

lili

by Arisman Arisman

Submission date: 30-Jan-2024 04:58AM (UTC-0500)

Submission ID: 2281305437

File name: article_lili.doc (497K)

Word count: 4009

Character count: 21771

EFFECTIVENESS OF PHYSICAL FITNESS TRAINING WITH THE B4FIT MODEL

Robertus Lili Bile¹, Yohanes B. O. Tapo², Yohanes F. Bali³
STKIP Citra Bakti^{1,2,3}
robertuslilibile16@mail.com¹, yohanesbayoolatapo@mail.com²,
robertuslilibile16@mail.com³

Abstract

This study aims to evaluate the effectiveness of physical fitness training for students of the Physical Education, Health and Recreation (PJKR) Study Program at STKIP Citra Bakti using the B4FIT Model. The research method used is a time series pre-experiment involving 40 PJKR students as research samples who undergo a physical fitness training program with the B4FIT Model. The main stages of the study included identification of variables to be measured, design and implementation of the exercise program, and data collection through pre- and post-intervention physical tests. The results showed a significant improvement in the physical fitness level of students who underwent training with the B4FIT Model. Variables such as muscular strength, agility, and cardiorespiratory endurance showed consistent and meaningful improvements after the intervention. From these findings, it is concluded that the B4FIT Model is effective in improving the physical fitness level of PJKR students at STKIP Citra Bakti. The implementation of exercise programs with this approach is able to have a positive impact on the physical fitness aspects of students. The implications of this study support the need for a structured fitness training method that can improve the health and physical performance of PJKR students.

Keywords: Effectiveness; Exercise; Physical Fitness; College Students.


Submitted : 13th of November 2023

Accepted : 26th of January 2024

Published : 30th of January 2024

Correspondence Author: Robertus Lili Bile, STKIP Citra Bakti, Indonesia.

E-Mail: robertuslilibile16@mail.com

DOI  <http://dx.doi.org/10.31851/hon.v7i1.14390>



Jurnal Laman Olahraga Nusantara licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/)

INTRODUCTION

This research is based on the fact that efforts to maintain health and physical fitness during the transition period after the covid-19 pandemic are vital needs for all groups including students. As a preventive measure in minimizing the risk of transmission of the covid-19 virus as well as a promotive effort to maintain physical fitness, various forms of physical exercise and sports activities need to be carried out. Students who have academic demands that tend to be high are very

3

necessary to continue to maintain their physical fitness level in order to complete tasks and bills in their academic activities on campus. In principle, good physical fitness will support students' cognitive abilities, help improve concentration, improve the ability to control stress and minimize the risk of health problems due to sedentary life style. Generally, students in the Physical Education, Health and Recreation (PJKR) study program have high physical activity demands because they have to take various practical courses. Therefore, it requires a physical condition that is always in prime condition so that it supports all the movement activities required in practical lectures. Efforts to maintain physical condition to stay healthy and fit can be done with several approaches, one of which is aerobic exercise. The aerobic exercise approach is one form of exercise that can be maximized as an effort to maintain overall physical fitness. This is because aerobic exercise can provide a good response and adaptation to the cardiovascular system which will greatly support overall physical fitness. The forms of aerobic exercise include brisk walking, jogging, cycling, swimming and health breathing exercises. One form of aerobic exercise that can be done easily is breathing exercises. Breathing exercises are physical exercise activities that utilize the physiological process of breathing, namely inhaling and exhaling for the purpose of training the respiratory apparatus and other components related to the respiration and cardiovascular systems. In principle, breathing exercises are a process where the body is accustomed to consciously taking and utilizing oxygen (breathing air) and removing carbon dioxide as a training condition. One form of breathing exercise that can be done by students is the B4Fit (Breath 4 Fit) breathing exercise model. This breathing exercise model was developed by adopting some basic forms of breathing exercises or exercises of the de colores organization.

This study aims to (1) measure the level of physical fitness of PJKR STKIP Citra Bakti students, (2) determine the effectiveness of the B4Fit training model as a physical fitness maintenance exercise for students. This research was conducted at STKIP Citra Bakti, Golewa sub-district, Ngada Regency, East Nusa Tenggara. The population in this research study were students of the PJKR Study Program at

STKIP Citra Bakti. The sample to be involved in this study amounted to 40 people who were determined by purposive sampling technique according to the researcher's criteria based on research needs. This research is a type of experimental research with a time series pre-experiment approach.

Physical fitness is a condition where a person can carry out various daily routines and still have the ability to carry out other activities and be free from health problems or diseases (Bile & Tapo, 2022). Good physical fitness is an indicator of overall health. This limitation provides a clear picture that individuals who have a good physical fitness condition indirectly have good physical health. Physical fitness generally involves two components, namely the health-related physical fitness component and the skill-related physical fitness component. Health-related fitness components include several components including cardiovascular fitness, muscular strength and endurance, flexibility, and body composition, while skill-related fitness components include agility, balance, power, speed, coordination, and reaction time. As one of the components of physical fitness related to health, the cardiovascular fitness component plays a very important role in supporting overall health. This is because the cardiovascular fitness component involves components of the circulatory system such as the heart and blood vessels. The performance of physical exercise through breathing exercises greatly supports the performance of the cardiovascular system so it needs to be done systematically and continuously as a form of health maintenance promotion efforts.

The problem of low physical fitness in students is a condition that can hamper the various demands of student academic activities on campus. As a promotive and preventive effort, efforts to maintain students' physical fitness through a series of systematic exercises need to be done (Grasdalsmoen et al, 2020). One form of exercise that can be done is aerobic exercise in the form of breathing exercises for the purpose of maintaining cardiorespiratory health. In some research results, it was found that breathing exercises contribute importantly to supporting the maintenance of physical fitness of students (Bile & Suharjana,

2019). The breathing exercise used in this study is the B4Fit breathing exercise model (Bile & Tapo, 2022). The breathing exercise mechanism in the B4Fit exercise model is generally the same as the breathing mechanism in humans, namely inhaling and exhaling. However, in this training model, between the inhale and exhale phases will be interspersed with a breath-hold phase for a certain duration of time. This breath-holding phase aims to create training conditions for the respiratory and cardiovascular systems in a hypoxic state so that they are able to function optimally both under normal conditions and conditions of lack of oxygen supply. Thus, the effect of these training conditions is to improve cardiorespiratory fitness while supporting overall physical fitness. The use of the B4Fit breathing exercise model in this study aims to determine the level of effectiveness of B4Fit training on efforts to maintain the physical fitness level of Physical Education, Health and Recreation (PJKR) Study Program students. In addition, this research is also an effort to map the level of physical fitness of PJKR STKIP Citra Bakti students, especially second semester students, which can be used as material for evaluating fitness coaching programs through practicum lectures in the PJKR study program in the following semester.

Physical activity and exercise contribute significantly to maintaining a healthy body (Giriwijoyo & Sidik, 2017). This is because both physical activity and exercise are preventive and promotive actions related to physical fitness issues (Christmas et al, 2019). During the current covid-19 pandemic, physical activity and exercise are needed as an effort to increase body immunity in particular and fitness in general to anticipate covid-19 transmission. However, the reality of the covid-19 pandemic, which is currently characterized by social restrictions, has indirectly contributed to the tendency of sedentary living habits. Learning activities carried out online with various facilities such as access to information through computer media, smartphones and other similar electronic media indirectly have an impact on the condition of low physical activity. The problem of physical inactivity is still a widespread problem with more than 30% of adults failing to meet adequate physical activity levels (Paula et al., 2020). This condition indicates

that the accumulation of physical activity in one day while doing routine work is not enough to support general physical fitness so that regular exercise or exercise activities that are carried out systematically and continuously are needed in order to support the maintenance of physical conditions (Bachman et al., 2015).

The breathing process in humans generally occurs through two conditions, namely consciously and unconsciously (Bachman et al., 2015). Breathing exercises, is one example of a breathing process that occurs consciously (Irianto, 2017) under human control which if carried out systematically and continuously will have a good training condition impact on the respiratory apparatus (Nambi et al., 2020) and result in increased endurance and strength of the muscles in the respiratory apparatus, improve the work function of the respiratory organs, during the inspiratory and expiratory processes and increase activity in parasympathetic nerves (Ghati et al., 2020). The combination of breathing exercises and dynamic movements of the upper extremities in a training condition can improve lung function (Shukla et al., 2020). Thus, a fitness training program based on breathing exercises is very necessary to maintain cardiorespiratory health and endurance to support overall physical fitness (Bile & Suharjana, 2019). This aims to create adequate training conditions (Hamzelou, 2020) for the organs or muscles responsible for the cardiorespiratory system (Beutler et al, 2016) so that they can function more optimally in various conditions (Barbagelata et al., 2021).

The B4Fit training model is a fitness training activity using a breathing exercise approach developed from the basic form of traditional breathing exercises or sports de colores (Bile & Tapo, 2022). The breathing exercise activities designed in this exercise model aim to improve the ability of the respiratory organs to function more optimally both in hypercapnia and in hypoxia. The breathing mechanism used in this training model is chest breathing with three stages, namely the inhale phase, the breath-hold phase, and the exhale phase. Breathing training activities in this training model are organized using counts with certain patterns designed to create training conditions so that cardiorespiratory physiological reactions and adaptations are formed as a result of the training

activities performed. This exercise is designed specifically for university students so that the intensity and duration of the exercise has been set according to the level of physical ability in the student age group.

METHOD

This research is a type of experimental research with a time series pre-experiment approach with a one group pretest-posttest design. In accordance with this approach, the research will be conducted in 3 series. Before the first series of the first week of treatment or application of physical exercise using the B4Fit exercise model, a physical fitness pretest was first conducted to be an initial evaluation of the students' physical fitness level. After the pretest is conducted, then the first series of the first week of the first week with the research sample will be given a physical fitness training program using the B4Fit model. The treatment was given as many as 3 series. At the end of the third series of the third week of treatment, a post-test was conducted to measure the progress of improving aspects of students' physical fitness after undergoing the treatment series for 3 series.

5
This research was conducted at STKIP Citra Bakti by involving 40 PJKR students as research samples determined using purposive sampling techniques (according to the criteria of researchers and research needs). The criteria used by researchers in determining the sample include the following; active students in the PJKR study program, not athletes in certain sports, and not experiencing health problems or physical injuries.

The research data was collected by conducting tests and measurements of physical fitness with the Multistage Fitness Test (MFT). The physical fitness test instrument used in this study was the MFT scoring sheet. Data analysis in this study used qualitative descriptive analysis techniques and quantitative data analysis techniques.

RESULT AND DISCUSSION

2
Based on the results of tests and measurements of students' physical fitness before and after the implementation of a physical fitness training program using

the B4Fit exercise model, the following data is shown on the pre-test results of students' physical fitness collected using the multistage fitness test.

Table 1. Pre-test Data of Students' Physical Fitness

Sample Codes	Levels	Shuttle	VO2Max	Category
1.	8	9	42,5	Good
2.	4	6	28,8	Poor
3.	4	7	29,1	Poor
4.	5	6	31,9	Poor
5.	7	1	36,6	Average
6.	6	7	32,2	Poor
7.	7	1	36,6	Average
8.	8	2	40,2	Average
9.	7	2	36,9	Average
10.	6	0	32,9	Poor
11.	8	0	39,6	Average
12.	6	1	30,5	Poor
13.	5	4	31,2	Poor
14.	7	0	36,3	Average
15.	6	0	32,9	Poor
16.	6	4	34,3	Poor
17.	5	6	31,9	Poor
18.	6	6	34,9	Average
19.	7	7	38,6	Average
20.	7	5	37,9	Average
21.	8	2	40,2	Average
22.	7	2	36,9	Average
23.	6	5	34,6	Average
24.	7	5	37,9	Average
25.	8	7	41,8	Average
26.	6	8	35,6	Average
27.	6	9	36,0	Average
28.	6	9	36,0	Average
29.	5	8	32,6	Poor
30.	5	8	32,6	Poor
31.	5	9	32,9	Poor
32.	5	7	32,2	Poor
33.	6	7	35,3	Average
34.	7	1	36,6	Average
35.	7	4	37,6	Average
36.	8	6	41,5	Average
37.	8	3	40,5	Average
38.	6	3	33,9	Poor
39.	6	6	34,9	Average
40.	6	4	34,3	Poor

Table 2. Percentage of students' physical fitness level in the pre-test

Category	Total	Percentage
<i>Very Poor</i>	0	0%
<i>Poor</i>	16	40%
<i>Average</i>	23	58%
<i>Good</i>	1	3%
<i>Very Good</i>	0	0%
Total	40	100%

Based on the data exposure as in tables 1 & 2 above, it was found that 16 of the 40 students who took the pre-test scored the physical fitness level in the poor category. While 23 students are in the average category and 1 student is in the good category. In percentage (%), there are no students who are in the very poor and very good categories. While in the poor category there are 16 students (40%), in the average category 23 students (58%) and the good category as many as 1 student (3%).

Table 3. Post-test Data of Students' Physical Fitness

Sample Codes	Levels	Shuttle	VO2Max	Category
1.	10	6	48,4	Good
2.	9	3	44,1	Good
3.	8	2	40,2	Average
4.	9	2	43,8	Good
5.	9	1	43,4	Good
6.	8	9	39,6	Average
7.	9	0	43,1	Good
8.	9	5	44,7	Good
9.	9	2	43,8	Good
10.	8	4	40,9	Average
11.	9	0	43,1	Good
12.	8	8	39,6	Average
13.	7	9	39,2	Average
14.	9	0	43,1	Good
15.	8	9	42,5	Good
16.	8	9	42,5	Good
17.	8	6	41,5	Average
18.	9	4	44,4	Good
19.	9	7	45,3	Good
20.	9	5	44,7	Good
21.	10	0	46,6	Good
22.	9	1	43,4	Good
23.	8	9	42,5	Good
24.	9	1	43,4	Good
25.	11	3	50,8	Good
26.	8	8	42,2	Average
27.	8	9	42,5	Good

28.	8	9	42,5	Good
29.	7	8	38,9	Average
30.	7	8	38,9	Average
31.	8	9	42,5	Good
32.	9	7	45,3	Good
33.	6	7	35,3	Average
34.	8	1	39,9	Average
35.	9	4	44,4	Good
36.	10	4	47,8	Good
37.	10	3	47,5	Good
38.	8	3	40,5	Average
39.	9	6	45,0	Good
40.	9	4	44,4	Good

Table 4. Percentage of students' physical fitness level at post-test

Category	Total	Percentage
Very Poor	0	0%
Poor	0	0%
Average	12	30%
Good	28	70%
Very Good	0	0%
Total	40	100%

Based on the data exposure as in tables 3 & 4 above, after undergoing a physical exercise program with the B4Fit model, at the time of the physical fitness post-test it was found that 12 students had physical fitness in the Moderate category (30%) and 28 students had physical fitness in the Good category (70%), and there were no students who had physical fitness levels in the Very Poor, Poor and Very Good categories. Based on the results found as shown in table 2 and table 4, the following can be presented data on the percentage increase in the level of physical fitness of students after undergoing a physical exercise program using the B4Fit exercise model.

Table 5. Percentage increase in students' physical fitness level

Category	Pre-test		Post-test	
	Total	Percentage	Total	Percentage
Very Poor	0	0%	0	0%
Poor	16	40%	0	0%
Average	23	58%	12	30%
Good	1	3%	28	70%
Very Good	0	0%	0	0%
Total	40	100%	40	100%

Based on the percentage data of physical fitness levels as in table 5, it was found that changes in **2** the level of physical fitness of students were seen in the Lack category, namely at the time of the pre-test, 16 people (40%) experienced an increase in their total physical fitness level so that in the post-test the percentage was 0%. While the physical fitness of students in the Moderate category also increased, namely at the time of the pre-test, there were 23 people (58%), which turned into 12 people (30%) at the time of the post-test. The increase in physical fitness level in the Good category occurred significantly after undergoing the exercise program, with only 1 person (3%) at the pre-test and increased to 28 people (70%) at the post-test.

Referring to the data as in Table 5, it can be said that there is **2** an increase in the percentage of overall physical fitness of students after undergoing a physical exercise program using the B4Fit exercise model for approximately 3 treatment series. This can occur because the B4Fit exercise model as a whole offers adequate physical activity with appropriate intensity to support the progress of increasing and maintaining students' physical fitness levels. During the implementation of the exercise program, students were given a fairly intense training session in each treatment series, namely for 4 exercises in 1 treatment series for 1 week. With a frequent training frequency and supported by variations and exercise weights that are in accordance with the level of students' physical abilities, the B4Fit training model has real implications for changes in students' physical fitness levels. B4Fit exercises that emphasize breath regulation patterns with well-designed training conditions, namely in the inhale, hold and exhale phases using certain count patterns, significantly influence the improvement of the activity capabilities of the organs of the cardiorespiratory system, namely the heart, lungs and blood vessels. This indirectly contributes to efforts to optimize and maintain the work function of the cardiorespiratory system. The impact of improving the performance of organs in the cardiorespiratory system significantly contributed to the increase in physical fitness levels in the group of students undergoing the B4Fit exercise program. Under these conditions, the systematic and continuous B4Fit training had a

favorable impact on improving the physical fitness level of the students. Another effect that was also noted in the results of the investigation of the students who underwent the B4Fit exercise program was that the quality of sleep improved and became better after undergoing the B4Fit exercise program for 3 series of treatments lasting approximately 3 weeks. This suggests that in addition to supporting the maintenance and improvement of students' physical fitness levels, B4Fit training also makes an important contribution to optimal sleep quality and recovery phase after training.

With these findings, the B4Fit training model is highly recommended for student groups to be able to make this training model as an alternative cardio exercise that can be done regularly and is continuous or continuous so that it has a good impact on maintaining and improving physical fitness conditions. Of course, training for student groups is recommended to remain adjusted to the level of ability and physical condition of each.

CONCLUSION

The implementation of a physical fitness training program for PJKR STKIP Citra Bakti students using the B4Fit training model approach carried out in this study showed a positive effect on efforts to maintain and improve students' physical fitness levels. After undergoing an exercise program for 3 times the treatment series, the students' physical fitness level has increased significantly. This shows that the B4Fit training model has proven effective in supporting efforts to improve and maintain the physical condition of PJKR STKIP Citra Bakti students during the transition period after the co-19 pandemic.

With these results, the B4Fit training model is highly recommended for students to be used as an alternative physical exercise to be carried out systematically and continuously to support efforts to maintain and improve physical fitness levels. With optimal physical fitness, it is expected that students will be able to carry out academic activities on campus more optimally.

REFERENCES

- Bile, R. L. & Tapo, Y. B. O. (2022). Pengembangan model latihan pernapasan berbasis teknik olah napas tradisional NTT *de colores* untuk meningkatkan kesehatan kardiorespirasi mahasiswa selama pandemi covid-19, *Jurnal Pendidikan Olahraga*, (2022) 11 (2) 330-346. doi: <https://doi.org/10.31571/jpo.v11i2.4790>
- Bile, R. L., Tapo, Y. B. O., Lelu, F. D., & Bali, Y. F. (2023). Implementasi program latihan pernapasan untuk pemeliharaan kebugaran kardiorespirasi bagi mahasiswa program studi PJKR STKIP Citra Bakti, *Jurnal Citra Pendidikan*, (2023) 3 (3) 1209-12-17. 1217 <https://doi.org/10.38048/jcp.v3i3.2129>
- Giriwijoyo, S., & Sidik, D. Z. (2017). *Ilmu kesehatan olahraga*. Bandung: PT. Remaja Rosdakarya.
- Christmas BCR, Majed L, Kneffel Z (2019) Physical fitness and physical self-concept of male and female young adults in Qatar. PLoS ONE 14(10): e0223359. <https://doi.org/10.1371/journal.pone.0223359>
- Paula Roldão da Silva, Géssika Castilho dos Santos, Jadson Marcio da Silva, Wayne Ferreira de Faria, Raphael Gonçalves de Oliveira, Antonio Stabelini Neto. 2020. Health-related physical fitness indicators and clustered cardiometabolic risk factors in adolescents: A longitudinal study. *Journal of Exercise Science & Fitness*, 18 (3) 162-167, <https://doi.org/10.1016/j.jesf.2020.06.002>
- Bachmann, J. M., DeFina, L. F., Franzini, L., Gao, A., Leonard, D. S., Cooper, K. H., Berry, J. D., & Willis, B. L. 2015. Cardiorespiratory fitness in middle age and health care costs in later life. *Journal Of The American College Of Cardiology*. 66, (7) 2015. <http://dx.doi.org/10.1016/j.jacc.2015.08.030>
- Irianto, D. P. (2017). *Panduan Gizi Lengkap Keluarga dan Olahragawan*. Yogyakarta: Andi Offset.
- G. Nambi, et al., 2020. Yoga in Burn: Role of pranayama breathing exercise on pulmonary function, respiratory muscle activity and exercise tolerance in full-thickness circumferential burns of the chest. *Burns* (2020), <https://doi.org/10.1016/j.burns.2020.06.033>
- Ghati, N., Killa, A. K., Sharma, G., Karunakaran, B., Agarwal, A., Mohanty, S., Nivethitha, L., Siddharthan, D., & Pandey, R. M. (2020). A randomized trial of the immediate effect of bee-humming breathing exercise on blood pressure and heart rate variability in patients with essential hypertension. *Explore* 000 (2020) 1-8. <https://doi.org/10.1016/j.explore.2020.03.009>
- Shukla M., Chauhan D., Raj R. 2020. Breathing exercises and pranayamas to decrease perceived exertion during breath-holding while locked-down due

- to COVID-19 online randomized study. *Complementary Therapies in Clinical Practice*, (41) 101248, <https://doi.org/10.1016/j.ctcp.2020.101248>
- Grasdalsmoen M, Engdahl B, Fjeld MK, Steingrimsdóttir ÓA, Nielsen CS, Eriksen HR, et al. (2020) Physical exercise and chronic pain in university students. *PLoS ONE* 15(6): e0235419. <https://doi.org/10.1371/journal.pone.0235419>
- Bile, R. L. & Suharjana. 2019. Efektivitas penggunaan model latihan kebugaran “Bbc Exercise” untuk pemeliharaan kebugaran jasmani mahasiswa. *SPORTIVE: Journal of Physical Education, Sport and Recreation* 3 (1), 30-37. <https://doi.org/10.26858/sportive.v3i1.16857>
- Hamzelou, Jessica. 2020. Can breathing exercises help protect you from covid-19? *New Scientist*, (246) 3279, 10-11. [https://doi.org/10.1016/S0262-4079\(20\)30789-2](https://doi.org/10.1016/S0262-4079(20)30789-2)
- Beutler E, Beltrami FG, Boutellier U, Spengler CM (2016) Effect of Regular Yoga Practice on Respiratory Regulation and Exercise Performance. *PLoS ONE* 11(4): e0153159. <https://doi.org/10.1371/journal.pone.0153159>
- Barbagelata, L., Masson, W., Iglesias, D., Lillo, E., Migone, J. F., Orazi, M. L., Furcada, J. M. 2021. Cardiopulmonary Exercise Testing in Patients with Post-COVID-19 Syndrome. *Medicina Clínica* (2021). <https://doi.org/10.1016/j.medcli.2021.07.007>

ORIGINALITY REPORT

8%

SIMILARITY INDEX

7%

INTERNET SOURCES

3%

PUBLICATIONS

3%

STUDENT PAPERS

PRIMARY SOURCES

1	journal.ikipgriptk.ac.id Internet Source	2%
2	jurnal.univpgri-palembang.ac.id Internet Source	2%
3	Submitted to Universitas Pendidikan Ganesha Student Paper	1%
4	e-journal.unair.ac.id Internet Source	1%
5	ojs.unm.ac.id Internet Source	1%
6	Submitted to Townsville Grammar School Student Paper	1%

Exclude quotes Off

Exclude bibliography On

Exclude matches < 1%