

## Exploring the Impact of Tabata Protocol among Manila Police District Personnel

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### Abstract

The purpose of the study is to determine the effect of the Tabata exercise program among obese 1 members of the Manila Police District and determine the acceptability of the Tabata exercise program among the members of the Manila Police District. Ericksen (2014) stated that full-body workouts are an excellent way to strengthen bones, build muscle, and avoid injury, which is one of a police officer's main concerns. As a result, this study aims to determine how a Tabata program improved body composition and aerobic capacity under the category of obese class 1. Second, to determine the acceptability of the Tabata exercise program among the members of the Manila Police District. The findings show that a 12-minute Tabata session for 12 weeks, which included repeated rounds of body-weight and plyometric activities meets physical fitness test measurement standards in the Philippine Military Academy for improving cardiorespiratory endurance. Tabata exercise was found to be effective in improving body mass while providing the most benefits in the shortest period. After the intervention, the acceptability of the Tabata was evidenced by the increase in involvement in exercise and healthy living. Furthermore, the many rounds of exercise were well tolerated by the subjects and resulted in a higher caloric expenditure than would be expected with only 4 minutes of activity.

**Keywords:** Tabata, Full-body workouts, Aerobic Capacity, Body composition, Plyometric.

### INTRODUCTION

Physical activity in everyday life can be classified as occupational, sports, conditioning, household, or other. This explains that physical activity is a type of movement that aims to maintain or improve fitness levels. It is meticulously planned, structured, and repetitive. (Caspersen et al., 1985). Any skeletal muscle-driven movement that involves an energy expenditure is considered physical activity by the (World Health Organization). All movement, whether done for recreation, transportation to get to and from locations, or as part of a person's job, is considered physical activity. In addition, (Sheink & Pyanzina, 2020) today's fitness industry serves a diverse range of demands, such as the normalization of body weight. This component has several choices and enables you to complete exercise activities more effectively and effectively with individuals who have participated in a fitness club. Moderate to high-intensity training is beneficial to health. Recent research shows that regular exercise is the most effective antidote to the

emergence of long-term and chronic diseases. (Kukic et al., 2020), stated that a 12-week fitness training program with a calorie-restricted diet can alter the body composition and lower the related health risks. Moreover, the key to any weight-loss or weight-maintenance plan, (Mayo Clinic, 2021), is to be physically active and fit since your body dissipates more energy when you move around (calories).

### Tabata

A Tabata is a high-intensity exercise protocol for weight loss and fitness. The best aspect of Tabata is that you may utilize whichever routine is ideal for you when it comes to the actual workout such as elements of CrossFit, Boot Camp, and Circuit Training, and it allows people to save a lot of time. Furthermore, the intense workout is quick, with a maximum effort formula that many individuals consider Tabata as one of the most challenging yet rewarding exercises they have ever probably done. According to (Del Monte, 2013), this exercise provides the greatest benefit while requiring the least time to achieve those results.

Dr. Izumi Tabata, a Japanese scientist, and researcher conducted a study using an interval-based training model

inspired by the name Tabata. His goal was to see if athletes would benefit from 20 seconds of work, 10 seconds of rest, and eight seconds of demonstration to demonstrate the number of rounds performed, also known as 20/10/8. A Tabata circuit would take four minutes to complete, but those four minutes could push your body to its absolute limit. The Tabata program is an effective method for losing weight and body fat. It provides an excellent cardio workout as well as a solid muscular workout when combined with resistance training.

The most effective way to increase both aerobic and anaerobic fitness and work is by stressing the system maximally, for it to be effective, it must be exceedingly challenging. Furthermore, the Tabata protocol can be used with a wide variety of exercises and equipment, including push-ups, planks, squats, stability ball exercises, resistance bands, weights, and benches. Once the individual understands the concept, they can perform two or three different Tabata routines with as many as twelve different exercises and perform two of them in a single session. According to the study of (Fortner 2013), the Tabata interval protocol might be quick, but it also increases metabolic and cardiovascular indicators including heart rate, % of VO<sub>2</sub>peak, and blood lactate levels in comparison to a conventional endurance routine. This implies that the Tabata training method represents an effective way of reducing body weight and body fat. As for fitness, the Tabata protocol is an effective technique for losing weight and body fat. (Taufikkurrachman, 2020). In addition, you can choose to train flexibly or use the Tabata protocol to target significant muscle groups like the legs, backs, cores, and upper limbs. You can perform movements like squats, push-ups, lunges, planks, and jump squats during this high-intensity workout with equipment and bodyweight training. (Wellness Evolution).

Like all HIIT exercises, the Tabata protocol is excellent for obtaining a high level of fitness quickly and for preparing for sports like running, boxing, or football, which place a high value on both cardio and muscle power. (Murawska-Cialowicz et al., 2020) found that fitness levels and body composition are all significantly improved with HIIT training using a Tabata protocol.

All these summarized Dr. Izumi Tabata, findings that high-intensity interval training produces significant improvements in anaerobic capacity, which raises anaerobic endurance. One can get a good workout with a warm-up and cool-down of five to 10 minutes each. The 20-second intervals may not seem particularly changing, if you are performing at your peak, those 20 seconds will seem interminable. Before starting a Tabata workout, a person should warm up for around a minute. (Emett, 2022) stated that the most accurate indicator of cardiovascular fitness as well as a reliable predictor of morbidity, mortality, and all-cause mortality is V<sub>O</sub>2max. Therefore, even when other risk factors are present, an increase in V<sub>O</sub>2max (i.e., the functional limit of the cardiorespiratory system) can lower the risk of cardiovascular disease and mortality (e.g., aging, hypertension, diabetes, smoking, and obesity). Exercise training is an effective means of increasing V<sub>O</sub>2max, he added. As a result, specific guidelines for exercise intensity are needed to provide the best possible gains in cardiorespiratory fitness.

Meanwhile, (Wachner, 2020) suggests adding the Tabata exercise once a week to observe how your body responds. It was said that the idea of interval training is not a new concept; it was extensively researched in the 1970s together with a nutritious diet and at least 150 minutes of moderate-intensity exercise per week as part of a healthy weight loss treatment plan. Consequently, anyone can improve one's fitness level and conduct an assessment of the limitations and progress of the training phase during the Tabata exercise since Tabata training has several features, such as the ability to burn calories, increase metabolism during and after a workout, be effective and efficient in its execution, improve anaerobic and aerobic systems, and be utilized for a variety of activities. (Taufikkurrachman et al., 2020). When compared to traditional cardiovascular training, (Viana et al., 2018), pointed out that the Tabata protocol seems to produce improvements in aerobic power that are comparable. The benefits seem to be predominantly the results of peripheral adaptations, he added. The Tabata method is a great technique to work out intensely quickly.

### **Tabata is a HIIT**

Tabata interval workouts have been shown in studies to be more effective than steady-state cardio workouts for improving aerobic and anaerobic fitness as well as fat loss. Interval training, as used in Tabata, is not a new concept, but it has grown in popularity in recent years. Intervals were originally intended to be used for running. Tabata training for runners might consist of 20-second sprints followed by 10 seconds of rest. This exercise improves

cardiovascular fitness while also increasing metabolism and heart rate. It was supported by [\(Yan & Cheng 2022\)](#) that one of the most efficient high-intensity intermittent training techniques is Tabata training. The study [\(Olson, 2014\)](#), proves that the group who completed HIIT sessions lost significantly more fat mass than the second group of participants who trained for a longer period doing steady-state, continuous, aerobic workouts while doing shorter workouts that burnt percent less energy. Therefore, this workout is efficient in promoting physical fitness, reasonably quick, and typically equipment-light. Tabata is a type of High-intensity interval training (HIIT) that has the potential to be a fast method for improving health. And it was proven that HIIT training burns more calories than other exercises, especially post-workout following a training phase known as "EPOC," (Exercise Post-Exercise Oxygen Consumption) which is a condition of excess oxygen after exercise. [\(Petridou et al., 2020\)](#). In addition to enhancing fitness levels that focus on both aerobic and anaerobic energy expenditure systems, Tabata is effective to stimulate weight burning and improve blood pressure, insulin sensitivity, and glucose management in a short period. For weight management, changing one's physical activity level, and achieving fitness goals, it is essential to be able to properly and portably monitor one's energy expenditure (EE) throughout these activities.

When you perform the exercises at a very high intensity, your body will have to work much harder to keep it up. This causes the heart to beat rapidly and the metabolism to speed up, which usually works if the goal is to lose fat. This process ensures that the metabolism remains elevated not only during but also after the workout. This means that the body will continue to burn fat for hours afterward [\(Tabata, 2019\)](#). The first author [\(Tabata, 1996\)](#) revealed that a 4-minute aerobic exercise routine improved fitness. The entire session is 14 minutes long and involves a 5-minute warm-up and 4 minutes of vigorous workout with a 5-minute cooldown. The 4 minutes of vigorous exercise consists of 8 sets of 20 seconds of full exertion activity in your chosen exercise followed by a 10-second rest. Long-distance runs, for example, do not promote skill-related components and instead develop a type of endurance that is counterproductive to physical needs. [\(NCJRS, 1978\)](#) explains that individuals like cops need to integrate health and skill-related fitness components to increase their fitness levels since there might be situations where a responding officer's fitness might rescue a life. For instance, interval running is a great workout to add new difficulties to your routine to strengthen your cardiovascular system and increase your metabolism. According to [\(Quinn, 2022\)](#), simply varying the pace of running with slower jogging recovery periods, may maximize your workload. Therefore, a good interval running strategy will help you lose weight by burning more calories than a regular run and during a workout, your body expends more energy to move the same mass at a faster rate. Thus, the fast-twitch muscle fibers are activated, which uses more energy than other muscle fibers since they function so quickly. All of this results in increased efficiency. [\(Alonzo-Fernandez, 2019\)](#), pointed out that functional HIIT or Tabata has the potential to become a reliable strategy for managing obesity due to its impact on body fat reduction in the individuals involved. Because of the short workouts, they can be easily and frequently incorporated into a fitness program. Compared to almost all conventional physical activities, Tabata is a special type of cardiovascular exercise that offers more health advantages. Tabata training is a method of intense exercise that consists of eight rounds. There is eight rounds total, with each round lasting 20 seconds of intensive action and 10 seconds of rest. Furthermore, the best thing about Tabata training is that any workout, whether performed in the gym or outside, including sprinting and weightlifting, may be used. In layman's words, this type of workout attempts to get you exercising at 170% of your VO<sub>2</sub> max or 100% of your maximum effort [\(Sunwarrior, 2020\)](#).

As a result, incorporating the Tabata protocol in weight loss and body composition in a short period with or without equipment will be a less expensive but effective weight loss method [\(Nishtha & Alpa 2020\)](#). Nonetheless, the majority of HIIE studies focused on short-term (2–6 weeks) skeletal muscle adaption techniques, sexes, genders, and BMIs must be included before, during, and after the training program to more accurately assess the effectiveness of Tabata and HIIT programs in the prevention and management of metabolic conditions. It was proven that this high-intensity exercise has been shown to significantly enhance glycemic control which refers to the method of maintaining optimal blood glucose levels in diabetes or inactive individuals as explained by [\(Babraji et al, 2009\)](#). Tabata is a time-efficient training protocol that has the potential to be used to reduce metabolic risk factors in sedentary populations that would otherwise shun time-consuming regular aerobic exercise routines. The training protocol may now be applied to almost every movement that has a formula of 20 seconds of labor, 10 seconds of rest, and then repeat.

Regular physical exercise is key for promoting health and your body requires exercise to maintain strength, stamina, and normal blood flow. Incorporating the Tabata protocol into your daily activity can improve your cardiovascular health, get fit and enjoy the wide variety of advantages that regular exercise provides. However, there were numerous studies have employed longer protocols to evaluate the effect of HIIE on subcutaneous and abdominal fat loss. Hence, regular HIIE results in considerable improvements in anaerobic and aerobic fitness as well as substantial oxidative and glycolytic muscle adaptations ([Boutcher, 2010](#)).

The Police Regional Office 9 (PRO 9) begins implementing the Body Mass Index Program and ongoing fitness training such as Zumba and cardio exercise for PNP personnel due to the rise in overweight PNP officers. Cops under the category of obese class 1, were given 36 weeks to reduce weight while those cops categorized as obese class 2 and obese class 3 will have 48 and 60 weeks respectively to normalize weight.

This study examined the effects of Tabata on police officers who were expected to actively participate in the PNP's fitness program and were classified as obese class 1 (low risk). In the Philippine National Police Memorandum No. U28-11-2019 approved by PNP Chief General Archie Francisco Gamboa, he recommended BMI range for cops by the Philippine Association for the Study of the Overweight and Obesity (PASOO). According to MedlinePlus (2020), BMI is frequently used by experts to evaluate if a person is overweight. Based on your height and weight, the BMI calculates your body fat percentage. It stated also that beginning at 25.0, the higher your BMI, the more likely you are to acquire obesity-related health problems. These BMI ranges are used to define risk levels: If your BMI is between 25.0 and 29.9, you are overweight (but not obese).

Obesity class 1 (low-risk) if BMI is 30.0 to 34.9

Obesity class 2 (moderate risk) if BMI is 35.0 to 39.9

Obesity class 3 (high-risk) if BMI is equal to or more than 40.0.

Following the expanded BMI acceptable standard, and the Tabata protocol of moderate to high-intensity workouts. The working hypothesis of the present study was to determine whether or not the Tabata intervention would be effective in lowering the body mass index of police officers who were classified into the obese class 1 category. And to determine the acceptability of Tabata protocol among the police officers classified as obese class 1.

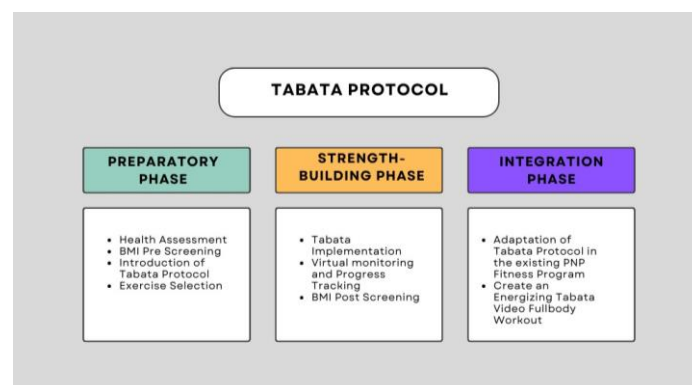
## AIM & OBJECTIVES

The purpose of this study is to investigate the impact of the Tabata protocol as part of the fitness program in the Manila Police District rather than the typical cardio exercise as well as to seek improvement in the body composition of overweight cops in the obese class 1 category.

Specifically, this study aims:

1. To determine the effect of the Tabata exercise program among obese 1 members of the Manila Police District.
2. To determine the acceptability of the Tabata exercise program among the members of the Manila Police District.

## The Conceptual Framework



## 1. METHODOLOGY

### 2.1 Design

The study was an experimental research design. As explained by (Babbie, 1998) "experimental research" adheres to a design of scientific research. It involves a hypothesis, a controllable variable, and variables that can be monitored, calculated, and compared by the researcher. Most consequentially, the environment is controlled while experimental research is being conducted. The researcher gathers information, results will confirm or disprove the hypothesis. This research method is known as testing hypotheses or using a deductive method of research. The dependent variable in this study is the Effectiveness of the Tabata protocol among the Manila police district personnel which includes the classified obese class 1. The experimental research method is considered appropriate for this study as it will help the researchers to determine the significant difference between the pre-test and post-test of the respondents.

## RESULTS

Table 1

Test of Significance between the Before and After of the Effect of the Tabata Exercise Program Among Obese 1 members of Manila Police District

	Mean	SD	Computed t-value	Tabular t-value	Decision	Interpretation
Before	31.65	2.32	12.24	1.70	Reject H <sub>0</sub>	Significant
After	28.47	1.93				

### 2.2 Respondents and Locale

The study included 534 non-commissioned officers from the Manila Police District in United Nations, ranging from Patrolman / Patrolwoman (Pat) to Police Executive Master Sergeant (PEMS). The researchers determined the obese class 1 category and obtained consent and health certificates. The researchers used pre- and post-screenings to evaluate the change in BMI as well as the effectiveness of the Tabata. Warm up for approximately one minute before beginning the Tabata protocol. A V02 max50% is advised.

### 2.3 Instruments

The researchers used the pretest-posttest design of Physical Assessment (BMI e.g. height, weight, gender, and age). BMI has been useful in population-based studies. Because of its widespread acceptance in defining specific categories of body mass as a health issue. Meanwhile, the core idea of the pretest-posttest design is the collection of a pretest measure of the desired outcome before the application of intervention of the Tabata protocol, followed by a posttest on the same measure after the implementation of the Tabata protocol.

### 2.4 DATA GATHERING AND ANALYSIS

The researchers first sought permission from the good office of the Manila Police District Director PBGEN. Bernabe M. Balba to allow them to conduct a research study entitled “Exploring the Impact of Tabata Fitness Program among Manila Police District Personnel” and use their office as their respondents given the fact that all data of the personnel must be treated with confidentiality. After the letter was approved, the researchers asked for their permission to assess the pre-screening and post-screening of their BMI in the obese class 1 category. The following data must be gathered to determine whether the Tabata exercise is effective among PAT and PEMS respondents. To assess the effectiveness of Tabata PAT and PEMS classified obese class 1 were given 12 weeks

to perform a 12-min Tabata protocol. At each stage of the Tabata round, the patterns used were different. The same exercise was repeated for 4 minutes during the involving stage.

#### The 12-minute Tabata Protocol:

4-min STAGE 1	4-min STAGE 2	4-min STAGE 3
March Steps	Standing toe touches	High Knees Run
Deep Squat	Knee Elbow Plank	Plank with Side Steps
Line Jumps	Cross Jacks	Mountain Climber
Alternate Lunges	Shoulder tap Plank	Russian Twist

The Statistical Package for the Social Sciences (SPSS) software was used in the statistical analysis of data. Specifically, all the data gathered were subjected to the following statistical treatment; mean, standard deviation, and T-test to establish whether there is a significant difference between the pre-test and post-test of respondents. Mean, to get the average BMI index of the respondent and ts, and the standard deviation to know the dispersion of the data.

#### ETHICAL CONSIDERATIONS

The researchers sought permission from the following individuals, first is from the office of the Manila Police Director PBGEN. Bernabe M. Balba at the Manila Police District Headquarters in U.N. Avenue Ermita, Manila. Secondly, the researchers obtained permission from the Directorate for Human Resource and Doctrine Development Office (DHRDD), the office in charge of the continuous and quality training of PNP personnel headed by PLTCOL Maria O. Agbon with the consultation of PCMS Erbert Buenaventura and PSSg Gian Mariz Flores from the Unit Training Program Division (UTPD) – whose sections are as follows: In-Service Training Section (ISTS) that develops training programs to improve the unit's (MPD) capability in various aspects such as Gender and Development/Moral Enrichment Program and The PNP's physical fitness and sports development section (PFSDS) that creates the PNP's physical fitness and sports development program and monitors the administration of the physical fitness tests. Finally, to PSSg Shan Dave Tupas for allowing us to access and evaluate the respondents' BMI data from the PEMS and PATS classified as obese class 1 before implementing the Tabata protocol.

#### RESULTS AND DISCUSSIONS

The Table showed the significant differences between before and after the effect of the Tabata Exercise Program among obese 1 members of the Manila Police District.

The result shows that the computed value of 12.24 is significant beyond the 0.05 level. ([Andrade, 2019](#)) believes that 5% is a reasonable cut-off for statistical significance, he pointed out what P 0.05 means, discusses the concept of statistical significance and why it has been widely criticized and suggests alternative and possibly better ways of interpreting statistical testing results.

After a careful analysis of the results, the null hypothesis in this study is Tabata exercise is rejected and does not affect the improvement of the BMI of Manila police officers. Since the computed t-value is greater than the critical t-value. It claims to support the alternative hypothesis that the Tabata exercise was effective, implying that members of the Manila Police District improved their BMI after the intervention. Moreover, the acceptability of the Tabata was evidenced by the increase in involvement in exercise and healthy living. Tabata is shown to be a great way to spice up your workouts, burn more calories, and get more out of your exercise time. As expressed by ([Wahner, 2020](#)), try adding Tabata training once a week to see how your body responds. Since interval training



is not a modern concept; it is extensively examined in the 1970s with a healthy diet and at least 150 minutes of moderate-intensity exercise per week required for a healthy weight loss treatment plan.

Tabata workout exercise has a marginal effect on body fat; however, other types of HIIE can have a greater influence on body composition. Emerging research into high-intensity intermittent exercise (HIIE) suggests that it may be more effective than other forms of exercise at reducing subcutaneous and abdominal body fat as stated (Boutcher, 2011).

## CONCLUSIONS AND RECOMMENDATIONS

At the end of the study, the Tabata protocol was found to be effective in improving the body mass index of the PEMS and PATS classified as obese class 1 and providing the maximum benefits in the shortest time in the Manila Police District's fitness program. As a result, the null hypothesis in this study is that the Tabata exercise does not affect the BMI improvement of Manila police officers. It claims to support the alternative hypothesis that the Tabata exercise was effective, indicating that Manila Police District officers improved their BMI following the intervention. Furthermore, Tabata's acceptability was proven by an increase in their engagement in exercise and a healthy lifestyle.

According to the findings. There were recommendations made. The researchers will offer and promote a Tabata video demonstration for the Manila police department to employ whenever possible as part of their UTPD fitness and development program. The video will cover instructions spanning from warm-up, dynamic stretching, and exercise proper (using the TABATA protocol), until cool down.

In future studies, researchers suggested that the police administration initiate various fitness and health programs. Thus, police officers should take an effort to exercise even if they are at home or alone for their benefit, such as through home fitness workouts or running outdoors.

## REFERENCES

- [1] Alonso-Fernández D., R.Fernández-Rodríguez (2019). Impact of a HIIT protocol on body composition and VO<sub>2</sub>max in adolescents Impact d'un protocol HIIT sur la composition corporelle et VO<sub>2</sub>max chez les adolescents 1. Retrieved from: <https://www.sciencedirect.com/science/article/abs/pii/S0765159719300668on>
- [2] Andrade, Chittaranjan (2019). The P Value and Statistical Significance: Misunderstandings, Explanations, Challenges, and Alternatives. *Indian J Psychol Med.* 2019 May-Jun; 41(3): 210–215. DOI: 10.4103/IJPSYM.IJPSYM\_193\_19
- [3] Retrieved from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6532382/> on Jul 2021.
- [4] Babbie, Earl. *The Practice of Social Research.* 8<sup>th</sup> ed. Detroit: Wadsworth Publishing Company, 1998. Accessed from: [https://cemast.illinoisstate.edu/downloads/hhrs/types\\_of\\_research.pdf](https://cemast.illinoisstate.edu/downloads/hhrs/types_of_research.pdf) on September 2022.
- [5] Babraj John, Vollaard, Keast, Guppy, Niels Cameron Cottrell, Fergus Greg Timmons, James. (2009). Extremely short-duration high-intensity interval training substantially improves insulin action in young healthy males. PMID: 19175906 PMCID: PMC2640399 DOI: 10.1186/1472-6823-9-3 [Google Scholar]
- [6] Boutcher, Stephen (2010, November). High-Intensity Intermittent Exercise and Fat Loss.
- [7] <https://www.hindawi.com/journals/jobc/2011/868305/>
- [8] Caspersen C J, Powell K E, and Christenson, G M (1985 Mar-Apr).
- [9] Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research.
- [10] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1424733/>
- [11] Del Monte, Flavia (2013 April 23,).The Tabata Revolution Explained: What, Why, And How to Tabata. <https://breakingmuscle.com/the-tabata-revolution-explained-what-why-and-how-to-tabata/>
- [12] Emmet Crowley, Cormac Powel (2022). The Effect of Exercise Training Intensity on VO<sub>2</sub>max in Healthy Adults: An Overview of Systematic Reviews and Meta-Analyses. Accessed on June 2022.
- [13] Fortner, H. A.; Salgado, J.; and Holmstrup, M. E. (2013) "Differential Response to Tabata Interval Versus Traditional Kettlebell Training Protocol," *International Journal of Exercise Science: Conference Proceedings*: Vol. 9: Iss. 1, Article 21.  
Available at: <https://digitalcommons.wku.edu/ijesab/vol9/iss1/21>

- 
- [14] Kukic Filip, MA, Dopsaj, Milivoj PhD, Dawes, Jay PhD. Effects of a 4-Week Training Intervention on Estimated VO<sub>2</sub>max and Body Composition Among Female Police Officers: Pilot Study Retrieved from: <https://core.ac.uk/download/pdf/196618488.pdf#page=49> on (September 15, 2022)
- [15] Mayo Clinic (2021, Dec 7). Exercise for weight loss: Calories burned in 1 hour
- [16] <https://www.mayoclinic.org/healthy-lifestyle/weight-loss/in-depth/exercise/art-20050999>
- [17] Body mass index Accessed on <https://medlineplus.gov/ency/article/007196.htm> on August 22, 2022
- [18] Murawska-Cialowicz Eugenia 1,\*ORCID,Pawel Wolanski 1,Jolanta Zuwala-Jagiello 2,Yuri Feito 3ORCID,Miroslav Petr 4,Jakub Kokstejn 4,Petr Stastny 4,\*ORCID and Dawid Goliński 1
- [19] 1 (2020, May 20). Effect of HIIT with Tabata Protocol on Serum Irisin, Physical Performance, and Body Composition in Men.
- [20] Int. J. Environ. Res. Public Health 2020, 17(10), 3589; <https://doi.org/10.3390/ijerph17103589>
- [21] National Criminal Justice Reference Service (1978). Physical- Importance for Police Officers Training Key No 265. Retrieved from: <https://www.ojp.gov/ncjrs/virtual-library/abstracts/physical-fitness-importance-police-officers-training-key-no-265> on September 25, 2022.
- [22] Nishtha Shah, Alpa Purohit (2020, December). Effect of Tabata Training for Weight Loss in Overweight Middle Age Female of Ahmedabad City: An Experimental Study. ([www.ijshr.com](http://www.ijshr.com))
- [23] International Journal of Science and Healthcare Research 282 October-December 2020; Volume 5, Issue 4. [Google Scholar]
- [24] Olson, Michele Ph.D., FACSM, CSCS (October 2014). TABATA: It's a HIIT!
- [25] ACSM's Health & Fitness Journal: September/October 2014 – Volume 18 – Issue 5 – p 17-24 DOI: 10.1249/FIT.0000000000000065 [Google Scholar]
- [26] Panuganti K; Nguyen M; Kshirsagar K (2022). Obesity. Retrieved from: <https://www.ncbi.nlm.nih.gov/books/NBK459357/>
- [27] Petrofsky J, Batt J, Morris A. Weight loss and cardiovascular fitness during a 1-week diet and exercise program. J Appl Res. 2012; 6(1):51–61. [Google Scholar]
- [28] Petridou A, Siopi Mougiou V. Exercise in the management of obesity. Metabolism [Internet]. 2019; 92:163–Available from: <https://doi.org/10.1016/j.metabol.2018.10.009> [Google Scholar]
- [29] Quinn, Elizabeth (2022). Interval Training Workouts Build Speed and Endurance. Retrieved from: <https://www.verywellfit.com/interval-training-workouts-3120774> on September 23, 2022
- [30] Sunwarrior (2020, January 9). 4 Benefits of Tabata Training. <https://sunwarrior.com/blogs/health-hub/4-benefits-of-tabata-training>
- [31] Tabata I, Nishimura K, Kouzaki M, Hirai Y, Ogita F, Miyachi M, Yamamoto K (1996) Effects of moderate intensity-endurance and high intensity-intermittent training on anaerobic capacity and VO<sub>2</sub>max. Med Sci Sports Exerc Tabata 327–1330
- [32] Tabata, Izumi (2019). Tabata training: one of the most energetically effective high-intensity intermittent training methods. The Journal of Physiological Sciences volume 69, pages 559-572. Accessed on September 2022. [Google Scholar]
- [33] Taufikkurrachman<sup>1</sup>, Amy Nilam Wardathi<sup>2</sup>, Afif Rusdiawan<sup>3</sup>, Reno Siska Sari (January 2020). The Effect of Cardio and Tabata Exercises on Decreasing Body Fat, Weight, and Increasing Physical Fitness. DOI:10.4108/eai.22-7-2020.2300320
- [34] Conference: Proceedings of the 5<sup>th</sup> International Seminar of Public Health and Education, ISPHE 2020, 22 July 2020, Universitas Negeri Semarang, Semarang, Indonesia.
- [35] Waehner, Paige (2020). Tabata Training and How It Works. Retrieved from: <https://www.verywellfit.com/tabata-training-definition-1230982> on March 2021 Wellness Evolution? What is Tabata Training. Retrieved from: <https://www.wellnessevolution.it/en/hiit-new100/tabata/> on August 31, 2022
- [36] World Health Organization (WHO) Global action plan for the prevention and control of non communicable diseases 2013–2020. Geneva: World Health Organization; 2013. [Google Scholar]
- [37] Yan Yiping, Chen, Quinguo (February 2022). Energy Expenditure Estimation of Tabata by Combining Acceleration and Heart Rate. 2022 DOI: 10.3389/fpubh.2021.804471. Published: 07 February

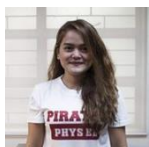


- [38] Viana, Ricardo Borges Barbosa de Lira, Claudio Andre, Naves, João Pedro Araújo Coswig, Victor Silveira Del Vecchio, Fabrício Boscolo, Gentil Paulo (2018, April 2). Tabata protocol: a review of its application, variations, and outcomes. <https://pubmed.ncbi.nlm.nih.gov/29608238/> Pages: 1-8 First Published: 02 April 2018 [Google Scholar]

#### Authors Bionote



Anna Leigh B. Botones has been working as a consultant for private companies, specializing in organizing recreation and teambuilding events. Her expertise lies in Sports and Wellness Management, and she has dedicated 15 years to teaching Physical Education and Sports. Currently, she holds the position of Chairperson of the Physical Education Department at Lyceum of the Philippines University. She completed her M.A. in Physical Education and Sports at the Polytechnic University of the Philippines – Graduate School and is currently pursuing her EdD with a focus on Educational Management. In addition to her professional endeavors, Leigh is the owner and founder of "WALLS ARE BAD," a clothing business and advocacy group that champions outdoor recreation and community outreach. Her commitment to community service was recognized in 2017 when she received the Outstanding Alumni Award for Community Service from Canossa Academy Lipa City. This award acknowledged her contributions, including providing sports clinics in underserved communities across various parts of Luzon.



Shobie Roselle S. Vicente completed her undergraduate degree at Arellano University - Legarda Campus in 2014, majoring in Music, Arts, Physical Education, and Health. In 2018, she earned her graduate degrees from the National Teachers College, including a Master of Arts in Education with a major in Physical Education and a Bachelor of Elementary Education with a specialization in Special Education. She is a certified Zumba Instructor and specializes in Modern Dance. She was a former Chair of the Department of Physical Education and serves as an Active Reservist Navy Officer.