International Journal of Future Engineering Innovations

Comprehensive Review of Flex fit - Personalized Fitness Assistant

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Article Info

ISSN (online): 3049-1215
Volume: 03
Issue: 01
Received: 08-11-2025
Accepted: 10-12-2025
Published: 08-01-2026
Page No: 16-18

Abstract
Over the past twenty years, urbanization and technological advancements have significantly changed daily lifestyles, leading to sedentary behaviors among students and professionals. Prolonged use of electronic devices has increased health issues such as obesity, poor posture, muscle tightness, eye strain, mental stress, and cardiovascular problems. Regular exercise, yoga, or physical activity is essential to maintain overall physical and mental well-being, yet many people fail to follow consistent fitness routines due to lack of time, motivation, or access to resources. Conventional fitness options, such as gyms or personal trainers, are often expensive, limiting accessibility. In response, smart fitness solutions have emerged, offering affordable, user-friendly, and wearable-independent platforms. These systems provide daily fitness tips, suggestions, and holistic features, including menstrual cycle tracking, promoting long-term commitment to a healthy lifestyle. Compared to existing wearable-dependent or complex AI-based applications, the proposed system is lightweight, cost-effective, and beginner-friendly, supporting consistent fitness habits at home or anywhere.

Keywords: Urbanization, Sedentary lifestyle, Physical fitness, Mental health

1. Introduction

From last twenty years, urbanization and improved technology have changed our lives, our routine, food style and fitness routine. Almost all of the students and professionals spare their most of their time using electronic gadgets such as computers, which made them to sit ideal at a constant place which leads to several health issues such as obesity, affects the body posture, muscle tightness, mental and physical stress, eye problems due to blue light effects and cardiovascular diseases.

Daily workouts, exercise or yoga is much important to balance overall body and mental health. But many people cannot continue their daily fitness routine. Because of their lack of time to workout, lack of interest or motivation to workout and lack of some sources which boost them to do workout.

Other fitness options like personal trainers or gyms are very costly for some people.

Therefore, Smart fitness options are growing rapidly, which makes every people to access them within their home or any other places with few or no equipments needed.

Technology has improved so far, now it is at a phase where it's so easier to use and to understand the physical activities. So that more number of people are started to using this to maintain their health physically as well as mentally, and get a required data about how to conduct their workouts. Bringing up a personal fitness assistant which offers daily fitness tips and suggestions for the users, we hope to increase the consistent of exercise, pushing up the users to continue their fitness routine by establishing a commitment. Using the existing technologies and research on physical fitness and wellness, we have developed an affordable and user-friendly solution that ensures the development of healthy lifestyle habits and holding them for long-term commitment to fitness.

2. Related Work

Various research shows how smart technology can help individuals monitor their fitness
levels and activities. In most cases, Fitness assistant system can be categorised as AI based system, wearable-dependent systems and basic reminder based applications.

2.1 Wearable-dependent

Wearable-dependent systems requires sensors, high cost, limited accessibility. In PRO-fit, it uses wearable sensors such as accelerometers and integrate machine learning for classifying activity data. While
PRO-fit enhances high personalization and it requires users to wear the device and continuously. But in our proposed system, it is wearable independent with low
personalization.

2.2 AI-based Systems:

AI - based system requires complex models and continuous interaction. In AI - Fitness workout Assistant, for evaluating algorithms it's important to choose effective NPL and machine learning models which can correctly understand user-inputs and recommend
relevant replies. But in our proposed system, low model complexity with simple logic and timers. It's beginner friendly and don't
requires continuous interaction with users.

2.3 Basic reminder-based applications.

Basic reminder-based applications offer reminder. In Mobile Fitness App it measures PA in pregnant women with the help of wearable devices. In our proposed system, it's wearable independent and it has unique feature that is Menstrual cycle Tracker in which they can know about their phase in menstrual cycle and provides cycle awareness. It also has holistic features but in mobile fitness app, there is no adaptive or holistic features.

By all this, most existing system are wearable dependent, needs complex models. But in our proposed system it is lightweight, affordable and easy to use fitness assistant.

3. Benchmark

As the purpose of benchmarking is to evaluate the performance of the proposed system by comparing it with existing system under same conditions in the existing systems. Here comparison done not only on the features but also on the cost, ease of use, underlying technology and comfortable of user to
workout at home.

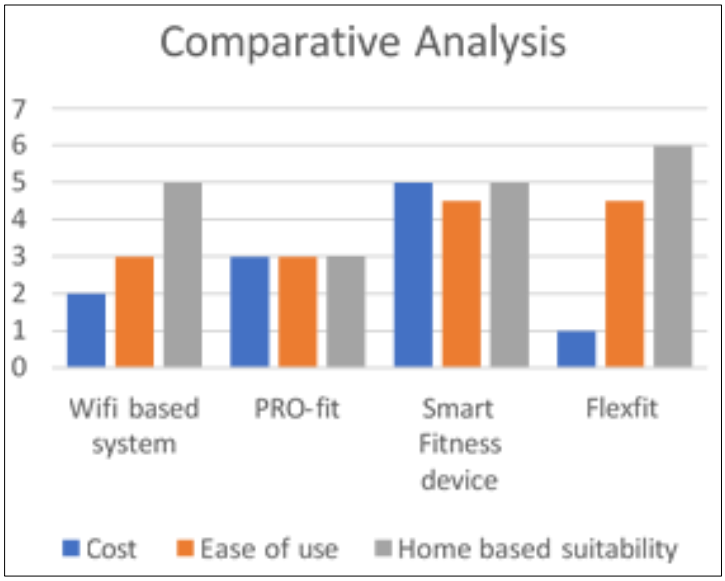

Fig 1

In existing systems fitness assistants can be hardware like sensors, wearable devices etc. and some of them uses WIFI, in this there is no need of using any wearable hardware devices. the systems accurately identify users' activities by using signals. But these signals require high processing, controlled environment and expensive set up. While in the wearable hardware devices like in PRO-Fit, it offers accurate user activity but it is not cost effective and also it increases overall system's complexity.

In our proposed system it eliminates hardware which increases system complexity and WIFI which uses high processing signals .here we made a user friendly website where user get essential health-related features such as particular yoga sessions ,exercise plans ,diet plans ,body mass index(BMI)calculation, menstrual tracking module and remainder settings .This system is user friendly and suitable for students ,working professionals and to the old people and this system can be accessed to anyone freely .Here they can also set reminder according to their free time so that they can practice their yoga and exercises. Especially for women in menstrual tracking section we keep track of user's four stages of menstrual cycle and give related exercise and yoga sessions.

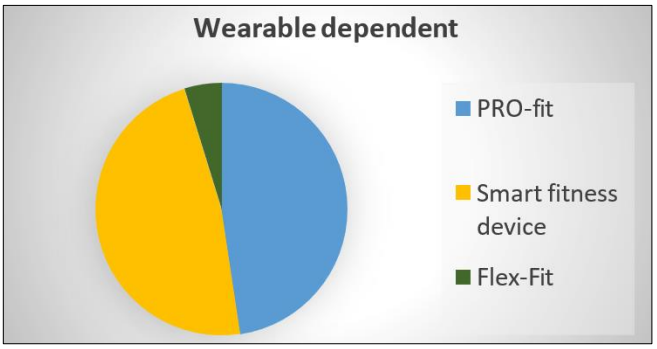

Fig 2

Through comparing benchmark of the currently existing systems and proposed fitness assistant, proposed fitness assistant is a cost effective and reasonable solution for

monitoring daily fitness activities of an individual in a home.

Table 1

Feature/System	WiFi-based Fitness Assistant	PRO-Fit Framework	Smart Fitness Device	Proposed Project
Wearable Device Required	No	Yes	Yes	No/Minimal
Personalization	High	High	Medium-High	High
Workout Recognition	Yes (WiFi CSI)	Yes (Sensors)	Yes (Sensors)	Yes
Real-time Feedback	Yes	Limited	Yes	Yes
Ease of Use	Medium	Medium	High	High
Workout Recognition	Yes (WiFi CSI)	Yes (Sensors)	Yes (Sensors)	Yes
Real-time Feedback	Yes	Limited	Yes	Yes
Ease of Use	Medium	Medium	High	High
Cost	Low-Medium	Medium	High	Low
Home based Suitability	High	Medium	High	Very High
Additional Health Features (BMI, Diet, etc)	Limited	Limited	Yes	Yes

4. Conclusion

There is a growing awareness of health problems and there are more people searching for fitness assistants. Fitness assistants provide support to help people exercise and maintain healthy life. However, most existing fitness solutions do not meet the needs of today's society.

Wearable trackers, WiFi, or Bluetooth-based Fitness Assistants generally are very expensive, need extensive training and offer few personalized experiences for the user.

There is a significant need for affordable, easy to use, and personalized Exercise Coaching Solutions.

This proposed Fitness Assistant has been developed as a low-cost solution for home use and is designed to provide customized fitness coaching and basic health and wellness support to the user. The proposed Fitness

Assistant will integrate into the daily lives of Students and Working Professionals.

This Fitness Assistant is an improvement over previous methods of Assessing Personal

Fitness and Encouraging Regular Physical Activity. The proposed Fitness Assistant enhances user knowledge of their personal fitness level and activity level, and therefore can help Users set and achieve Health Goals and also improve long-term Health

Management.

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How to Cite This Article

Prathiksha TS, Kanthi RR, Rakshitha C, Rakshitha DN. Comprehensive review of Flex Fit – personalized fitness assistant. Int J Future Eng Innov. 2026;3(1):16–18.