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DOI: [10.31965/infokes.Vol24.Iss3.2445](https://doi.org/10.31965/infokes.Vol24.Iss3.2445)Journal homepage: <https://jurnal.poltekkeskupang.ac.id/index.php/infokes>**RESEARCH****Open Access****Effect of FITT Education (Frequency, Intensity, Type, Time) on Knowledge, Attitude, and Physical Activity Behavior among Overweight Members: A Pre-Experimental Study in a Running Community****Arjuna Herfa Dwilingga^{1a}, Linda^{1b*}, Lisma Ningsih^{1c}, Muhammad Alwi Eka Pranata^{2d}**¹ Department of Health Promotion, Health Polytechnic Ministry of Health Bengkulu, Bengkulu Indonesia² Department of Healthcare Administration, Asia University^a Email address: herfaarjuna@gmail.com^b Email address: elindinda@gmail.com^c Email address: lisma@poltekkesbengkulu.ac.id^d Email address: muhammadalwi084@gmail.com

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Abstract

Overweight is a growing public health concern because it raises the risk of non-communicable diseases. Regular physical activity is central to managing overweight, and it should follow the FITT (Frequency, Intensity, Type, and Time) principles. Insufficient knowledge and unsuitable attitudes can get in the way of appropriate physical activity. This study analyzed the effect of FITT-based education on knowledge, attitude, and physical activity behavior among overweight members of the Teman Sehat running community in Bengkulu City. A pre-experimental one-group pretest-posttest design was used, with FITT-based education as the independent variable and knowledge, attitude, and physical activity behavior as the dependent variables. Of the 54 community members, 30 overweight members were chosen by purposive sampling; they were older than 18 years, had a BMI ≥ 25 kg/m², were literate, and agreed to take part. Knowledge and attitude were measured with structured questionnaires, and physical activity was recorded with an observation checklist built on the FITT components. The intervention consisted of structured lectures supported by the Athleta educational module. Because the data were not normally distributed, descriptive statistics and the Wilcoxon signed-rank test were applied. Mean knowledge rose significantly from 58.67 ± 6.81 to 86.67 ± 6.07 (mean difference 28.00; $p < 0.001$). Mean attitude rose from 10.43 ± 0.94 to 14.97 ± 0.89 (mean difference 4.54; $p < 0.001$), and mean physical activity behavior rose from 9.20 ± 1.50 to 11.80 ± 0.86 (mean difference 2.60; $p < 0.001$). All FITT domains improved. FITT-based education therefore significantly improved knowledge, attitude, and physical activity behavior among overweight members of the Teman Sehat running community in Bengkulu City, and it can be used as a promotive and preventive strategy for overweight management in community health programs.

Keywords: overweight, behavior change, running community.**Corresponding Author:**

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1. INTRODUCTION

Overweight and obesity are among the major public health challenges worldwide, and their prevalence keeps rising in many countries, Indonesia included. The World Health Organization reported that over 2.5 billion adults were overweight, about 890 million of whom were living with obesity. Both conditions raise the risk of non-communicable diseases (NCDs) such as cardiovascular disease, type 2 diabetes, and hypertension, and they add considerably to the global disease burden (World Health Organization 2022); (World Health Organization 2024). In Bengkulu City, overweight prevalence was reported at 3.2% in 2023, so the problem is relevant locally as well. Still, there is little longitudinal or time-series data on how overweight prevalence in Bengkulu City has changed in recent years, which makes it hard to say whether the figure is rising. Even so, overweight is also found among members of community-based physical activity groups, and this calls for interventions that encourage appropriate and sustainable exercise behavior (Rotunda et al. 2024).

Physical activity plays an important role in overweight management and NCD prevention. Regular activity is linked to better cardiovascular and metabolic health, better physical fitness, and lower overall mortality risk. The World Health Organization advises adults to do 150–300 minutes of moderate-intensity aerobic activity per week, or 75–150 minutes of vigorous-intensity activity, or an equivalent mix, plus muscle-strengthening activities on at least two days a week (World Health Organization 2020); (Martínez-Vizcaino et al. 2024). International physical activity guidelines give similar recommendations. Even so, many people do not meet them: about 27.5% of adults worldwide were insufficiently active in 2016, and more recent evidence shows that inactivity is still a substantial global public health problem (Strain et al. 2024). Being active alone is therefore not enough; to get the most health benefit, exercise also has to be done with suitable frequency, intensity, type, and duration.

To address this, it helps to understand how structured physical activity interventions affect overweight populations. Earlier studies took different approaches and reported varied results. FITT-based education has been used to help people understand how to apply exercise properly, and structured exercise programs have improved body composition and physical fitness. Among adults with overweight or obesity, exercise interventions generally benefit body weight, body composition, cardiorespiratory fitness, and metabolic health (Bellicha et al. 2021). Combining exercise modalities in particular can add benefits over a single modality, although the size of the improvement depends on exercise intensity, duration, frequency, and participant characteristics (Chao, Liao, and Chou 2021). Taken together, educational and exercise-based interventions both appear beneficial, but their effects differ with the design of the intervention, the target population, and the outcomes assessed.

The evidence so far also indicates that exercise prescriptions should reflect the characteristics and needs of each participant. The FITT principle offers a practical way to set exercise frequency, intensity, type, and time systematically, according to individual needs and exercise goals (Amalia et al. 2025). Studies comparing exercise approaches show that the choice and combination of intensity and modality affect gains in physical fitness and body composition among people with overweight or obesity (Jacob, Moura, and Avery 2024); (Jayedi et al. 2024). Adherence to physical activity in this group is also shaped by behavioral, psychological, and social factors, so exercise prescriptions need to be paired with strategies that help people keep participating (Corr and Tabak 2024); (Curran et al. 2023). However, FITT principles have mostly been studied in exercise-prescription or supervised training settings, not as a structured educational intervention within community exercise groups. Many earlier studies also involved clinical, school, adolescent, or supervised exercise populations. Evidence on FITT-based education for overweight adults in community running groups is still limited. This is an important research gap, because community exercise groups already offer a social

environment in which health education and behavior-change interventions can be carried out (Huangfu et al. 2022); (Ominyi, Clifton, and Brewster 2024).

The Teman Sehat running community in Bengkulu City is a suitable setting to address this gap. It has 54 members who run regularly. Running, however, does not guarantee that people exercise according to FITT principles. In community groups, running is often done for recreation, enjoyment, and social interaction, and members may know little about the right frequency, intensity, type, and duration of exercise. As a result, they can be active without following an adequate or properly structured exercise pattern. This matters most for overweight individuals, who need appropriate exercise planning to manage their weight and lower health risks (Bellicha et al. 2021).

Earlier research supports the value of structured behavioral education. Educational and behavioral interventions can increase physical activity by working on determinants such as knowledge, self-efficacy, goal setting, action planning, self-monitoring, and social support. Interventions using behavior-change techniques have improved physical activity among adults with overweight or obesity, especially when participants are given practical strategies for turning intentions into action (Carraça et al. 2021). Health literacy also seems to matter, since people with better health literacy are more able to understand and apply health information in daily life (Buja et al. 2020). Knowledge alone is therefore unlikely to produce lasting behavior change; education should offer practical guidance that helps participants turn health information into specific, achievable physical activity practices.

FITT (Frequency, Intensity, Type, and Time) gives a practical framework for turning general physical activity recommendations into structured exercise behavior. Frequency is how often exercise is done, intensity is the level of effort, type is the mode of exercise, and time is the duration of each session. Education built on these four components can help participants see why physical activity matters and also how to plan and carry it out according to their own needs and abilities. FITT-based prescription is especially useful because exercise intensity and volume should be adapted to the individual, and one prescription does not fit every participant (Amalia et al. 2025). Lectures supported by an educational module may thus help turn information into practical exercise behavior.

This study has several distinguishing features. First, it focuses on overweight adults in a community-based running group, rather than on clinical, school-based, or adolescent populations. Community-based physical activity interventions can make use of existing social environments and support systems to encourage participation and adherence (Rodrigues et al. 2026). Second, FITT principles are delivered as a structured educational intervention that pairs face-to-face lectures with the Athleta educational module, so participants receive both a direct explanation and learning material to refer back to. Third, physical activity behavior is assessed through the individual FITT components (frequency, intensity, type, and time) instead of a single general activity score, which shows more precisely which dimensions of behavior change after the intervention. Together, these features offer a community-based perspective on applying FITT education to overweight adults.

The importance of this intervention goes beyond appearance or short-term fitness. Long-standing overweight and obesity raise the risk of NCDs, lower health status, and add to the burden on healthcare. Regular physical activity lowers the risk of premature death and brings important cardiovascular and metabolic benefits, and it can offset some of the health risks of prolonged sedentary behavior. Community members who are active without proper guidance may not gain the full benefit of exercise when their activity falls short in frequency, intensity, type, or duration. Building structured physical activity education into community exercise groups could therefore serve as a practical promotive and preventive strategy to improve exercise behavior and support overweight management.

Based on the identified problem and research gap, this study aimed to analyze the effect of FITT-based education on knowledge, attitude, and physical activity behavior, including

frequency, intensity, type, and time, among overweight members of the Teman Sehat running community in Bengkulu City.

2. RESEARCH METHOD

This was a quantitative study with a pre-experimental one-group pretest-posttest design. It assessed how FITT (Frequency, Intensity, Type, and Time)-based education changed knowledge, attitude, and physical activity behavior among overweight members of the Teman Sehat Running Community in Bengkulu City. FITT-based education was the independent variable; knowledge, attitude, and physical activity behavior were the dependent variables.

The population was all 54 members of the Teman Sehat Running Community in Bengkulu City. Thirty overweight members formed the sample, chosen by purposive sampling according to set inclusion and exclusion criteria. Inclusion required age >18 years, BMI ≥ 25 kg/m², literacy, and willingness to take part; people with cognitive impairment or who were absent during the intervention were excluded. The Lemeshow formula was used to calculate sample size from the pretest-posttest means and standard deviations of earlier studies, with a 10% allowance for attrition, which gave a final sample of 30 respondents.

Data were gathered with the Athleta module as educational material, a knowledge questionnaire of 10 multiple-choice items, an attitude questionnaire of 4 Likert-scale items, and an observation checklist for physical activity behavior based on the FITT components of frequency, intensity, type, and time. Both questionnaires had been tested for validity and reliability: experts in health promotion and physical activity validated the instruments, and Cronbach's alpha was >0.60 for the knowledge and attitude questionnaires. Ethical approval and research permission were granted by the Ethics Committee of the Health Polytechnic of Bengkulu, Ministry of Health (No. KEPK.BKL/219/04/2025).

The research followed three stages: preparation, intervention, and post-intervention evaluation. The first stage took place on Wednesday, February 12, 2025, beginning with informed consent from all 30 respondents. They then filled in the knowledge and attitude questionnaires as the pretest. Afterwards, the researchers used an observation checklist to assess physical activity behavior, covering the frequency, intensity, type, and time of running. This observation lasted one week and recorded how far the FITT principles were applied before the intervention. The researchers also explained the study procedures and activities so that every respondent understood the process. On Wednesday, February 19, 2025, the researchers went over the results of that one-week observation.

The second stage was the intervention. FITT-based education was delivered in two sessions. The first was face-to-face on Wednesday, February 19, 2025, and lasted about 45 minutes. The researchers gave respondents a QR code linking to the educational media and explained the content of the Athleta module. Respondents listened while reading the material and could ask questions and join the discussion. The second session was held on Friday, February 21, 2025, using the same approach. Both sessions aimed to improve respondents' understanding of the FITT principles and how to apply them to physical activity, especially running.

The third stage was the post-intervention evaluation. A posttest was held on Friday, February 28, 2025, after the two intervention sessions, using the same knowledge and attitude questionnaires as the pretest. Physical activity behavior was again assessed with the same FITT observation checklist, over one week, to see how respondents' application of the FITT principles had changed after the intervention.

Descriptive and inferential statistics were used for analysis. Normality was checked before hypothesis testing, and since the data were not normally distributed, the Wilcoxon

signed-rank test compared knowledge, attitude, and physical activity behavior scores before and after the FITT-based education. The significance level was set at $p < 0.05$.

3. RESULTS AND DISCUSSION

Most participants were male, aged 26–35 years, and had completed secondary or higher education. Mean knowledge score rose from 58.67 to 86.67 and mean attitude score from 9.47 to 14.97. Behavior improved in the frequency, intensity, type, and time dimensions. The Wilcoxon test showed significant changes ($p < 0.05$) in all domains.

Table 1. Characteristics of Respondents by Age, Education, and Gender

Characteristic	Variable	Frequency (f)	Percentage (%)
Age	18-25 year	9	30
	26-35 year	17	56.7
	36-45 year	4	13.3
Education	Junior high school	0	0
	Senior high school	10	33.3
	Bachelor's degree	20	66.7
Gender	Male	19	63.3
	Female	11	36.7

Most respondents (56.7%) were aged 26-35 years, most (66.7%) held a bachelor's degree, and most (63.3%) were male.

Table 2. Mean Knowledge Score of Overweight Members Before and After the Athleta Module Intervention

Variable	n	Mean+SD	Min-Max
Before	30	58.67±6.814	50-70
After	30	86.67 + 6.065	80-100

Table 2 shows that the mean knowledge score was 58.67 before the intervention and rose to 86.67 after the intervention with the Athleta module.

Table 3. Mean Attitude Score of Overweight Members Before and After the Athleta Module Intervention

Variable	n	Mean+SD	Min-Max
Before	30	9.47 + 0.19	8-11
After	30	14.97 + 0.890	13-16

Table 3 shows that the mean attitude score was 9.47 before the intervention and rose to 14.97 after the intervention with the Athleta module educational media.

Table 4. Mean FITT-Based Physical Activity Behavior Scores Before and After Intervention

FITT Component	Before (Mean ± SD)	Before (Min–Max)	After (Mean ± SD)	After (Min–Max)
Frequency	2.10+0.71	1-3	3.10+0.66	2-5
Intensity	1.60+0.56	1-3	1.83+0.59	1-3
Type	1.37+0.49	1-2	1.83+0.59	1-3
Time	2.13+0.43	1-3	2.37+0.67	2-3
Adherence to FITT program	2.00+0.74	1-3	2.90+0.31	2-3

Table 4 shows how overweight members of the Teman Sehat running community applied the FITT principles. Exercise frequency was fairly good, with a mean of 3.1, whereas intensity, type of exercise, and duration were still moderate to low (mean 2.0). Compliance with the FITT

program was fairly high (mean 3.0), which suggests that most members followed the exercise program quite consistently.

Table 5. Effect of FITT Education on Knowledge, Attitude, and Behavior Among Overweight Members

Variable	Before (Mean SD)	After (Mean SD)	Δ Mean	P-Value
Knowledge	58.67+6.814	86.67+6.065	28.0	0.000
Attitude	10.43+0.935	14.97+0.890	4.54	0.000
Behavior	9.20+1.495	11.8+0.860	2.60	0.000

Table 5 shows significant improvement in all three variables after the FITT education intervention ($p = 0.000$ for knowledge, attitude, and behavior). The size of the change, however, differed widely: knowledge rose by 28.00 points, a proportionally larger gain than attitude ($\Delta = 4.54$) and behavior ($\Delta = 2.60$). The intervention therefore had its strongest and most direct effect on the cognitive domain, and a more modest effect on attitude and, especially, behavior. This is the pattern one would expect: knowledge is usually the quickest and most direct result of education, while attitude and behavior change depend on further psychological and social processes (e.g., perceived self-efficacy, social reinforcement, habit formation) that a two-session lecture and module can hardly influence directly.

Discussion

This study examined how FITT (Frequency, Intensity, Type, and Time)-based education changed knowledge, attitude, and physical activity behavior among overweight members of the Teman Sehat Running Community in Bengkulu City. All three outcomes improved significantly after the intervention: knowledge from 58.67 ± 6.81 to 86.67 ± 6.07 , attitude from 10.43 ± 0.94 to 14.97 ± 0.89 , and physical activity behavior from 9.20 ± 1.50 to 11.80 ± 0.86 . A fairly simple intervention, structured lectures combined with the Athleta module, was thus enough to improve participants' understanding, perceptions, and application of the FITT principles. These findings matter because physical activity is a key part of overweight management and NCD prevention. Regular activity is linked to better cardiovascular and metabolic health, body composition, physical function, and psychological well-being (World Health Organization 2020).

Respondent Characteristics

Respondent characteristics such as age, gender, and educational background should be considered when interpreting physical activity behavior. Age can shape exercise preferences, physical capacity, and tolerance for different exercise intensities. Younger adults usually have greater physiological capacity for moderate-to-vigorous activity, while older age can bring changes in cardiorespiratory capacity, muscle strength, and exercise preferences. Physical activity stays beneficial throughout life, as long as its type, intensity, and duration are adapted to individual capacity (World Health Organization 2020).

Gender can also affect participation in physical activity. Population-level data consistently show differences in insufficient physical activity between men and women, although these differences vary between countries and social contexts (Strain et al. 2024). They may stem not only from physiological characteristics but also from social norms, opportunities to take part, perceived safety, social support, and preferences for certain forms of exercise. The characteristics of the Teman Sehat Running Community should therefore be taken into account when designing physical activity education, so that the messages fit participants' needs and capacities.

Educational background matters too, because it influences how well a person can find, understand, and use health information. Several studies link health literacy positively with physical activity, which suggests that people who understand health information better are able to make more informed decisions about being active (Buja et al. 2020). In this study, simple, structured, and contextualized educational material may have narrowed differences in educational background by presenting FITT concepts in a form that could be applied directly to running. Education should therefore do more than provide information; it should turn technical exercise recommendations into practical instructions that participants can understand and use.

Changes in Knowledge Regarding FITT

Mean knowledge rose by 28.00 points, from 58.67 ± 6.81 before the intervention to 86.67 ± 6.07 after it. This large gain shows that the FITT-based education effectively improved participants' understanding of appropriate physical activity prescription. The result agrees with evidence that educational and behavioral interventions can improve physical activity-related knowledge and support later changes in physical activity behavior (Amalia and Kurniasari 2025).

The combination of structured lectures and the Athleta module probably explains the gain in knowledge. The lecture allowed direct interaction between researchers and participants, so concepts could be explained and clarified on the spot, while the module gave participants a reference to review after the session. Clear, practical materials tied to participants' daily activities can help them remember and apply health information. Earlier evidence also indicates that health literacy is positively associated with physical activity and helps people make deliberate choices about how they are active (Buja et al. 2020).

The content was also directly relevant to participants, because FITT was explained through running, which community members already knew well. This contextual approach may have made the information seem more useful. Instead of presenting physical activity as an abstract idea, the intervention showed how often to exercise, how to determine suitable intensity, which types of activity can be done, and how long each session should last. This matches current exercise prescription, which adjusts frequency, intensity, time, and type to an individual's goals, baseline fitness, and health status (World Health Organization 2020); (Amalia et al. 2025).

These findings are also in line with Amalia and Kurniasari (2025), who found significant improvements in knowledge and physical activity-related attitudes after educational interventions among adults with overweight (Amalia and Kurniasari 2025). Behavior-change research likewise shows that interventions using instruction, goal setting, graded tasks, self-monitoring, and other behavior-change techniques can improve physical activity among adults with overweight or obesity (Carraça et al. 2021). The knowledge gain in this study can therefore be seen as an important first step toward behavior change.

Changes in Attitude Regarding FITT

Attitude also improved significantly after the FITT-based education. Mean attitude score rose from 10.43 ± 0.94 before the intervention to 14.97 ± 0.89 after it, suggesting that participants came to view structured, measurable, and sustainable physical activity more positively. Positive attitudes matter because knowledge alone does not necessarily lead to behavior adoption.

Increased knowledge, practical examples, and chances to interact during the sessions probably all contributed to the better attitude. Because the Athleta module presented FITT in the context of running, participants may have realized that exercise should not only be done more often but also be structured properly. For overweight individuals this distinction is important, since exercise prescription should account for safety, individual capacity, progression, and adherence and not simply push for greater exercise volume (Bellicha et al. 2021).

Earlier research supports the link between educational interventions and attitudes toward physical activity. Khani Jeihooni found that education based on the Theory of Planned Behavior improved physical and nutritional behaviors among overweight and obese women (Khani et al. 2022). Their findings indicate that education can influence behavioral determinants by strengthening perceptions of the benefits of physical activity and tackling barriers to participation. Rakhshani et al. (2025) likewise showed that training based on the Transtheoretical Model improved physical activity among overweight and obese women, which suggests that educational interventions help participants recognize the benefits of exercise and overcome barriers to participation (Rakhshani et al. 2025).

Attitude deserves attention because people can know enough about exercise and still not act on it. Research on the intention-behavior relationship shows that positive intentions do not always lead to matching physical activity behavior, a phenomenon known as the intention-behavior gap (Feil, Fritsch, and Rhodes 2023b). The improvement in attitude found here should therefore be read as an important intermediate outcome, not as proof that knowledge and attitude automatically produce long-term behavior change.

Changes in Physical Activity Behavior and the FITT Components

Mean physical activity behavior score rose from 9.20 ± 1.50 to 11.80 ± 0.86 after the intervention. Because improvements appeared across the FITT domains, participants not only understood the principles but also changed how they exercised. This agrees with systematic reviews showing that behavioral interventions can increase physical activity among adults, including those with overweight or obesity (Carraça et al. 2021); (Wahlich et al. 2020).

The changes, however, were not the same across FITT components. Frequency improved most, from a mean of 2.10 to 3.10, while intensity and type stayed comparatively lower. Education thus seems to have been more effective at changing the scheduling and regularity of exercise than its qualitative characteristics. Participants may find it easier to decide to exercise more often than to work out how hard to exercise or how to change the type of activity.

Frequency probably improved most because it demands relatively little behavioral change. Raising frequency mainly takes planning, scheduling, and building a routine. Changing intensity, by contrast, requires participants to recognize and regulate their physiological effort, and changing type requires knowing other exercise modalities and sometimes having equipment, facilities, or professional supervision. The behavior-change literature supports this view: goal setting, action planning, and self-monitoring are techniques associated with better physical activity, while behavioral practice and rehearsal become especially important when the behavior calls for specific skills (Carraça et al. 2021).

The limited improvement in intensity is also understandable among overweight participants. Higher intensity places greater physiological demands and can be constrained by perceived exertion, cardiorespiratory fitness, musculoskeletal discomfort, fear of injury, or low confidence. Participants may therefore be willing to add exercise sessions but unwilling or unable to raise intensity substantially. Evidence shows that exercise intensity should be individualized, especially for people with overweight or obesity, and not uniformly set at a high level (Amalia et al. 2025).

These findings do not mean that high-intensity exercise is always better than moderate-intensity exercise. Studies comparing high-intensity interval training with moderate-intensity continuous training in overweight and obese populations found that both improve cardiorespiratory fitness and body composition, with differences depending on the outcome and the intervention characteristics (Rugbeer, Constantinou, and Torres 2021). More recent evidence also shows dose-related improvements in body weight, waist circumference, and body fat from aerobic exercise among adults with overweight or obesity (Bellicha et al. 2021). The

key issue is therefore not to raise intensity as such but to reach an intensity that is appropriate, sustainable, and matched to participants' capabilities.

The type-of-exercise domain also improved only slightly. A likely reason is that members of the Teman Sehat community already prefer running, so an intervention centered on FITT may reinforce how they run instead of pushing them to diversify their exercise modalities. Variety could still be useful, because combining aerobic and resistance exercise has complementary effects on cardiorespiratory fitness, body composition, muscle strength, and metabolic health (Wang et al. 2024);(Lopez et al. 2022); (Liu et al. 2022). Exercise interventions in overweight and obese individuals have also shown favorable effects on body weight, BMI, visceral fat, and other body composition components (Lee and Lee 2021)

Relationship Between Knowledge, Attitude, and Behavior

Overall, the findings support the view that knowledge and attitude can contribute to behavior change, but not necessarily in a linear or immediate way. Participants first received information about the FITT principles, then showed better attitudes toward structured physical activity, and finally improved in observed physical activity behavior. This sequence fits behavioral theories in which knowledge and other cognitive determinants feed into intention and behavior adoption, although actual behavior is also shaped by environmental, social, physical, and motivational factors.

The results also show a partial gap between cognitive improvement and behavioral implementation. Knowledge and attitude rose substantially, yet the size of behavioral improvement varied across FITT domains. This agrees with the wider literature, which shows that intention and positive attitudes do not always translate directly into physical activity behavior (Feil, Fritsch, and Rhodes 2023a). People may understand why physical activity matters and hold positive attitudes toward exercise, yet still face barriers such as lack of time, fatigue, physical discomfort, low confidence, environmental conditions, or lack of proper supervision.

This is especially relevant to community-based interventions. Carraça et al found that the effect of behavior-change techniques depends on the mode of intervention, with behavioral practice and rehearsal particularly relevant to face-to-face delivery (Carraça et al. 2021). Olander likewise found that action planning, time management, self-monitoring, and social support were associated with better physical activity among people with obesity. Education may thus work best when combined with chances to practice the target behavior.

Role of the Athleta Module and Community Setting

The Athleta module probably strengthened the intervention by letting participants reach the educational content outside the lecture session. It works as a reference that participants can use to review the FITT recommendations and relate them to their own running. Educational materials are most useful when they give specific instructions and not general messages like “exercise regularly.” Here, the FITT concept was translated into practical components that participants could build into their existing exercise routines.

The community setting probably contributed to the improvement as well. The Teman Sehat Running Community already offers a social environment where members run regularly. Community-based physical activity interventions can benefit from such existing structures, because group participation can bring social support, encouragement, accountability, and shared experiences (Wang, X et al. 2024). Systematic reviews have also found that community-based physical activity interventions can improve physical activity, especially when they involve personal contact, group sessions, or tailored approaches (Wahlich et al. 2020).

Recent evidence further shows that group-based and supervised interventions may be especially useful for improving exercise adherence among adults with overweight or obesity (Rodrigues et al. 2026). This supports the value of running communities as sustainable settings for health promotion. Such a community already has a structure that can be used to deliver

education, monitor participation, offer peer encouragement, and gradually introduce more structured exercise practices.

Implications for Overweight Management

The improvement in physical activity behavior found here has important implications for overweight management. Physical activity is a core element of lifestyle management because it raises energy expenditure and can improve body composition and metabolic health even without substantial weight loss. Systematic reviews show that exercise interventions can reduce body weight, BMI, body fat, and visceral fat in individuals with overweight or obesity (Lee and Lee 2021).

The findings also show that increasing frequency alone may not maximize the health benefits of exercise. WHO recommends that adults do 150–300 minutes of moderate-intensity aerobic activity per week or 75–150 minutes of vigorous-intensity activity, together with muscle-strengthening activities on at least two days per week (World Health Organization 2020). The smaller changes in intensity and type seen in this study therefore point to an area that later interventions should improve. Participants should be supported step by step, moving from simply exercising more often toward exercising at a suitable intensity, adding other exercise types, and reaching an adequate duration.

Importantly, an educational intervention should not push participants to start high-intensity exercise right away. Progression should be individualized and sustainable. Regular moderate-intensity exercise can give meaningful health benefits, and higher-intensity exercise can be added gradually when it is appropriate and tolerated (Amalia et al. 2025). For overweight individuals, this approach can lower barriers such as fatigue, discomfort, and fear of injury while raising confidence and adherence.

Practical and Research Implications

FITT-based education can serve as a practical health-promotion strategy within community running groups. The results also show, however, that education alone may not produce equal improvements in every component of physical activity behavior. Future programs should therefore pair educational sessions with supervised practice, individualized exercise prescription, goal setting, self-monitoring, and periodic feedback, which can help participants turn conceptual knowledge about FITT into suitable exercise intensity, type, and duration (Carraça et al. 2021).

The community setting makes such an approach feasible at relatively low cost, since its social structure and regular activities already exist. Community-based interventions have shown potential to increase physical activity, but maintaining the gains over the long term remains a challenge (Wahlich et al. 2020). Follow-up sessions and periodic reinforcement may therefore be needed to stop the initial improvement from fading.

Finally, the study design must be taken into account. The one-group pretest-posttest design shows a significant change after the intervention but cannot fully rule out other explanations such as maturation, external influences, or repeated testing. The relatively small sample and single-community setting may also limit generalizability. Future studies should use randomized controlled or controlled quasi-experimental designs, larger samples, and longer follow-up. Objective measures such as accelerometers or validated activity monitors could complement observation checklists and measure exercise intensity, duration, and volume more precisely. Long-term follow-up is especially needed to find out whether improvements in FITT-related behavior last beyond the immediate post-intervention period (Wahlich et al. 2020).

In sum, FITT-based education delivered through structured lectures and the Athleta module improved knowledge, attitude, and physical activity behavior among overweight members of the Teman Sehat Running Community. Exercise frequency showed the strongest behavioral improvement, while intensity and type changed less. Education thus appears

effective for building awareness and regular exercise, but more comprehensive change across all FITT components probably needs additional practice, supervision, and individualized exercise prescription.

4. CONCLUSION

FITT (Frequency, Intensity, Type, and Time)-based education significantly changed physical activity behavior among overweight members of the Teman Sehat Running Community in Bengkulu City.

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