



Review Article

## High intensity interval training on physical fitness

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### ABSTRACT

*A good high intensity interval training program can aid with daily tasks, endurance, physical performance, and sports. This article examines the research on high intensity interval training. This article aims to determine the effectiveness of high-intensity interval training on fitness and endurance. Data sources were taken from Scholar, Scimago Jr., Wiley Online Library, Springer. Search data ranges from 2015 to 2023. The method of implementing activities uses the literature review method. In this article, it is recommended that high intensity interval training should be done regularly with the right intensity and sufficient duration to achieve optimal results. The results of the review concluded that high intensity interval training can be done outside or inside the house which is suitable for athletes and non-athletes because it can increase muscle strength, reduce high blood pressure, improve cardiorespiratory fitness, burn fat, and help cure diabetes. In conclusion, high intensity interval training has an influence on changes in improving performance, health, and endurance. This strength training can further be developed or tested with various variables, subject characteristics, and a larger population. HIIT exercise can greatly increase physical performance. Optimal physical ability is intended to increase the body's metabolic system, cardiovascular fitness, and endurance, as well as influence health levels. HIIT is a quick and effective exercise that can be done both indoors and outdoors.*

**Key words:** *high intensity interval training, physical fitness, endurance*

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## INTRODUCTION

The level of physical fitness of a person dictates how quickly they can do everyday duties without being unduly weary while still having energy left over to enjoy their leisure time (Hernawan et al., 2021). Physical fitness includes physical exercise. A range of factors influence success in sports activities, including physical fitness, technique, tactics, and psychology. Regular engagement in sports activities is ideal for preparing the body's performance for demanding demands such as those encountered in athletic settings (Ghram et al., 2021). Physical fitness is one of the characteristics that is highly important to boost achievement not only for athletes or sportsmen, but also for non-athletes to maintain physical and spiritual health (Hernawan et al., 2021). Most people nowadays don't pay as much attention to their physical health because of their hectic lifestyles. Furthermore, the Covid-19 pandemic requires people to work from home, often doing passive rather than active employment. Physical fitness is directly tied to a person's capacity to function successfully throughout work-related activities. A physically fit individual is one who does daily chores to the best of their ability without becoming exhausted (Suryadi et al., 2021). Based on this remark, it may be deduced that physical fitness is an important factor in increasing achievement, preserving bodily and spiritual health, and supporting daily effort without becoming unduly exhausted.

Students must be physically fit to study comfortably and get their best results. Students, as the nation's future generation, must be healthy and fit. In response to the importance of physical fitness, the government has made an effort to include physical education, sports, and health courses in the primary and secondary school curricula in Indonesia (Astuti et al., 2020). There are numerous positive effects and clear evidence of the benefits of exercising, beginning with improving one's body health and progressing to sports being an activity to establish friendship between communities around the world, as well as in Indonesia with sports competitions that are held or competed in order to foster good togetherness (Rozi et al., 2021). According to this quotation, physical

fitness is part of the government's efforts to prepare the nation's next generation of achievers. It is thought that athletics can boost health.

Gymnastics, gym, and other physical activity programs are currently available. This is purely for the purpose of maintaining bodily fitness and endurance. High-Intensity Interval Training (HIIT) is one of the physical activities that requires little time but yields excellent benefits. (Leahy et al., 2020). High-intensity interval training (HIIT) is a type of exercise that blends high-intensity activity with moderate or low-intensity exercise. This training is done at regular intervals, which causes the heart to work harder in order to boost oxygen consumption and the body's metabolism (Widhiya & Utomo, 2020). The phrase states that the goal of physical exercise programs is to maintain fitness and endurance, and the definition of High-intensity interval training (HIIT).

High-intensity interval training (HIIT) is made up of short- to medium-duration, high-intensity cycles. Each cycle is broken up by rest periods of light-intensity exercise (Boereboom et al., 2019). High-Intensity Interval Training is particularly beneficial since it can improve cardiac performance, influencing the body's metabolism, which also increases dramatically. Metabolism in this context refers to the body's ability to transform fat into energy. In addition to raising metabolism during activity, it also increases during rest, so that even when the body is at rest, it is still burning fat (Cemara & Fauqi, 2022). High-Intensity Interval Training (HIIT) has been shown to have a good effect on physiological, functional, and motor alterations, as well as provide considerable improvements to physical fitness (Sartono & Adityatama, 2020). The key to HIIT training success is that the exercise work duration is ideal and interspersed with short rest times (Puji et al., 2019). According to this quote, high-intensity interval training consists of multiple short, medium, and long-duration cycles. High-Intensity Interval Training can improve cardiac performance, which affects the body's metabolism and causes it to rise dramatically.

A measurable increase in exercise will boost metabolism and convert stored fat into energy, while the quality of work of essential organs will improve as a result of the adaptation process (Santos et al., 2020). High-Intensity Interval

Training and Circuit Weight Training are two exercise programs for lowering fat percentage and enhancing essential lung capacity. High-Intensity Interval Training improves lung physiology and enhances oxygen usage, which is important in the fat-burning process. Circuit weight training routines develop leg muscle strength, hand muscle strength (grasping, pushing, pulling), upper body muscle strength, abdominal muscles, arm muscles, and shoulders greatly (Blackwell et al., 2021). According to the quote above, an exercise program reduces fat percentage, boosts vital lung capacity, increases energy generation, and improves muscle function.

In Costigan et al.'s study, health-related fitness in teenagers was investigated using data collection methods and thorough meta-analysis tools, as well as potential modifiers. The following distinction exists between past study and present research: participants in previous studies were young people who had not had their fitness levels examined. The prior study required adolescents between the ages of 13 and 18. In the previous study, the impacts of HIIT resulted in statistically insignificant interventions in waist circumference and muscular fitness (Costigan et al., 2015). High-intensity interval training can be done for the general public, including non-athletes and athletes, for the current study, where the training can increase fitness and endurance.

Previous research (Herdayanti et al., 2021; Wibowo, 2020) found that the literature sources for this research still needed to be more comprehensive and contemporized. Some of the sources cited could be more credible. In this case, updating the literature review is needed. The author sees comprehensive writing opportunities related to this matter. With comprehensive information and credible sources, it is hoped that it will complement previous research and become a reference for future research. Existing research discusses performance rather than physical fitness. This study aimed to determine the effectiveness of high-intensity interval training on physical fitness.

## METHOD

The method used in this article review uses the literature review method by searching literature from 4 sources, namely Scholar, Scimago JR, Wiley Online Library, and Springer, with the keywords "High Intensity Interval Training on physical fitness". The expected results are to obtain new knowledge so that it can be used to understand, solve, and anticipate problems. This study aimed to determine the effect of HIIT on physical fitness and endurance. The stages that are passed in the literature review method are:

1. Formulating research questions
2. Determine inclusion and exclusion criteria
3. Literature search
4. Article identification
5. Qualitative analysis

### Data Collection

Data collection is the process of gathering research data. The data collected in this study are secondary data obtained from prior research results published in respected journals in scientific papers.

### Inclusion Criteria

The inclusion criteria in this study are eligible for selection if there are the following criteria:

1. The data used only relates to HIIT on physical fitness.
2. Search through reputable databases online.
3. Articles or journals in Indonesian and English.
4. Data used in the 2018-2023 timeframe.
5. Data is an original article.

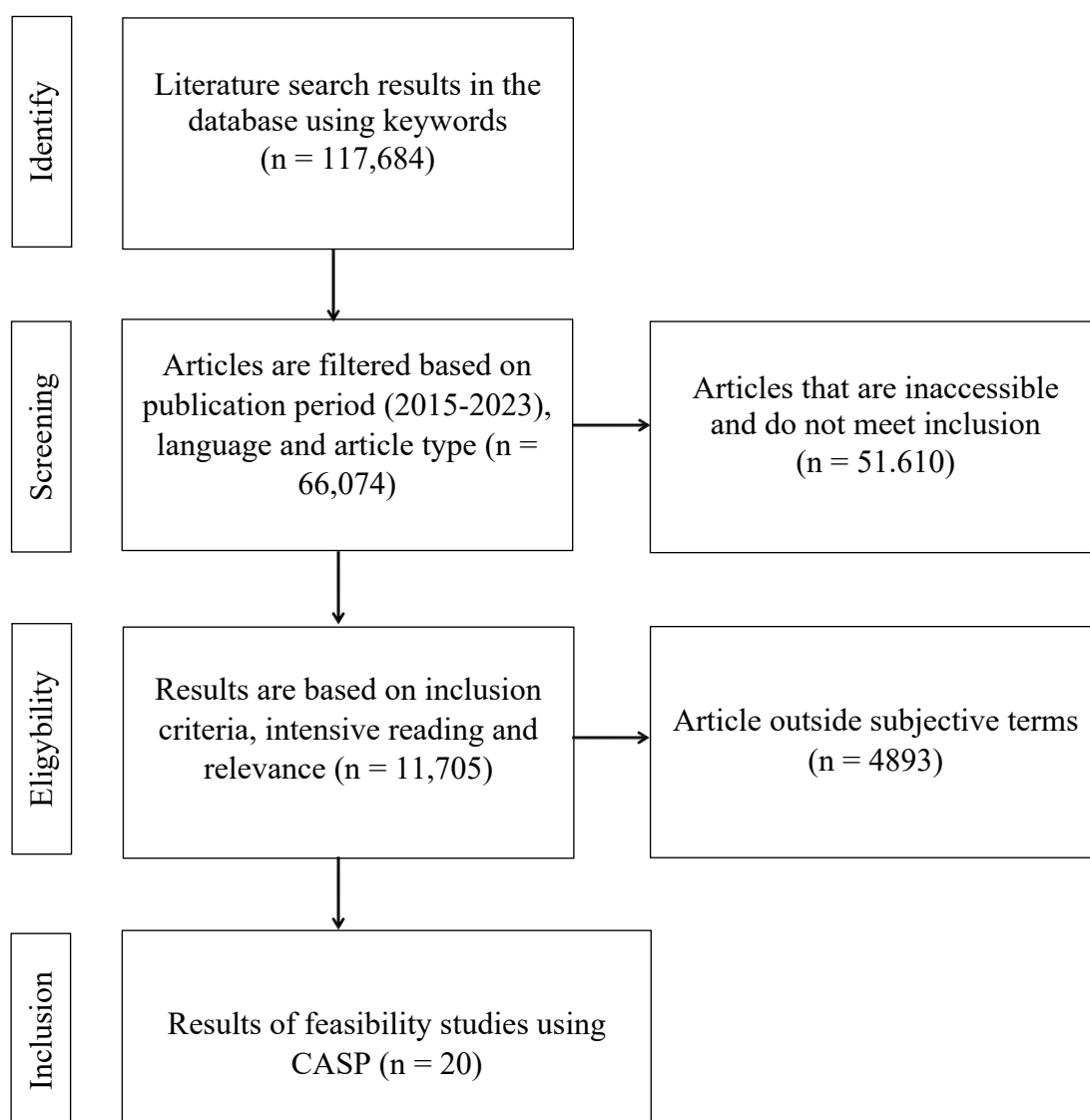
### Exclusion Criteria

1. Data that is not related to HIIT on physical fitness.
2. Articles or journals published before 2018-2023.

## Data Analysis

The data collected in this study are secondary data obtained from prior research results published in respected journals in scientific papers:

1. Identity of the reference source
2. Conclusion of the content of the writing
3. The importance of the referenced source in answering the problem that has been formulate.



**Figure 1.** PRISMA scheme in the literature selection process

## RESULTS AND DISCUSSION

### Results

Author/Indeks (Sinta 1,2,3/Scopus/Scimago JR)	Results
(Sopyan et al., 2023)/Sinta 3 The Effect Of High-Intensity Interval Training And Fartlek On Vo2max Players U15 And U23 Pamoso Football School	There is a difference in VO2max rise for u-15 and u-13 players, with a 32% increase compared to u-23 players, who only increased 29%, and there is no interaction between high intensity interval training and player age on boosting VO2max of soccer school players.
(Sartono & Adityatama, 2019)/Sinta 3 The effect of high intensity interval training to physical condition of pencak silat atlet	Pencak Silat's physical state is affected by training using High Intensity Interval Training (HIIT).
(Fauzi et al., 2020)/Sinta 3 Effect of HIIT and SAQ Training on Agility and Speed	The HIIT approach resulted in substantial gains in agility and speed of 3.2% and 4.2%, respectively, in 30 extracurricular participating students.
(Putra et al., 2018)/Sinta 3 The Effect of High Intensity Interval Training (HIIT) on the Body Fat Percentage of Menopausal Women with Obesity	High Intensity Interval Training (HIIT) reduces the fat percentage in obese menopausal women.
(Wibowo, 2020)/Sinta 2 The Effect of High Intensity Interval Training on Cardiovascular Endurance, Speed and Agility at the Age of 13-15 Years	There were significant gains in agility, speed, and cardiovascular fitness by 14.3%, 5.2%, and 5.3%, respectively. HIIT can thus be utilized to improve agility, speed, and cardiovascular endurance.
(Mendelson et al., 2022)/Scopus (Q2) Effects of high intensity interval training on sustained reduction in cardiometabolic risk associated with overweight/ obesity: A randomized trial	In overweight individuals, HIIT generates larger gains in VO2max in cardiorespiratory fitness, and this training modality on maintenance of enhanced cardiorespiratory fitness can lower total belly fat mass and total cholesterol.
(Scoubeau et al., 2023)/Scopus (Q2) Body composition, cardiorespiratory fitness, and neuromuscular adaptations induced by a home-based whole-	Home high-intensity interval training improves cardiorespiratory fitness and neuromuscular function. The concurrently reported strong effects for aerobic capacity and muscle endurance may increase exercise tolerance and

body high intensity interval training	reduce fatigue.
(Shi et al., 2022)/Scopus (Q2) The effects of high-intensity interval training and moderate-intensity continuous training on visceral fat and carotid hemodynamics parameters in obese adults	High intensity interval training for 8 weeks can successfully enhance visceral fat index and partial hemodynamic parameters, implying that this training has a significant impact on fat loss and hemodynamic improvement.
(Li et al., 2022)/Scopus (Q2) High-intensity interval training elicits more enjoyment and positive affective valence than moderate-intensity training over a 12-week intervention in overweight young women	HIIT is a pleasurable long-term exercise for overweight young women, whereas repeating sprint training can be used for weight control due to the equivalent time efficiency with total satisfaction.
(Tsirigkakis et al., 2022)/Scopus (Q2) Physiological, perceptual and affective responses to high-intensity interval training using two work-matched programs with different bout duration in obese males	HIIT is more effective in enhancing physiological and perceptual responses in obese males.
(Delgado-Floody et al., 2019)/Scopus (Q2) Feasibility of incorporating high-intensity interval training into physical education programs to improve body composition and cardiorespiratory capacity of overweight and obese children: A systematic review	HIIT can be utilized in conjunction with athletic activities in learning as a technique to battle the pandemic of childhood obesity since the addition of an HIIT program results in significant changes in body composition, body mass index, body fat, increased muscle mass, and maximum oxygen uptake.
(Lu et al., 2022)/Scopus (Q2) Effects of 8-week high-intensity interval training and moderate-intensity continuous training on bone metabolism in sedentary young females	In sedentary young women, an 8-week HIIT intervention may provide greater benefits and enhance bone metabolism.
(Songsorn et al., 2022)/Scopus (Q2) The effect of whole-body high-intensity interval training on heart rate variability in insufficiently active adults	6 weeks of total-body conditioning HIIT enhances cardiovascular autonomic function in sedentary persons and may thus be regarded to lower the risk of cardiovascular disease.
(Kwok et al., 2022)/Scopus (Q2)	Aquatic high-intensity interval training



The effect of aquatic high intensity interval training on cardiometabolic and physical health markers in women: A systematic review and meta-analysis	has a moderate effect on cardiometabolic and physical health in women.
(Nuñez et al., 2020)/Scopus (Q2) Metabolic effects of two high-intensity circuit training protocols: Does sequence matter?	High-intensity interval training and circuit weight training are both effective for caloric expenditure, metabolic and cardiorespiratory responses; however, practicing high-intensity training before circuit weight training can result in metabolic disruptions.
(Birkett et al., 2019)/Scopus (Q3) The effects of low-volume high-intensity interval training and circuit training on maximal oxygen uptake	When compared to circuit training, studies suggest that HIIT causes larger improvements in cardiorespiratory fitness.
(Hostrup & Bangsbo, 2023)/Scopus (Q1) Performance Adaptations to Intensified Training in Top-Level Football	HIIT once or twice a week can boost the capacity of the aerobic energy system, but because of the risk of overload and injury, it should be properly planned, taking into account the match schedule and player load, so that the volume of training spent is frequently reduced during periods of intense training.
(Ma et al., 2023)/Scopus (Q1) VO2max (VO2peak) in elite athletes under high-intensity interval training: A meta-analysis	When compared to other types of training, the HIIT approach can marginally improve VO2max and sports performance, as well as stimulate the improvement of aerobic and anaerobic capacity.
(COLETTA et al., 2019)/Scopus (Q1) High-Intensity Interval Training Is Feasible in Women at High Risk for Breast Cancer	HIIT improved absolute and relative VO2max changes when compared to standard care. There were no significant differences in body weight or BMI between groups. In women at high risk of breast cancer, HIIT is feasible and safe in cardiorespiratory fitness when compared to moderate-intensity continuous exercise and standard treatment.
(Pierros & Spyrou, 2023)/Scopus (Q1)	In semi-professional soccer players, HIIT mixed with resistance training in

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Effects of high-intensity interval training versus sprint interval training during the second wave of COVID-19 lockdown on soccer players

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multiple sessions can yield superior increases in endurance, vertical leap ability, and body weight strength training.

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## **Discussion**

Physical fitness is defined as a person's capacity to do everyday activities quickly and efficiently while still having energy reserves to enjoy leisure time. (Hernawan et al., 2021). There are numerous good effects and substantial evidence of the benefits of exercise, beginning with improved body health (Rozi et al., 2021). This is since having a healthy and fit physique can keep the body from being attacked by disease, allowing us to continue with our everyday activities.

Sport is a type of physical exercise that can increase physical fitness. Exercise affects not only the musculoskeletal system, but also other systems such as the circulatory system, respiratory system, excretory system, neurological system, and many others. Exercise is crucial for sustaining health and repairing an ill body (Mhaimed et al., 2023). High-intensity interval training (HIIT) is a type of exercise that blends high-intensity activity with moderate or low-intensity exercise. This training is done at regular intervals, which causes the heart to work harder in order to boost oxygen consumption and the body's metabolism (Widhiya & Utomo, 2020). Fitness, endurance, and High-intensity interval training (HIIT) can all be maintained by physical exercise programs. Physical fitness, in addition to immunity, plays an important part in health maintenance. A healthy physique helps protect against a variety of disorders, including heart disease, bone and muscular difficulties, and the risk of obesity.

High-Intensity Interval Training (HIIT) is defined as an exercise that consists of multiple short or medium-duration high-intensity cycles alternated with light-intensity rest periods. High-Intensity Interval Training (HIIT) exercise has an impact on the body, particularly blood pressure, hormones, and blood glucose levels. High-Intensity Interval Training (HIIT) is a technique for increasing the intensity of alternative labor in order to obtain optimal activity (Sartono & Adityatama, 2020). HIIT training is a quick and effective form of

aerobic and anaerobic exercise that also goes by the name sprint interval training. Based on prior studies' definitions of HIIT, the authors conclude that HIIT training is an efficient and effective training approach with short rest intervals and high intensity ([Hernawan et al., 2021](#)). According to the quotation, HIIT exercise must be mixed with rest periods because your body still requires calories and oxygen to get to the recovery phase even if you stop training and start resting. HIIT is a fast-paced, efficient and effective form of physical exercise.

HIIT exercise is quick and effective, whereas gymnastics training takes a long time. In terms of calorie burn, HIIT exercises burn calories faster than traditional gymnastics. HIIT training is more effective than traditional gymnastics training; it also yields more substantial effects ([Widhiya & Utomo, 2020](#)). Because of the high intensity of the activity, interval training can burn more fat and thus more calories in the body.

The method of high-intensity interval training has a substantial impact on physical capacities. HIIT training has many benefits for people of all ages, including adolescents. HIIT training on an ongoing basis can improve fitness, affect heart rate rhythms, increase lactic acid tolerance in muscles, improve cardiorespiratory system fitness, affect muscle mitochondria adaptation, lower blood pressure, reduce dyspnea, increase glucose transport in the blood, increase insulin sensitivity and ability to control glycemic, increase fat ([Lange, 2021](#)). Because the intensity of the workout is higher, high-intensity interval training activities can provide considerable improvements. However, keep in mind that exercise intensity that exceeds the body's ability can increase the risk of health problems.

Adolescents' physical ability can benefit greatly from HIIT exercise. Optimal physical abilities are believed to increase the body's metabolic system, cardiorespiratory fitness, and endurance, and can influence health during the Covid-19 pandemic ([Lange, 2021](#)). During the Covid-19 epidemic, high-intensity interval training (HIIT) enhances physical capacities in the form of strength and agility in teenagers. As a result, during the Covid-19 pandemic, HIIT training might be employed as an alternative activity to promote physical fitness in

teenagers ([Lange, 2021](#)). High-Intensity Interval Training (HIIT) and Cardiorespiratory Fitness. According to the findings of this study, HIIT training can increase VO2 max and cause physiological thickening of the left ventricular myocardia of the heart, increasing the strength and ability of the heart to pump blood per contraction, reducing the number of pulse beats per minute and increasing cardiorespiratory fitness ([Puji et al., 2019](#)). This is due to the fact that High-Intensity Interval Training might alter the anatomy of the heart. High-intensity interval training has a significant impact on lung health ([Gao et al., 2022](#)). The greater the level of activity, the bigger the vital capacity of the lungs. As a result, it can increase lung capacity and enhance lung structure.

The following is a discussion from various points of view. High-intensity interval training (HIIT) is a type of exercise that combines high-intensity activity with moderate or low-intensity exercise at regular intervals. This exercise makes the heart work harder to increase the body's metabolism and oxygen consumption ([Widhiya & Utomo, 2020](#)). HIIT has been shown to improve mental health and cognitive function in kids and teens. HIIT has more acute impacts on cognitive performance than long-term ones. HIIT training led to substantial improvements in both well-being and illness. Due to the limited number of studies and substantial variability, these results, although encouraging, need more high-quality research to be validated ([Leahy et al., 2020](#)). Children may improve their inhibitory control and neurophysiological attention measures by playing acute, high-intensity soccer ([Lind et al., 2019](#)). Combine high-intensity interval training (HIIT) with moderate- or low-intensity training (LIIT) to prevent injury to the body instead of continual high-intensity exercise. since the body is essentially a part of mankind.

High-intensity interval training (HIIT) is a time-efficient stimulus that has been shown to improve other elements of cardiometabolic health that are known to deteriorate with age ([Gao et al., 2022](#)). Physical activities that activate the aerobic energy system can help increase cardiorespiratory fitness. One of the aerobic training strategies that can improve cardiorespiratory fitness is the HIIT approach. HIIT training raises VO2 max, which has an effect on cardiorespiratory

function (Permata, 2018). HIIT training can improve cardiorespiratory fitness by increasing VO2 max. Human development slows as we get older. As a result, HIIT is required to improve health outcomes.

Because HIIT can enhance oxidative capacity in the muscles and the benefits of exercise quickly, it tends to burn more calories than regular training, especially after exercise (Sartono & Adityatama, 2020). Diabetes can be cured with high-intensity interval training. In diabetic patients, low-volume high-intensity intervals and continuous moderate-intensity exercise regulate blood flow changes and flow-mediated arterial dilatation (Ghardashi Afousi et al., 2018). Unequipped and unsupervised high-intensity interval exercise enhanced the physiological endurance of older persons significantly (Sian et al., 2022). This is due to the high intensity of HIIT training, which might help you burn fat faster. Adults find it easier to considerably develop physiological endurance since they already have essential physiological endurance, thus when combined with high-intensity interval training, it results in a more meaningful physiological improvement.

High-intensity interval training incorporated in physical education classes lowers systolic blood pressure in teenagers with high blood pressure (Popowczak et al., 2022). Preoperative HIIT is most effective when administered to entire surgical groups, including less motivated and non-compliant patients (Woodfield et al., 2022). High-intensity exercise can lower blood pressure because the heart becomes more robust, requiring less effort to pump blood. Furthermore, high-intensity training might generate motivation.

Interval training is based on the interval principle, which states that interval training is characterized by variations in loading length (length of distance/size of exercise series), variations in load intensity (speed/overload), variations in load intervals (length of rest), and the form of rest against the loading of load components (Lind et al., 2019). High-intensity interval training (HIIT) is both safe and beneficial in the treatment of cardiovascular disease. There is, however, a scarcity of data on the effects of HIIT on individuals with acute pulmonary embolism. As a result, the current randomized controlled trial

investigated the efficacy and safety of HIIT in individuals with acute PE. All patients in the HIIT group who had recently been discharged with a diagnosis of intermediate-high risk acute PE tolerated exercise training without major ill effects ([Ghram et al., 2021](#)). In a laboratory setting, high-intensity interval training (HIIT) and moderate-intensity continuous exercise have equivalent health results; however, effectiveness studies in a real-world setting are scarce. The purpose of this study was to see how beneficial a 12-month unsupervised HIIT program was in overweight/obese people ([Roy et al., 2018](#)).

Although high-intensity interval training (HIIT) has been proven to raise CRF and FFM in several populations, its efficacy in older persons with comorbidities is unknown ([Blackwell et al., 2021](#)). The applicant's claimed benefit is to contribute to increased physical performance during high-intensity, long-term physical activity, which the Panel deems to be a positive physiological impact. The Panel concludes that there is a cause-and-effect link between drinking a carbohydrate solution and better physical performance during high-intensity, long-duration exercise. The intended audience consisted of healthy, trained individuals who engaged in high-intensity exercise ([Turck et al., 2018](#)).

The study was carried out to underline and establish that the benefits of weight training are not limited to muscle mass expansion. It is intended that the findings of this study will serve as a resource for trainers and fitness instructors in developing training programs for athletes and non-athletes alike ([Suryadi et al., 2021](#)). HIIT training is advised for raising the anaerobic threshold. The anaerobic threshold is the level of oxygen consumption accompanied by a rapid rise in blood lactate concentration. Increasing the anaerobic threshold can acclimate our bodies with the accumulation of lactic acid, allowing the athlete's capacity to improve in speed, strength, and endurance because exhaustion is difficult to feel ([Rozi et al., 2021](#)).

The training approach used in High-Intensity Interval Training Fast and medium-intensity running, done alternately, or weight training can be used for training. There are numerous weight training models, such as weight training using our bodies or additional equipment. In this example, the researcher employs

training with the use of a kettlebell (KB). This is due to the prevalence of kettlebell fever (KB) in the fitness sector, particularly in Indonesia (Susilo, 2019). Based on the explanation above, it appears that employing Tabata training and High-Intensity Interval Training has a considerable influence on building leg muscular strength. However, there are distinctions in how High-Intensity Interval Training (HIIT) is more effective and efficient in improving leg muscle strength (Cemara & Fauqi, 2022).

Circuit Training is a type of exercise that improves endurance, strength, flexibility, agility, and balance. Circuit training is another type of exercise that develops all aspects of physical condition in a sequence of posts, with each post doing a distinct workout (Lubis & Rusip, 2021). Circuit weight training routines develop leg muscle strength, hand muscle strength (grasping, pushing, pulling), upper body muscle strength, abdominal muscles, arm muscles, and shoulders greatly (Nasrulloh, 2012). According to the quote above, the exercise program promises that it would reduce the proportion of fat, increase the vital capacity of the lungs, increase energy production, and improve muscle function. All body parts move during circuit training exercises, which might have an impact on physical conditions.

HIIT has been shown to reduce body fat and enhance cardiorespiratory fitness, or the ability of the body to supply oxygen to other parts of the body, particularly in obese persons. HIIT is also relatively brief, with twice as much activity as rest time (De Salles Painelli et al., 2018). High-intensity interval training (HIIT) is both safe and beneficial in the treatment of cardiovascular disease. There is, however, a scarcity of data on the effects of HIIT on individuals with acute pulmonary embolism. It describes a randomized controlled experiment that looked at the effectiveness and safety of HIIT in patients with acute PE. All patients in the HIIT group who had recently been discharged with a diagnosis of intermediate-high risk acute PE tolerated exercise training without major ill effects (Ghram et al., 2021). HIIT has been demonstrated to reduce body fat and enhance cardiorespiratory fitness, or the ability of the body to supply oxygen to



other parts of the body, particularly in obese persons. HIIT is also relatively brief, with twice as much workout time as rest time (Golightly et al., 2021).

High-intensity training patterns improve fitness and immunity significantly. This is since a high-intensity training plan can improve the respiratory muscles, hence improving heart and lung fitness. In other words, a healthy heart and lungs boost the body's endurance or immunity (Widhiya & Utomo, 2020). High-intensity exercise also reduces other barriers, such as time management, self-confidence, and shyness. High-intensity training has numerous advantages for endurance. It can even lessen stress since exercising makes the body feel good, therefore doing enough exercise can raise endorphin levels in the body. This hormone enhances mood, which aids in stress management and prevention.

## CONCLUSION

HIIT training improves physical fitness significantly. Furthermore, the findings of this study suggest that HIIT training can be used to maintain health-related physical fitness. This strength training can further be developed or tested with various variables, subject characteristics, and a larger population. HIIT exercise can greatly increase physical performance. Optimal physical ability is intended to increase the body's metabolic system, cardiovascular fitness, and endurance, as well as influence health levels. HIIT is a quick and effective exercise that can be done both indoors and outdoors. Hopefully, this study will bring advantages and raise awareness about the need of physical activity.

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