

BMI Home Workout: Exercise Application Without Any Equipment Along with BMI Calculations

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DOI: <https://doi.org/10.30880/mari.2022.03.05.015>

Received 15 July 2022; Accepted 30 November 2022; Available online 31 December 2022

Abstract: Due to the spread of the covid-19 virus, all communities are instructed to stay at home and cannot go out to the park or gym to do exercise activities. This is not a reason for us not to exercise even if we do not have complete equipment. Therefore, this application was developed to help them stay active even at home. A BMI home workout application can be a valuable tool to help you stay calm and continue to protect your health over the years. It provides four types of workouts and takes less than five minutes for each exercise pleasure, even at home, without special equipment, and with limited space. The BMI Home workout application has been developed for Android devices. This application helps people maintain the health and fitness of their bodies. This application is suitable for any range of age especially for those who care about the health of the body. According to the ADDIE model, which has five phases namely analysis, design, development, implementation, and evaluation phases, this application is developed using unity software. In this era, society is very concerned about a beautiful body shape, therefore a balanced diet and exercise routine are very important. With this application, we can know which BMI category we belong to. We can also learn about the food pyramid and Developed for Android devices Also, we can exercise at home. And most importantly does not require exercise equipment. The application is simple and cost-free. The result of this project is expected that the BMI Home Workout application can be used by an android user and a user-friendly that can be used by every range of age. BMI Home Workout application contains appropriate workouts at home and calculates the Body Mass Index (BMI). Lastly, we hope this application can upgraded further by produce more of the latest features that users need, such as collecting healthy food recipe videos and users' overview of their fitness activities by day, week, month, or another time period. It helps evaluate the progress in a given period of time and set long-term goals accordingly.

Keywords: BMI, Application, Home Workout

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1. Introduction

Body Mass Index (BMI) determine whether weight is balanced or not. If your BMI value does not match your height and weight ratio, it indicates overweight or underweight. If BMI value is high, you are at risk for diseases such as high blood pressure, diabetes or heart disease. Meanwhile, if the value is too low, there is a possibility of facing health problems such as decreased resistance to infection, chronic fatigue or anemia. Calculate BMI will help identify the ideal weight, thus, reducing the risk of health problems. BMI category provided by the Ministry of Health Malaysia (MOH) [1] shows that BMI less than 18.5 means underweight. It can pose serious health risks if left untreated. BMI 18.5 to 24.9 is normal and suitable for yourself. BMI 25 until 29.9 is an early warning that being overweight and at risk for developing type 2 diabetes and other critical illnesses while BMI from 30.0 to 34.9 means Obese. Lastly, BMI greater than 35 means extremely obesity. It will increase the tendency as well as the risk to develop various chronic diseases such as type 2 diabetes as well as heart related diseases. For this reason, it is very important that we know the BMI category of our body and ensure that the BMI is in the normal category.

When exercising, blood flow will increase and often feel more positive also affects our brain [2]. Thus, workout is a daily routine that must be done by every individual to maintain the health and intelligence of the body. This is because exercise involves the respiratory system that can supply oxygen to the whole body including the brain, thus building a person who can think rationally and maturely, especially in the current situation that requires high mental endurance [3]. Thus, workout is a daily routine that must be done by every individual to maintain health and intelligence. A good workout must be followed by a balanced diet according to food pyramid [4]. This is because, when exercising the cells in the body work hard to build muscle to make the body stronger and healthier.

According to the World Health Organization (WHO), a substantial majority of young people and adults were not physically active enough. As new COVID-19 cases arise in our country, most people are advised to remain at home in self-quarantine. Fitness centers and other places where people regularly exercise are temporarily closed due to the pandemic. As a result, remaining at home for extended periods of time might make it difficult to maintain a healthy level of physical activity. Inactive behavior and low levels of physical activity have a negative impact on each individual's health, well-being, and quality of life. The condition could be aggravated by the impact of ongoing COVID-19 transmission [5]. The BMI home workout software can be a useful tool in helping you stay calm and safeguard your health over time [1]. To avoid health complications other than COVID-19 infection, BMI Home workout application provides four types of exercise and takes less than five minutes for each. This application can be used even at home, without special equipment and with limited space. Aside from exercise, it is also important to eat healthily and stay hydrated. The application recommends adequate water intake following the needs of each individual and ensuring an excess of fruits and vegetables, as well as limiting the intake of salt, sugar and fat with more whole grains than refined foods.

2. Materials and Methods

The BMI home workout application is developed using ADDIE model which covers five phases, namely analysis, design, development, implementations and final evaluation. We use this model as it is comprehensive which covers the objectives of the project, the goal of the project developed and the results of the design in order to achieve the actual objectives of the project [6].

2.1 Analysis

In this analysis phase, we need to first identify the problems that exist in relation to this development project. To ensure that this project achieves its objectives, we have done some review by making comparisons with other existing applications namely 365 Body Workout, 30 Days Fitness, Aerobic Dance Workout and Cardio Workout At Home. The results of the study found that there are several problems as mentioned below:

- Difficulty in checking BMI and good nutritional recommendations
- Not provide a full guide of certain workout and required payment to got a full guide
- Only showed a picture so not easier for beginner to know how the actuals way to doing the workout

The application target consisting youngest to oldest people. Target user will be the first to try this application whether it is successful and according to the required requirements. We also take into account the scope, background and objectives of the project.

2.2 Design

In this phase, we will discuss about what hardware and software needed to develop this project. In this phase each member in our team should be able to find some reference on the internet about our project and show the design idea in this application interfaces. Storyboards used to translate the design that will be produced.

2.3 Development

In this phase, the application development process will be done based on the research and data collected through the distribution online questionnaires in Google forms using the whatsapp platform. The software used is Unity because is very suitable for building Android-based applications. The programming language is the C# language. There are also some multimedia elements used such as graphics, audio and text. Background, logos, icons and menus are also produced.

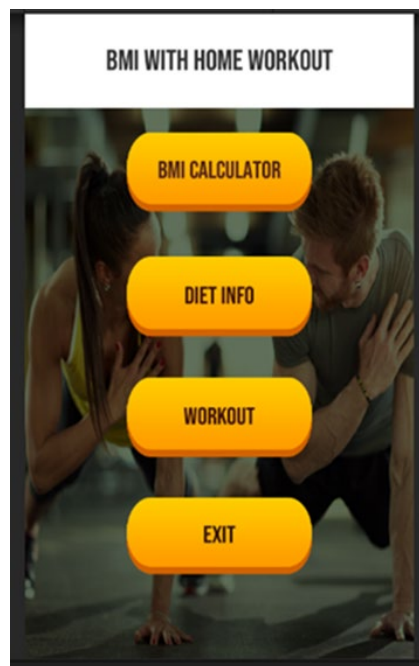


Figure 1: Main Page

Figure 1 is the main page of our application called BMI Home Workout which will offers three modules for the users to use. Firstly, the users can perform exercise anywhere they like by using the Workout section where it contains different types of workouts as well as exercises that can support and aid them to practice a healthy lifestyle. Other than that, Body Mass Index (BMI) calculator is involved in the app because it is highly essential when it comes to calculating the amount of body fat of an individual globally and accurately. Lastly, the users will be able to keep track of what they eaten and then consume appropriate diet by looking at the food pyramid regarding their bodies in the Diet info section and the users also can keep an eye on the daily water intake because sufficient amount of water intake is necessary for human body as well [7].

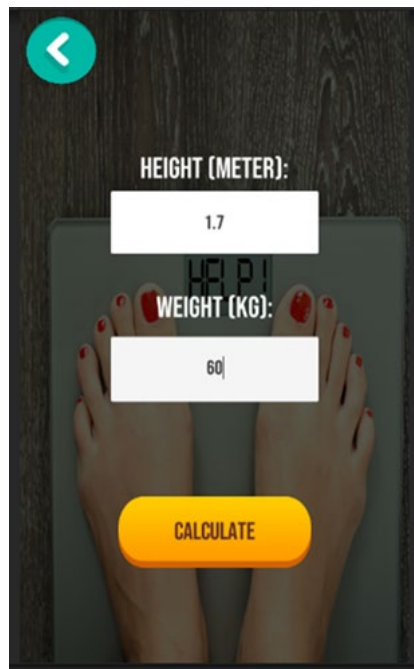


Figure 2: BMI calculations

Figure 2 is the BMI calculator page where the user can enter input such as their weight(kg) and height(cm) then the user needs to press the calculate button to get the total BMI for their body. After the user presses the calculate button, the user will be taken to a page that show their BMI result. Users will get the results of the total BMI for their body and there is a BMI category, where a BMI less than 18.5 means underweight. BMI from 18.5 to 24.9 means the weight of the user is normal. BMI 25 to 29.9 is overweight. BMI 30.0 to 34.9 means obese. BMI greater than 35 means extremely obese [6].



Figure 3: Diet information

Figure 3 is the Food Pyramid as a simple guide for user to diversify their daily diet according to the recommended number of meals. The body needs different types of food in different quantities to maintain health. The Food Pyramid has a combination of five food groups placed on four levels [3]. Apart from the types of food groups, the food pyramid also states the number of meals recommended

to be taken in a day for each food group. The shape of the larger pyramid at the bottom and the smaller one at the top illustrates to the user the need to consume more food at the bottom of the pyramid and eat less foods at the top of the pyramid. Users also has a suggestion on the daily water intake because sufficient amount of water intake is necessary for human body as well.

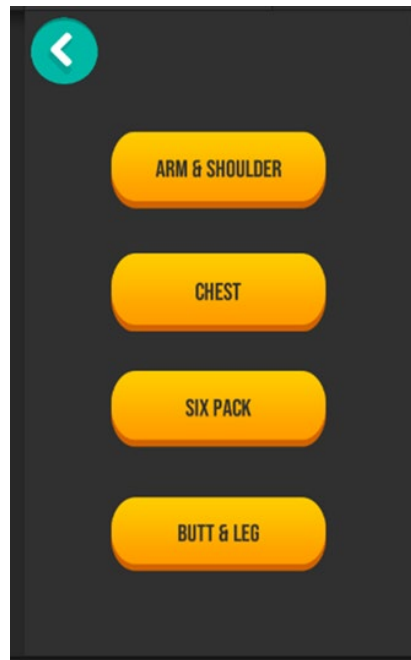


Figure 4: Types of workout

Figure 4 shows the four types of workout sections available in this application and each exercise section has five different exercise types. Each exercise has recommendations to do for 3 categories of users whether beginner, amateur or professional users. For beginner users it is recommended to do 12 reps for each set up to 3 sets. Amateur users need to do 3 sets and each set of 20 reps. Professional users are advised to do 26 reps for each set up to three sets. After the user finishes the exercise, the user may need to press the continue button to continue with another exercise [3]. Lastly, is the exit button when the user presses the button the user will automatically exit from the BMI Home Workout application.

2.4 Implementation

In this phase, after done everything regarding to the project the application will be downloaded on smartphones to be tested by users using APK file given through the Telegram application. To make sure we will be able to find and solve if there are some error in the application created.

2.5 Evaluation

In this last phase, it is vital to conduct examination and consider in development for each sort of work out is fitting and the BMI calculation is either exact or not agreeing to the standard [6]. We asked 30 people, from youngest to oldest people to evaluate this application. Online questionnaire created using Google Forms distributed through WhatsApp. There are 10 questions regarding BMI Home Workout Application divided into two parts. In part one we provide four questions about the respondents and in the second part we provide six questions related to our application.

3. Results and Discussion

We have conducted a survey for the public and students. Link survey form that we give to them via WhatsApp. Our survey form has 10 questions in all divided into two parts, in part one we provide four

questions about the respondents and in the second part we provide six questions related to our application and feedback from respondents on our application.

Question	Respondents		Percentage	
	Yes	No	Yes	No
1. Do you know your body mass index (BMI) under what category?	24	6	80%	20%
2. Do you know how to calculate body mass index (BMI)?	24	6	80%	20%
3. Unhealthy weight will make a person susceptible to disease?	27	3	90%	10%
4. Do you know the food pyramid?	30	0	100%	0%
5. Do you know of exercises that do not require exercise equipment?	26	4	86.7%	13.3%
6. This app can help in maintaining the health and fitness of the body?	30	0	100%	0%

Table 1: Respondents opinion whether unhealthy weight will susceptible to diseases

Results for survey were summarized as shown in Table 1. All six questions majority respondent have given yes answer but still a handful give no answer maybe because them to focused on the other menu or function on this app and maybe the style we present the info is not interact that why them ignore it. As can be seen in question 6 in table 1 they still give positive feedback. This shows that this application is helping users maintain their health and fitness.

4. Conclusion

This application allows people to know their body weight index. This is very important because by knowing the body mass index, we can know which category we belong to. If we belong to an unhealthy weight category we can take steps to take care of our health. We can also learn about the food pyramid and healthy eating tips with this we will be able to take care of our nutrition well.

Furthermore, we can save time and cost because with this application we can exercise at home most people are lazy to exercise because there is no time to go to the gym so with the application you can exercise anywhere you like and do not forget to exercise this application is simple and most importantly does not require exercise equipment. Our application can help everyone to maintain their health and fitness prevent various dangerous diseases such as heart disease and so on. Hence, it can be concluded that the overall feedback is positive. The objective of this project is to design, develop and test this application has been implemented successfully. The feedback obtained from testers was very positive, but improvement needed in terms of timer, settings, navigation, colour, notes, and graphics. The application can be used by body builders and highly recommend for people who want to maintain body health and fitness. We hope this application can be upgraded further by adding more of the latest features that users need, such as collecting healthy food recipe videos and users overview of their fitness activities by day, week, month, or another time period. It helps evaluate the progress in a given period of time and set long-term goals accordingly.

Acknowledgement

This project was supported by the Centre for Diploma Studies, University Tun Hussein Onn Malaysia. The authors wish to thank the assessment panel of this project for their evaluation and feedback.

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