Wibowo Eko Yulianto, Siswantoyo, & Purwandono Shaleh, 2019). One of the Malaysia studies proved that a walking football during 8 weeks for elders' persons with moderate intensity can reduce cholesterol and glycemia, but it can improve also cardiorespiratory and metabolism. A program stratified in period like 8 weeks of imagery training can decrease blood sugar, improve wellbeing and performance of athletes (Shaari et al., 2019). Walking football can improve strength within stratified time more than 8 weeks (Prasetyo & Siswantoyo, 2019)

In the research done with Oppezzo & Schwartz in 2014 concluded that football is a broad spectrum exercise that decrease cholesterol, it improves also cardiovascular and musculo-skeletal fitness and reduces the risk of cardiovascular disease, falls and fractures. However, Oppezzo & Schwartz (2014) found that competitive walking football was enjoyable, could be played more frequently with less strain than regular football and the emphasis on passing had team-building benefits for Canadian high-performance veteran football players. As it was demonstrated in study done by Thomas, Hons, Pretty, Desaive, & Chase, (2016) that regular physical activity could decrease blood glycemic, walking football was very great in decreasing the glucose. Each physical activity with moderate intensity is great to decrease glucose (Peinado, Rojo-tirado, & Benito, 2013; Siswantoyo, 2012)

In the research done by Øen, Kvilhaugsvik, Eldal, & Halding (2018) study was to gain an in-depth understanding into the perspectives and life experiences of adolescents living with obesity. The analysis revealed showed that people still unknown of ways to lose weight and cholesterol with a fun game. Method for jogging most accurately for the obese population to fix the problem high cholesterol and glycemia (Heden et al., n.d.). Walking football was somehow similar on a handicap games model for practicing the physical fitness of 10-12 years old children. Walking football was used to decrease weight, cholesterol for people with obesity Juniarta & Siswantoyo (2014). Nielsen, Almeida, Juncker, Rasmussen, & Li (2014) report that walking football has a positive impact on decreasing cholesterol,

and glycemia, Exercise has shown an impact on cognitive function in older adults. With this walking football obesity sport it can be concluded that this model is more fun, effective and qualitatively improve fitness and health. The result from the lookout above was among as others researches to provide that walking football was found as a strong tool to decrease cholesterol and glycemia.

CONCLUSION

This study showed that walking football for all people may be sustainable. It was not too physically demanding and it is engaging to play. Sceptical interest turned to enthusiasm once play began. Players initially found avoiding running difficult but later play felt natural and involving.his investigation suggests the potential efficacy of walking football as a public health intervention, Walking football was found very easy to fight against high cholesterol and glycemic level.

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