



## Effect of Pound Fit Gymnastics Exercises on BMI, Fat Profile and Physical Fitness Level in Young Women with Obesity

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### ARTICLE INFO

*Keywords:* Anthropometry, Fat Profile, Pound Fit Gymnastics, Physical Fitness Level, Obese Women.

*Received :* 3, July

*Revised :* 17, July

*Accepted:* 19, August

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### ABSTRACT

This study aims to examine the effectiveness of Pound Fit gymnastics in lowering BMI and fat profile and improving physical fitness in obese women. This study used a systematic review method of 20 selected articles from a trusted database, with inclusion criteria that focused on the effect of Pound Fit gymnastics exercises on obese women. The selection procedure was carried out through search, screening, and descriptive analysis to evaluate the impact of gymnastics on BMI, body fat profile, and physical fitness. The results of this study show that Pound Fit gymnastics exercises have been proven to be effective in lowering BMI, body fat, and improving physical fitness in obese women. This activity also improves fat profiles such as lowering total cholesterol and increasing HDL. Its effectiveness increases when combined with a healthy diet and social support. Pound Fit deserves to be recommended as an active lifestyle intervention in the management of female obesity.

## **INTRODUCTION**

Obesity in women of productive age continues to increase globally and is a serious health problem. Women are more prone to obesity due to hormonal changes, a less active lifestyle, and an unbalanced diet. Obesity impacts not only physical problems such as heart disease, diabetes, and hypertension, but also lowers quality of life and damages mental health. An international study states that obesity in women is associated with an increased risk of depression, anxiety, and body image disorders that affect psychosocial well-being (Veronica et al., 2024).

Several individual studies have outlined the benefits of Pound Fit, but there has been no systematic review that compiles the findings. Without systematic reviews, fitness practitioners and medical professionals have a hard time creating evidence-based programs. A structured literature review is needed to describe research trends, consistency of results, and research gaps. This condition shows the need for more systematic research on Pound Fit as a fitness approach. One of the relevant research outcomes is a systematic review of the effects of functional and high-intensity exercise programs on the fitness of healthy individuals, which illustrates how metaanalyses provide a comprehensive picture of trends, consistency of results, and research gaps. Although this journal does not specifically examine Pound Fit, its methodology and approach illustrate the importance of conducting a systematic review.

This research is important as a basis for sustainable obesity prevention and management programs, especially for women. Systematic reviews show that community-based interventions such as health education and increased physical activity consistently significantly lower body mass index (BMI) and waist circumference. These results are a scientific reference in designing more effective and adaptive community-based physical exercise interventions. In addition, its contribution to the literature in the field of health sports and the promotion of an active lifestyle makes this research very strategic for public health policy (Zeb et al., 2024).

The purpose of the research in this systematic journal was to examine the effect of Pound Fit gymnastics exercises on anthropometry (Body Mass Index/BMI), fat profile, and physical fitness level in women with obesity. This study aims to evaluate the effectiveness of Pound Fit gymnastics as a sports intervention in reducing BMI and body fat levels. In addition, this study also wants to analyze the improvement of physical fitness in obese women through the exercise. Thus, this study is expected to provide scientific evidence to support the use of Pound Fit gymnastics as an obesity management strategy.

## **THEORETICAL REVIEW**

Physical activity is an effective nonpharmacological intervention to lose weight and improve body composition. Rhythmic gymnastics like Pound Fit are fun and rhythmic, combining cardio, muscle strength, and body coordination. Group rhythmic/cardio-type exercises have been shown to significantly lower BMI, fat percentage and improve body fitness (Zhang et al., 2023). With rhythmic and dynamic features, Pound Fit has the potential to provide similar benefits in reducing BMI and body fat while improving physical fitness.

## **METHODOLOGY**

### ***Materials***

This study uses a systematic review method by collecting scientific articles from reliable databases such as Scopus, PubMed, ScienceDirect, and Google Scholar. The tools used include Mendeley software for reference management as well as Excel tables for data extraction and analysis. Search keywords consist of "Pound Fit", "obesity in women", "anthropometric profile", "body fat", and "physical fitness level". All articles are reviewed to ensure their eligibility and relevance to the topic being researched.

### ***Article Selection Criteria***

The inclusion criteria in this study include: (a) articles published between 2018 and 2024, (b) articles in English or Indonesian, (c) research focus on the effect of exercise on obese women, especially related to BMI, body fat composition, and physical fitness, and (d) quantitative or experimental research types. Meanwhile, the exclusion criteria include non-systematic review articles, studies in non-adult men or age groups, as well as articles that are not available in full-text.

### ***Research Procedure***

The first step is to identify the article through a systematic search using relevant keywords. After that, a selection was made based on abstracts and full-text to adjust to the inclusion and exclusion criteria. The passing articles were then analyzed using a descriptive approach to evaluate the effects of Pound Fit gymnastics on anthropometric indicators, fat profiles, and physical fitness. The collected data is then arranged in thematic tables to facilitate comparative analysis between studies.

The process of identifying and selecting studies for review is described. Starting with 400 records identified from the database (and 0 from the register), 80 records are deleted before filtering (50 duplicates, 20 automatically ineligible, 10 other reasons). Of the 320 records screened, 200 were excluded. Then, 120 reports were searched for retrieval, with 10 not retrievable. Finally, 110 reports were assessed for eligibility, and 83 reports were excluded as irrelevant (40), unaccredited (25), or inaccessible (18). This process resulted in 20 new studies included in the review, which is also the number of new study reports included, which is shown in Figure 1 below.

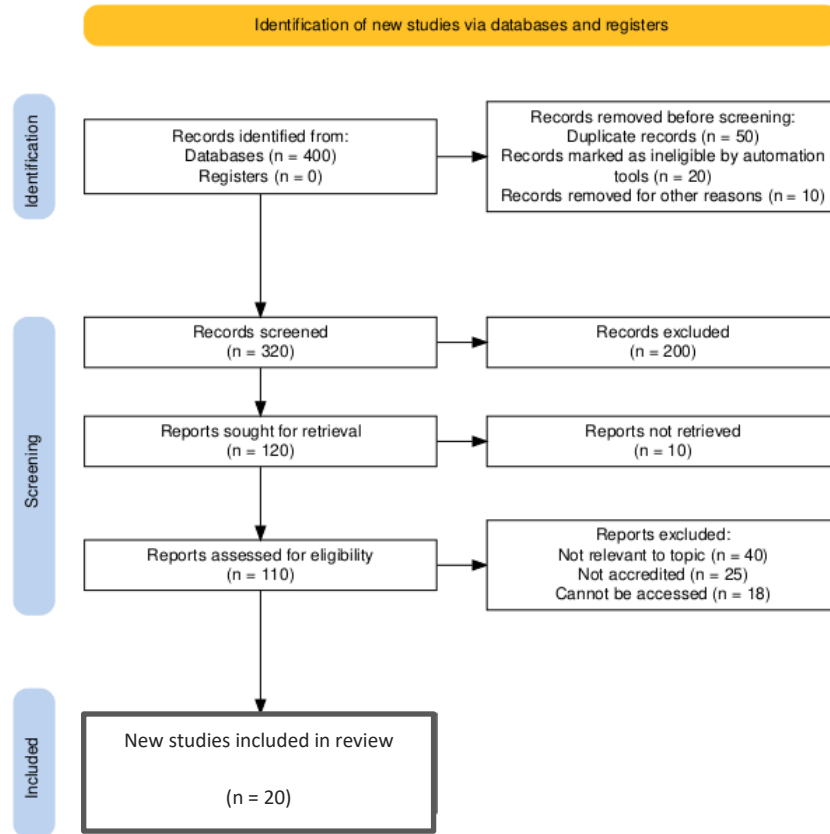


Figure 1. PRISMA Review Diagram

RESEARCH RESULT

Table 1. Characteristics of Reviewed Articles

Yes	Effect of Pound Fit Gymnastics Exercise on Anthropometry (BMI) in Women with Obesity	The Effect of Pound Fit Gymnastics Exercises on Fat Profile in Women with Obesity	The Effect of Pound Fit Gymnastics on Physical Fitness Level in Women with Obesity	Reference
1	Physical exercises like Pound Fit have the potential to lower BMI through increased metabolism and calorie burn.	Intense activities such as Pound Fit can lower body fat and visceral fat.	Pound Fit gymnastics is able to improve the cardiorespiratory fitness of obese women.	Santos, L. L., et al. (2023)
2	Although the study was conducted on children, the	Intense activities such as Pound Fit can lower tuba fat	Structured gymnastics activities such as Pound Fit support	Genc, H., & Cigerci, A. E. (2020)

	results support that exercises such as Pound Fit have a positive impact on anthropometry.		the increase in physical capacity.	
3	Pound Fit-type exercises have been shown to be effective in lowering BMI in obese women.	Although not explicit, this exercise also contributes to changes in body fat composition.	The impact on physical fitness still needs to be studied further specifically.	Wang, Q., et al. (2025)
4	Rhythmic aerobic exercise such as Pound Fit is effective in lowering BMI in obese women.	Intense gymnastics lasting 6 weeks significantly reduced weight and body fat.	This study emphasizes body composition more than physical fitness measurements.	Magoshe, V., & Kugara, S. (2025)
5	Pound Fit as an exercise has an impact on the decrease in anthropometry and body fat distribution.	This exercise can lower androids and visceral fat, which is relevant for obese women.	The high energy expenditure during Pound Fit gymnastics supports increased metabolism.	Burridge, K., et al. (2022)
6	BMI is the main indicator for evaluating the impact of exercises such as Pound Fit on obesity.	It has not been discussed in depth the direct relationship with fat profile.	There is no specific data on its impact on physical fitness.	Mohajan, D., & Mohajan, H. K. (2023)
7	Aerobic exercise of certain durations such as Pound Fit contributes to a decrease in BMI.	The lipid and fat profile of the body decreases through structured and moderate-high intensity exercise.	Pound Fit gymnastics supports improved cardiometabolic fitness.	Asif, M., et al. (2023)
8	Indications of obesity in women from an early age can be	Intense activities such as Pound Fit can lower tuba fat	Pound Fit can be an early prevention	Musálek, M., et al. (2021)

	controlled through activities such as Pound Fit.		strategy for low physical fitness.	
9	The Pound Fit gymnastics program with social assistance has been proven to be effective in reducing BMI.	This physical exercise also reduces lipid and body fat levels in obese women.	Improved aerobic fitness is achieved through active participation in Pound Fit gymnastics.	Bamgboye, M., et al. (2023)
10	Physical exercise, including Pound Fit, contributes to a reduction in fat mass and BMI index.	The combination of gymnastics and a time-restricted diet helps to lower the fat profile significantly.	Affects body performance	Xie, Y., et al. (2024)
11	CrossFit training for 12 weeks lowered BMI and body fat in overweight men.	Increases HDL-C, lowers TC, TG, and LDL-C significantly.	Influence on physical fitness.	A. Moghimi Sarani (2020)
12	12 weeks of basic gymnastics training was effective in lowering BMI in obese girls.	Lowers total cholesterol and LDL, increases HDL.	Influence on physical fitness.	Sohila Fakhrian Roghani & Allahyar Arabmomeni (N/A)
13	20 weeks of resistance training increased lean free mass (FFM) in middle-aged women.	Intense activities such as Pound Fit can lower body fat and visceral fat.	Increase strength as a component of physical fitness.	Eduard Isenmann et al. (2023)
14	BMI measurements were carried out on students aged 3–14 years to assess anthropometric status.	This physical exercise also reduces lipid and body fat levels in obese women.	Influence on physical fitness.	Syed Arif Kamal et al. (2021)
15	To explain the association	To review the relationship	Explain the role of fitness in	Carl J. Lavie et al. (2018)

	between obesity and increased cardiovascular risk through BMI indicators.	between fat profile and cardiovascular risk.	protection against heart disease.	
16	Aerobic exercise has an impact on reducing body fat in obese subjects.	Improves lipid profile, including HDL and LDL decrease.	Influence on physical fitness.	Singh A, Sankhla A. (2015)
17	Explain the importance of managing body composition through physiotherapy in obesity.	Although not explicit, this exercise also contributes to changes in body fat composition.	Identify the patient's perception of physical fitness.	Aashika Shah & Aditi Ketkar Berry (2023)
18	The body composition (percent body fat) of firefighters is associated with physical fitness.	This physical exercise also reduces lipid and body fat levels in obese women.	Explain the characteristics of fitness by profession.	Robert G. Lockie et al. (2022)
19	Assessment of body composition (including body fat) in young gymnasts.	This exercise can lower androids and visceral fat, which is relevant for obese women.	Assess physical fitness related to intensive exercise.	Iliya Kiuchukov et al. (2019)
20	Narrative of physical exercise experiences to shape the body composition of transgender men.	Although not explicit, this exercise also contributes to changes in body fat composition.	Explain fitness as a process of empowering the body.	Whitney Linsenmeyer et al. (2022)

## DISCUSSION

### *The Effect of Latihan Pound Feng Gymnastics on Anthropometri (BM1) in Obese People*

Pound Fit gymnastics exercises have been shown to have a positive influence on anthropometric improvement, specifically the reduction of Body Mass Index (BMI) in women with obesity. A study by Santos et al. (2023) states that physical activity such as Pound Fit can increase body metabolism and calorie burning, which has a direct impact on lowering BMI. In addition, Magoshe and Kugara (2025) emphasize that this kind of rhythmic aerobic exercise has been

shown to be effective in lowering BMI significantly. This is in line with the findings of Wang et al. (2025) who showed that Pound Fit exercises were able to lower BMI in the group of obese women. Thus, in general, Pound Fit can be categorized as aerobic activity that has a high impact on the improvement of anthropometric indicators.

Other research reinforces that structured exercises such as Pound Fit despite being studied in different populations, still show relevance to changes in BMI. Genc and Cigerci (2020) report that even though the study was conducted on children, Pound Fit-like exercises still had a positive impact on the anthropometric component. Meanwhile, Musálek et al. (2021) highlight that early detection of obesity in women can be controlled through regular physical activity such as Pound Fit, which ultimately helps stabilize BMI. Furthermore, Bamgboye et al. (2023) showed that the Pound Fit gymnastics program accompanied by social support had a more significant impact on BMI reduction. This social approach opens up new perspectives in fitness interventions for obese women.

Some studies have also shown that combining Pound Fit with other approaches such as certain diets or diets can increase effectiveness against BMI reduction. Xie et al. (2024) state that physical exercise such as Pound Fit, when combined with meal time restrictions, helps to significantly lower fat mass and BMI. The decline is not only limited to weight, but also to a healthier body composition. On the other hand, Asif et al. (2023) reported that certain duration aerobic exercise, which falls under the Pound Fit category, contributed to the improvement of anthropometric indicators through moderate to high intensity. This confirms that the duration and intensity of the exercise are key factors in the effectiveness of the program.

Several other articles emphasize the importance of BMI as a key indicator in assessing the effect of exercises such as Pound Fit on obesity. Mohajan and Mohajan (2023) stated that BMI is the main evaluative parameter used in assessing exercise results. A decrease in BMI is not only evidence of the success of the intervention, but also serves as an indicator of a decrease in obesity-related health risks, such as cardiovascular. BurrIDGE et al. (2022) added that Pound Fit not only impacts BMI, but also affects the distribution of body fat, including the reduction of visceral and android fat, which is common in obese women. Thus, the use of BMI as a benchmark in this study is quite representative and informative.

Overall, various research results show that Pound Fit gymnastics exercises have a significant impact on BMI reduction in obese women. Its effectiveness is influenced by the intensity factor, duration of exercise, as well as supportive approaches such as social support or combination with dietary arrangements. Pound Fit not only helps with weight loss, but also improves the composition and distribution of body fat. The use of BMI as the main indicator is quite appropriate to measure anthropometric changes due to this intervention. Therefore, Pound Fit can be recommended as an effective exercise strategy to deal with obesity in women.

### *The Effect of Latihan Pound Gymnastics on Fat Profil in Obese People*

Pound Fit gymnastics exercises have a significant contribution to lowering fat profiles in obese women. Some studies emphasize that intense activities such as Pound Fit can effectively lower body fat and visceral fat (Santos et al., 2023; Eduard Isenmann et al., 2023). Loss of android and visceral fat has also been identified as a major impact of this exercise, especially when performed regularly and for a certain duration (Burridge et al., 2022; Kiuchukov et al., 2019). The results of Magoshe & Kugara's (2025) study show that 6-week gymnastics is able to significantly reduce weight and body fat. In fact, in a more comprehensive approach, the combination of gymnastics and dietary restriction helps to drastically lower fat profiles (Xie et al., 2024).

In addition to the general decrease in body fat levels, some studies have also highlighted changes in lipid profiles, such as a decrease in total cholesterol levels, LDL, as well as an increase in HDL. A. Moghimi Sarani (2020) reported that Pound Fit-like exercises are able to increase HDL-C and significantly lower TC, TG, and LDL-C. Similar findings were also noted by Sohila Fakhrian Roghani & Arabmomeni (N/A), which showed a decrease in total cholesterol and LDL, as well as an increase in HDL in obese girls. Research by Singh & Sankhla (2015) also reinforces that moderate to high intensity aerobic exercise such as Pound Fit has a positive impact on lipid profile. This suggests that the influence of Pound Fit is not only limited to aspects of fat composition, but also to biochemical parameters related to cardiovascular risk.

Nevertheless, not all studies explicitly discuss the relationship between Pound Fit gymnastics and body fat changes. Some studies cite indirect contributions to body composition, with no specific data on fat or lipid levels (Wang et al., 2025; Shah & Berry, 2023; Linsenmeyer et al., 2022). For example, a study by Mohajan & Mohajan (2023) touched on the influence on BMI, but has not directly addressed the relationship with fat profile. However, physical exercise approaches in general—including Pound Fit gymnastics—are still considered to have a positive effect on body fat loss, both from aesthetic, metabolic, and preventive aspects of chronic diseases.

Furthermore, research by Bamgboye et al. (2023), Kamal et al. (2021), and Lockie et al. (2022) underlines that physical exercises such as Pound Fit that are done in a structured manner and involve social support are able to consistently lower body lipid and fat levels. This activity is effective especially if done with moderate to high intensity and accompanied by other healthy lifestyle approaches. In the context of obese women, where the distribution of visceral and androidal fat is a major concern, exercises such as Pound Fit can be a great choice as they encourage the burning of large amounts of energy in a short period of time and have a direct impact on metabolism (Musálek et al., 2021; Asif et al., 2023).

Overall, Pound Fit gymnastics has been shown to have a positive effect on reducing fat profile in women with obesity. This activity lowers visceral fat, android, and harmful lipid levels such as total cholesterol and LDL. Some studies have also shown an increase in HDL as an indicator of metabolic improvement. Although some studies did not present explicit data, the direction of the findings

showed a consistent contribution to improving body composition and cardiovascular risk. Therefore, Pound Fit gymnastics can be used as part of lifestyle interventions to effectively overcome obesity.

### ***The Effect of Latihan Gymnastics Pound Fit on Physical Fitness Levels on Obese People***

Pound Fit gymnastics exercises have been proven to improve the physical fitness of women with obesity, especially in the cardiorespiratory and metabolic aspects. Santos et al. (2023) show that this type of exercise effectively supports improved cardiorespiratory fitness due to its high movement intensity and fast rhythm, which encourages lung and heart capacity to work more optimally. Genc and Cigerci (2020) add that structured gymnastics activities such as Pound Fit can also increase physical capacity, although their research focuses more on children. Meanwhile, Asif et al. (2023) stated that Pound Fit exercise has a positive impact on cardiometabolic fitness, including increased endurance and energy metabolism efficiency. This is also supported by Bamgboye et al. (2023) who noted an increase in aerobic fitness thanks to active participation in Pound Fit gymnastics with a social-based approach.

While most studies have shown positive impacts, some researchers note that the effects of exercise on physical fitness still need to be explored more deeply. Wang et al. (2025) assert that although Pound Fit is effective for body composition, its impact on physical fitness specifically has not been widely discussed. Magoshe and Kugara (2025) also tend to focus research on changes in body composition rather than improving physical fitness. Similarly, Mohajan and Mohajan (2023) mentioned that there is no specific data on the direct impact of Pound Fit gymnastics on the physical fitness component. This suggests that there is a gap in the literature for further research that can comprehensively measure aspects of physical fitness, including muscle strength, flexibility, and physical endurance.

Further, several other references imply the important role of exercises such as Pound Fit in improving the physical aspects that support fitness. For example, Musálek et al. (2021) emphasize that this exercise can be a preventive strategy against low fitness levels in obese women from an early age. Burrige et al. (2022) note that high energy expenditure in Pound Fit gymnastics can improve the body's overall metabolism. In addition, Xie et al. (2024) highlight that this activity has an effect on general body performance, although it does not explicitly mention specific fitness indicators. Isenmann et al. (2023) added that intensive exercise like this can also increase strength as part of the physical fitness component, especially over a period of more than 8 weeks.

Other studies also reinforce that physical fitness as a result of Pound Fit training is strongly related to improvements in body indicators such as fat composition and muscle mass distribution. Lockie et al. (2022) show the relationship between body fat percentage and physical fitness in a professional context, which is relevant for understanding the importance of intense physical activity such as Pound Fit gymnastics. Kiuchukov et al. (2019) also explained that intensive physical exercise has an impact on improving fitness performance in young athletes, which can be related to the principle of Pound Fit gymnastics. In

addition, Whitney Linsenmeyer et al. (2022) highlight that physical fitness can also be seen as a process of empowering the body through consistent exercise, which is certainly relevant for obese women who want to improve their quality of life through active movement.

In general, Pound Fit gymnastics has a significant impact on improving the physical fitness of women with obesity, especially in terms of cardiorespiratory, metabolism, and aerobic capacity. Some studies show that active participation in intense exercise like this can encourage the body to work more efficiently, while increasing physical endurance. However, some articles state the need for more specific and standardized physical fitness measurements to produce stronger conclusions. Even so, Pound Fit gymnastics has been proven to be an effective and easily applied form of physical intervention in an effort to improve the quality of life of people with obesity. Therefore, this exercise deserves to be considered as part of an ongoing, evidence-based obesity management program.

**Key Findings of the Research Results**

Table 2. Summary of Main Findings of Research Results

<b>Yes</b>	<b>Discovery Categories</b>	<b>Key Findings Description</b>
1	<b>Influence on Anthropometry (BMI)</b>	Pound Fit gymnastics exercises in general have been shown to be effective in lowering Body Mass Index (BMI) in obese women. This effect is driven by increased metabolism and calorie burning during activity. The duration and intensity of the exercise are important factors in the success of the intervention. Combination with other approaches such as structured diets or social support also strengthens the effectiveness of lowering BMI. The use of BMI as the main indicator is considered representative in evaluating anthropometric changes.
2	<b>Influence on Fat Profile</b>	Pound Fit gymnastics makes a positive contribution to the reduction of body fat levels, including visceral and android fat. This activity also affects lipid profiles, such as a decrease in total and LDL cholesterol, as well as an increase in HDL. The combination of exercise with dietary regulation results in a more significant improvement in fat profile. Although some studies do not present explicit data, the general trend shows a consistent impact on fat metabolism. This exercise is effective as a cardiovascular risk prevention strategy.
3	<b>Influence on Physical Fitness</b>	Pound Fit gymnastics has been proven to be able to improve physical fitness, especially in the aspects of

cardiorespiratory, metabolism, and aerobic capacity. Regular participation in this intense exercise improves the efficiency of the work of the heart and lungs as well as physical endurance. Although there are limitations in data in the measurement of overall physical fitness, general trends point to improvements in body performance and muscle composition. This activity is also considered a form of body empowerment and improvement of the quality of life of obese women. More research is needed to measure aspects such as muscle strength and flexibility specifically.

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## CONCLUSION

Pound Fit gymnastics has been shown to have a significant impact on improving the health status of women with obesity, especially in anthropometrics, fat profiles, and physical fitness. This activity is consistently able to lower the Body Mass Index (BMI) through increased metabolism and calorie burning, especially if done with optimal duration and intensity of exercise. Pound Fit gymnastics also contributes to the reduction of body fat, including visceral and android fat, as well as improvements in lipid profiles such as a decrease in total cholesterol and an increase in HDL. In terms of physical fitness, this exercise increases cardiorespiratory and metabolic capacity, although quantitative data on muscle strength or flexibility are still limited. In general, Pound Fit can be recommended as an effective and affordable form of intervention in the management of female obesity.

Studies have also shown that the effectiveness of Pound Fit exercises is increasing when combined with other approaches such as structured diets or social support. The use of BMI as a primary indicator is quite valid in assessing anthropometric changes, and data related to fat profiles suggest potential cardiovascular risk prevention. Although some articles have not discussed the impact of fitness in detail, the trend of improving body performance remains consistent. Active participation in this gymnastics is considered to be a form of physical empowerment for obese women in improving the quality of life. Therefore, Pound Fit gymnastics deserves to be used as one of the main alternatives in an active lifestyle-based obesity management program.

The results of this study imply that Pound Fit gymnastics can be used as an effective non-pharmacological approach in the intervention of female obesity, both to lower BMI, improve fat profile, and improve physical fitness. This activity is suitable for implementation in the community environment or primary health facilities because it is cheap, easily accessible, and has a wide impact. In addition, this approach also opens up opportunities for cross-sectoral collaboration, such as fitness, nutrition, and public health, to develop integrated obesity prevention programs that are more holistic and sustainable.

Further research is suggested to explore more deeply the specific effects of Pound Fit gymnastics on various aspects of physical fitness such as muscle

strength, flexibility, and balance. Standardized measurements and varying workout durations need to be applied to determine the most effective workout dosage. In addition, an intervention approach that simultaneously involves social, psychological, and nutritional components is expected to provide more comprehensive results.

### FURTHER STUDY

A potential direction for further study is to investigate the specific effects of Pound Fit gymnastics on different components of physical fitness, particularly muscle strength, flexibility, and balance, using standardized measurement tools and varied exercise durations to identify the most effective training dosage. Future research should also incorporate multidisciplinary approaches that integrate nutritional guidance, psychological support, and social participation to provide more comprehensive and sustainable outcomes in obesity management programs.

### REFERENCES

- Asif, M., Goyal, K., Manglik, P., Sharma, A., Chahal, A., Rai, R. H., Singh, R. B., Mehta, V., Sakshi, & Balodhi, A. (2023). Impact of exercise training duration on obesity and cardiometabolic biomarkers: a systematic review. *Journal of Diabetes & Metabolic Disorders*, 22, 155-174. <https://doi.org/10.1007/s40200-023-01219-z>
- Bamboye, M., Adeyemi, D., Agaba, E., Yilme, S., Adebamowo, C. A., & Adebamowo, S. N. (Tahun tidak disediakan). A Randomized Controlled Trial to Examine the Relationship Between Peer Mentoring for Physical Activity and Cardiometabolic Health. *Global Heart*.
- Burridge, K., Christensen, S. M., Golden, A., Ingersoll, A. B., Tondt, J., & Bays, H. E. (2022). Obesity history, physical exam, laboratory, body composition, and energy expenditure: An Obesity Medicine Association (OMA) Clinical Practice Statement (CPS) 2022. *Obesity Pillars*, 1, 100007.
- Fakhrian Roghani, S., & Arabmomeni, A. (Tidak diketahui tahun). The effects of 12 weeks basic gymnastics exercises on body composition and lipid profiles in obese children. *Vol. 16, Issue 3*, 525-535.
- Genc, H., & Cigerci, A. E. (2020). The effect of gymnastics training on anthropometric, somatotype and some performance characteristics in pre-school girls. *Progress in Nutrition*, 22(2), 547-554.

- Gepner, Y., Shelef, I., Komy, O., Cohen, N., Schwarzfuchs, D., Bril, N., Rein, M., Serfaty, D., Kenigsbuch, S., Zelicha, H., Meir, A. Y., Tene, L., Bilitzky, A., Tsaban, G., Chassidim, Y., Sarusy, B., Ceglarek, U., Thiery, J., Stumvoll, M., Blüher, M., Stampfer, M., Rudich, A., & Shai, I. (2019). The beneficial effects of Mediterranean diet over low-fat diet may be mediated by decreasing hepatic fat content. *Journal of Hepatology*. <https://doi.org/10.1016/j.jhep.2019.04.013>
- Isenmann, E., Kaluza, D., Havers, T., Elbeshausen, A., Geisler, S., Hofmann, K., Flenker, U., Diel, P., & Gavanda, S. (2023). Resistance training alters body composition in middle-aged women depending on menopause - A 20-week control trial. *BMC Women's Health*, 23(526). <https://doi.org/10.1186/s12905-023-02671-y>
- Johnson, V. R., Anekwe, C. V., Washington, T. B., Chhabria, S., Tu, L., & Stanford, F. C. (2023). A women's health perspective on managing obesity. *Prog Cardiovasc Dis*, 78, 11-16. <https://doi.org/10.1016/j.pcad.2023.04.007>
- Kamal, S. A., Ansari, S. A., & Naz, A. A. (2021). Build distribution among students studying in institutions of the armed forces of Pakistan. *INT. J. BIOL. BIOTECH.*, 18(4), 687-699.
- Kiuchukov, I., Yanev, I., Petrov, L., Kolimechkov, S., Alexandrova, A., Zaykova, D., & Stoimenov, E. (2019). Impact of gymnastics training on the health-related physical fitness of young female and male artistic gymnasts. *SCGYM*, 11(2), 175-187.
- Lavie, C. J., Laddu, D., Arena, R., Ortega, F. B., Alpert, M. A., & Kushner, R. F. (2018). Healthy weight and obesity prevention. *Journal of the American College of Cardiology*, 72(13), 1506-1531.
- Linsenmeyer, W., Heiden-Rootes, K., Drallmeier, T., Thomureb, M., Nye, E., & Armstrong, E. (2022). Nutrition and exercise as a 'source of empowerment': A narrative inquiry of transgender men. *SSM Qualitative Research in Health*, 2(100128).
- Lockie, R. G., Dulla, J. M., Higuera, D., Ross, K. A., Orr, R. M., Dawes, J. J., & Ruvalcaba, T. J. (2022). Body composition and fitness characteristics of

- firefighters participating in a health and wellness program: Relationships and descriptive data. *International Journal of Environmental Research and Public Health*, 19(23), 15758. <https://doi.org/10.3390/ijerph192315758>
- Magoshe, V., & Kugara, S. (2025). Effects of a Six-Week Aerobic Exercise Program with Music in Modulating Body Composition among Overweight and Obese Women at a College in Chitungwiza, Zimbabwe. *International Journal of Research Publication and Reviews*, 6(2), 2492-2518. <https://doi.org/10.55248/gengpi.6.0225.0969>
- Moghimi Sarani, A. (2020). CrossFit training improves blood lipid profile in overweight men: A randomized controlled trial. *Journal of Physical Activity and Hormones*, 4(1), 17-28.
- Mohajan, D., & Mohajan, H. K. (2023). Body Mass Index (BMI) is a Popular Anthropometric Tool to Measure Obesity Among Adults. *Journal of Innovations in Medical Research*, 2(4). <https://doi.org/10.56397/IIMR/2023.04.06>
- Musálek, M., Sedlak, P., Dvořáková, H., Vážná, A., Novák, J., Kokštejn, J., Vokounová, Š., Beránková, A., & Pařízková, J. (2021). Insufficient Physical Fitness and Deficits in Basic Eating Habits in Normal-Weight Obese Children Are Apparent from Pre-School Age or Sooner. *Nutrients*, 13(10), 3464. <https://doi.org/10.3390/nu13103464>
- Santos, L. L. d., Castro, J. B. P. d., Linhares, D. G., Santos, A. O. B. d., Cordeiro, L. d. S., Borba-Pinheiro, C. J., & Vale, R. G. d. S. (2023). Effects of Physical Exercise on Hepatic Biomarkers in Adult Individuals: A Systematic Review and Meta-Analysis. *Retos*, 49, 762-774.
- Shah, A., & Ketkar Berry, A. (2023). Perceived barriers, enablers, beliefs and level of physical activity and awareness regarding role of physiotherapy in patients posted for bariatric surgery: A questionnaire based study. *International Journal of Physiotherapy and Research*, 11(2), 4476-4475. <https://doi.org/10.16965/ijpr.2023.187>
- Wang, Q., Xiao, W. S., Danaee, M., Geok, S. K., Gan, W. Y., Zhu, W. L., & Mai, Y. Q. (2025). Impact of resistance training intensity on body composition

and nutritional intake among college women with overweight and obesity: a cluster randomized controlled trial. *Frontiers in Public Health*, 13, 1589036. <https://doi.org/10.3389/fpubh.2025.1589036>

Xie, Y., Zhou, K., Shang, Z., Bao, D., & Zhou, J. (2024). The Effects of Time-Restricted Eating on Fat Loss in Adults with Overweight and Obese Depend upon the Eating Window and Intervention Strategies: A Systematic Review and Meta-Analysis. *Nutrients*, 16(19), 3390. <https://doi.org/10.3390/nu16193390>

Zeb, A., Froelicher, E. S., Pienaar, A. J., & Dhamani, K. (2024). Effectiveness of community-based obesity intervention for body weight, body mass index, and waist circumference: Meta-analysis. *Iran J Nurs Midwifery Res*, 29, 16–22. [https://doi.org/10.4103/ijnmr.ijnmr\\_120\\_22](https://doi.org/10.4103/ijnmr.ijnmr_120_22)

Zhang, Y., Guo, Z., Liu, Y., Zhou, Y., & Jing, L. (2024). Is dancing an effective intervention for fat loss? A systematic review and meta-analysis of dance interventions on body composition. *PLoS ONE*, 19(1), e0296089. <https://doi.org/10.1371/journal.pone.0296089>