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Android Fitness Applications: Changing the Lifestyle of People

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Abstract: In today's hectic world we don't have time to look after our health properly but growing technology can be a big helping hand to fix this problem. Smart phones have worked successfully as personal assistant, so they can provide assistance in maintaining health as well.People not having the time or funds to hit the gym and work with a personal trainer, it can be difficult to plan a workout routine that really works. Luckily, the smart phone can help. Nike Training Club, Vitogo and other similar apps offer tons of workout ideas depending on the current level of fitness and desired workout intensity.
This paper has merged the idea of fitness with android. We have tried to build a fitness app which can educate people to live their lifestyle healthily and look for different body building exercises and routines.
Keywords: BMI,GAIN, CrossFit WOD, Android.

1. Introduction

Growth and share of Android operating system in the world

Android just upped its own stakes. With over 328 million Android devices shipped worldwide, the operating system has long dominated the smartphone industry. But in the third quarter of 2016, Android managed to capture a record 88% of the global market, according to Strategy Analytics. Meanwhile, Apple's iOS share slipped to 12.1% in the same period, from 13.6% the year prior. Android's success has a lot to do with the advantages of its approach. Unlike iOS—included only on Apple devices, Android has hundreds of partners releasing new phones every year. (The third quarter saw the release of the iPhone 7, but also new phone models from Oppo, Samsung, Huawei, and others.) Likewise, there are multiple Android options in mid-range or low-end price brackets. That can be crucial in price-sensitive markets like India, where 97% of smartphone users have Android devices, and in countries across Africa and the Middle East. Android may be stealing some market share from Apple—which, it's worth noting, still commands more than 60% of global smartphone profits—but much of its growth has come at the expense of newer market entrants and more staid competitors. Microsoft's Windows phone sales declined by 46% in the first three months of 2016, and Blackberry decided to halt production of its devices after three straight years of losses[1].

Android based fitness applications

If the user is trying to lose weight, walk more steps each day, or push themselves through a brutal morning workout, fitness apps can help. Mobile apps are ideal assistants for health, fitness, and weight-loss because they are always with us, and they're quite personal. Maintaining fitness requires daily habits and lifestyle changes, and a few little nudges in the right direction from the mobile phone might make all the difference. The online certified personal trainers guide the users through exercises with timed, step-by-step audio, photo and video instructions complete with encouragement. Whether performing bodyweight workouts at home or lifting weights at the gym, Fitness apps are the ultimate fitness companion. Copious choices are provided for choosing the area of focus and use the app to get a six pack, lose weight, improve your running, practice yoga, and more. Fitness apps are ideal for people who want to get in shape without either going to the gym or those who seek personalized guidance within the gym. Specialization varies from bodyweight-only, high intensity workouts, quick strength building routines, energizing yoga practices, and brutal fitness challenges. Also, great for those who enjoy Tabata HIIT, timed workouts, rep-based workouts, max rep workouts, CrossFit WOD and the Scientific 7-Minute Workout[2].

Categories of fitness applications

Workout apps

Typically broken down into three broad categories: personal trainer apps, logbook apps, and a workout fitness tracking apps that pair with devices people wear to the gym.

Personal trainers

Personal trainer apps include pre-arranged exercise routines that can come in different formats: video, illustrations, 3D models, or just text. You can choose a workout that matches your personal preferences, set up a level of difficulty, and start training muscles from the comfort of your home. No gym required.

Logbook apps

A logbook app that allows planning and recording personal exercise routines can be a great solution for gym training. The app features great style and a brilliant interactive design, and doesn't demand too much attention. Hence, it doesn't distract users from working out.

Workout fitness tracking apps that pair with devices

An activity tracker, also known as a fitness tracker, is a device or application for monitoring and tracking fitness-related metrics such as distance walked or run, calorie consumption, and in some cases heartbeat and quality of sleep. The term is now primarily used for smart watches that are synced, in many cases wirelessly, to a computer or smartphone for long-term data tracking. There are also independent mobile and Facebook apps. Some evidence has found that the use of these type of devices results in less weight loss rather than more[3,4].

FEATURES AND FUNCTIONALITIES

Workout apps

These applications are designed for providing its users the following functionalities at the basic level, apart from one or more additional ones.

1) **Workout Module**: -This module provides the user with effective calorie burning, shredding, weight loss, bulking, lean muscle and metabolism enhancing workouts. The workouts may be segregated for male and female users. Exercises which are body part specific and full body movement are specifically designed for the user to perform them at ease and gain maximum results.

2) **BMI Calculator module:** This module calculates the Body Mass Index (BMI) for a person based on the height and weight of the person using the formula: BMI = Weight (kg)/ (Height (m))2. The essence of this module is to generate useful information regarding the BMI parameter used for ascertaining a person's risk of heart disease, diabetes etc. The BMI is a heuristic proxy for estimating human body fat based on an individual's weight and height.

BMI Classification

Classification	WHO	Asia-Pacific	Health Risk
Underweight	Under 18.5	Under 18.5	Low
Normal	18.5-24.9	18.5-22.9	Average
Overweight	25-29.9	23-24.9	Increased
Obese Class I	30-34.9	25-29.9	Moderate
Obese Class II	35-39.9 (Morbid >40)	≥30	Severe

Figure 1:This index is classified into four groups, based on WHO Asian BMI classifications. It is mainly for men and women who are 18 – 65 years old.

3) Diet guidance module: many fitness applications either focus entirely on the workout module or the diet module. This module comprises of several categories of diet. They are result and type specific. As per the requirement of the user i.e. pre-workout, post workout, bulking, shredding etc. vegetarian and non-vegetarian variants are provided. This makes it easy for the user as he gets maximum information at the same place.

Personal trainers

The Physcult app for example illustrates a 3D model where users can pick out the body parts they want to train. Then, the app will offer them video lessons with exercises focused on training selected body parts. Fitstar's Personal Trainer and Codyapp for yoga are also great examples of video-based apps that, in addition to offering amazing content and top coaches, also have support for smart TVs. GAIN Fitness is another app that offers trainers, workouts and plans that match your personal fitness level and goals. A separate type of a personal trainer is a CrossFit app. CrossFit routines are about doing a set of exercises within a certain time.

CrossFit training requires a well-balanced program, and there are a lot of apps that can help users organize their workouts. WODBook is an example of such an app. As great as they are, most personal trainer apps can't be customized.

Logbook apps

Features

- Records training progress automatically
- Reminds you to work out every day
- Detailed video guides
- Increases exercise intensity step by step
- Full body challenges and parts challenges
- Share the results with friends on social media[5].

Each challenge usually has 3 difficulty levels, from beginner to pro level. Such applications are useful in maintaining records of daily workout, improving flexibility and strength of users through levels, and eventually enabling the user to record his progress throughout the weeks or months[6].

Workout fitness tracking apps

Such apps automatically track phone/app usage, fitness, travel, sleep and places. They provide daily and weekly reports based on the user's tracked data. All the data stays only on the user's smartphone. It is meant to track habits, especially used by Quantified Self and life logging enthusiasts. They automatically journal the user's life with data from the smartphone and sensors. They also can connect to the user's Android Wear smart watch and heart rate monitors. Tracking activities include Running, cycling, cardio and high intensity interval training in cardio workouts[8].

FITNESS APP: A DISTINCTIVE APPROACH TO TRADITIONAL FITNESS APPLICATIONS

Based on the above study and research the authors of this perspective piece have developed an "**android based fitness application**". The proposed android architectural framework and module development as presented above encompasses three modules namely: (1) Gym workout (2) BMI Calculator (3) Diet guidance

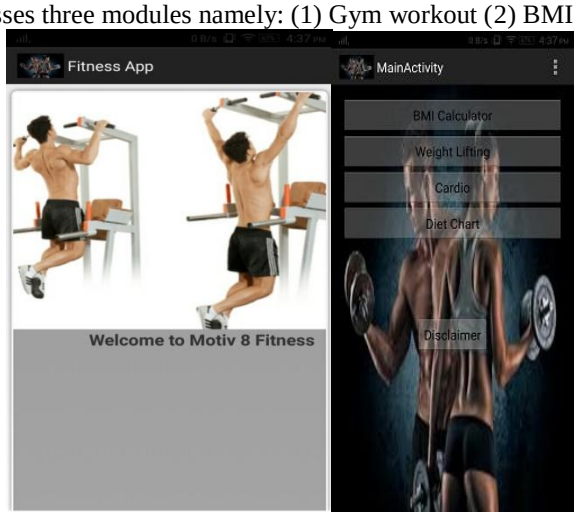

Figure 2: Screenshots of first appearance of the Fitness app along with main activity.

(1) **Gym workout Module**: -This module is specifically segregated into weightlifting and cardio for users, who want to work out with weights in the gym or at home without the gym equipment. In the weight lifting category, the exercises are divided specifying everybody part. Thorough description with images and steps, and for even better illustration video links are provided for each exercise, which switches the control to options namely "for men "and "for women". With the suitable choice of the user the app switches to YouTube providing an extensive playlist for the user desired exercise. Moreover, studies have found that 30 seconds of continuous exercise when performed gives effective results and endurance. Therefore, keeping this in consideration with every exercise an inbuilt timer for 30 seconds is facilitated to prevent the inconvenience of switching from the app to stopwatch back and forth.

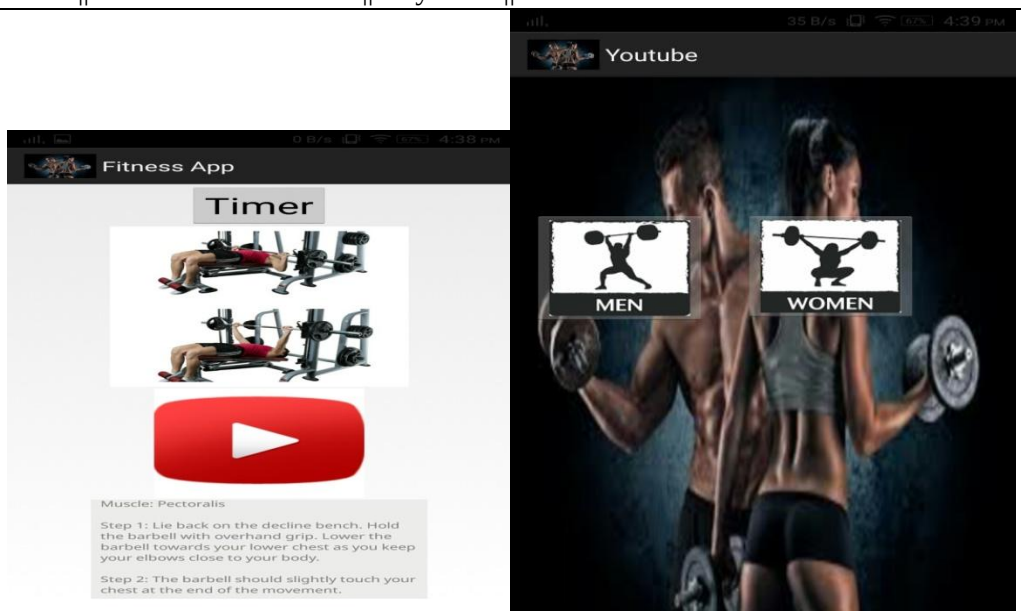

Figure 3: Weightlifting exercise with image and text description. The YouTube button takes the user to choose among men or women video for the corresponding exercise.

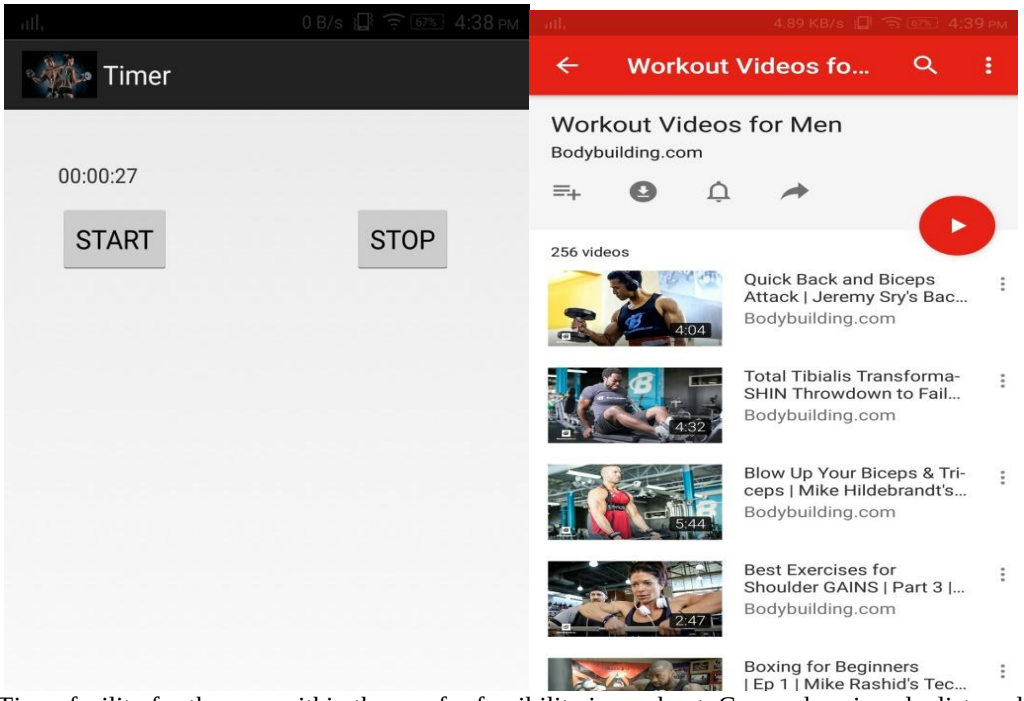

Figure 4: Timer facility for the user within the app for feasibility in workout. Comprehensive playlist made for user convenience in navigating through appropriate exercise.

(2) **BMI Calculator module:** This module calculates the Body Mass Index (BMI) for a person based on the height and weight of the person using the formula: BMI = Weight (kg)/ (Height (m))2. The essence of this module is to generate useful information regarding the BMI parameter used for ascertaining a person's risk of heart disease, diabetes etc. (**Figure 1**). The BMI is a heuristic proxy for estimating human body fat based on an individual's weight and height.

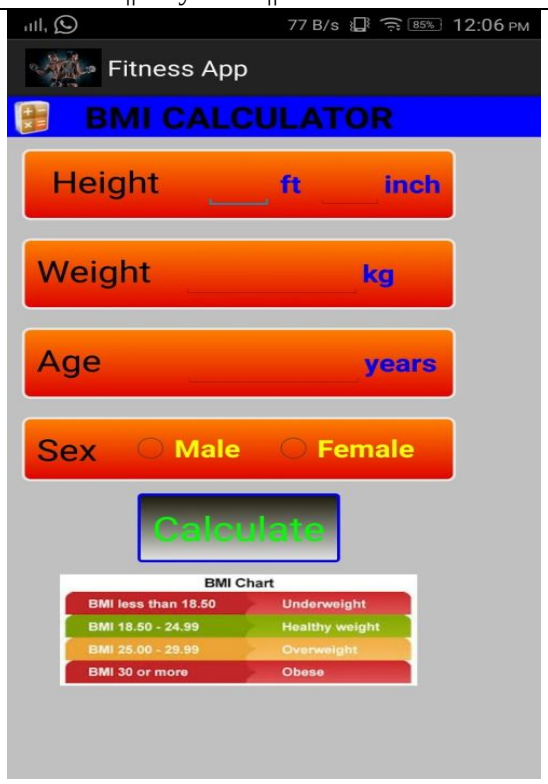

Figure 5: The BMI module which, according to the user input, calculates whether he requires working out and follow the diet. It is one of the most common and essential components of fitness applications.

(3) **Diet guidance Module**: This module presents to the user the various meal plans for breakfast, lunch, and dinner based on the number of calories needed by the person taking into consideration, age, type and nature of work. This module is specifically designed to meet various criteria of diet for different users with different body goals, be it weight gain, weight loss, pre-workout, post workout, high protein etc. In addition to it, vegetarian and non-vegetarian variants of diet have been precisely secluded taking care of user preferences. When the user choses one of the diet criterion, the diet is displayed as an offline image. For additional information and more variations, the view on net button at the bottom takes the control from the app to the default browser, and displays the corresponding diet in the form of a web page.

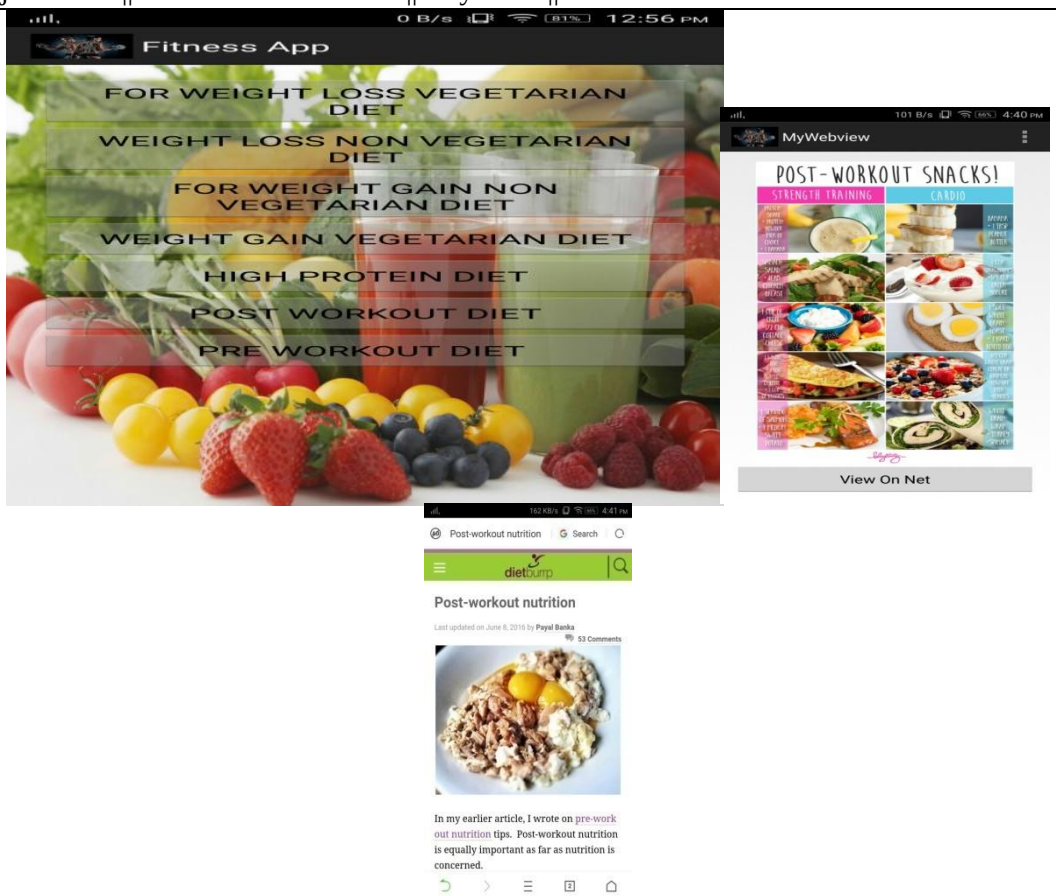

Figure 6: The diet module displays diverse choices for the user. On choosing diet image is displayed which can further be seen elaborately on the browser with "View on net" button.

DO SUCH FITNESS APPLICATIONS WORK?

A recent study published in the Journal of Medical Internet Research gives this popularity a layer of scientific credibility. As per the research, participants who used fitness apps were more active compared to non-users and past users. Perhaps most importantly, however, the study's authors also found that current users had a lower body mass index than past users and nonusers, "and that this association was mediated by exercise levels and self-efficacy" — the latter, in this case, defined as the belief that one can effectively exercise. "Exercise apps can be a vehicle for behavior change in exercise the same way that a nicotine patch can be a vehicle for behavior change in smoking," LeibLitman, one of the study's authors and an assistant professor of psychology at Lander College, told *Mic* in an email. Litman said apps were helpful in allowing people to circumvent their "barriers" i.e. things that stopped them from exercising, like a lack of understanding or organization, which led to better exercise habits and overall health. "Our main finding was that people who have a lot of barriers appear to obtain higher levels of self-efficacy when they use exercise apps," Litmansaid.

Litman and his colleagues examined the exercise habits of 726 participants, whom they split into three groups: current app users, former app users and nonusers. Almost 75% of current app users said they were more active; less than half of nonusers and former users said the same. In addition, current users had BMIs of 25.16 — lower than the BMIs of 26.8 for past users and 26.9 for nonusers.

The team looked at various apps over the course of their research, and tracked participants' usage consistency. They looked whether apps target physical activity only or physical activity plus diet, whether apps incorporate social aspects and whether the app focuses on aerobic or anaerobic exercise. The results showed that apps that focus on aerobic exercise such as cardiovascular conditioning tend to be used for longer time periods compared to apps that focus on weight training[9].

Benefits of fitness applications

Easily Keep Track of Your Progress: To know how far the user has come in his personal training efforts, the smart phone can help tracking the user progress easier than ever before. Great apps like Strava and RunKeeper

use the phone's GPS to track mileage and speed whenever you go out running or cycling, giving you can automatically generated progress report

Get Free Workout Ideas: Not having the time or funds to hit the gym and work with a personal trainer, it can be difficult to plan a workout routine that really works. Luckily, the smart phone can help. Nike Training Club, Vitogo and other similar apps offer tons of workout ideas depending on the current level of fitness and desired workout intensity. Forget about spending all the money on fitness books and professional routines. These apps can help planning the perfect workout to achieve your fitness goals.

Setting Achievable Goals: Right from the beginning of an exercise routine, it's important to set realistic goals that you can achieve without over exhausting the body. Going from a totally sedentary lifestyle to ultimate fitness in 30 days is not a realistic plan for most people, but apps like Couch to 5K can help to set and achieve reasonable goals according to a tested time frame. Couch to 5K guides you through the process of transforming from a couch potato to a 5K runner in 9 weeks, and then ramps up the intensity to help in covering longer distance runs. Users stay positive and motivated by setting realistic goals and achieving them using apps like this.

Diet Monitoring Every Day: Diet is an important part of fitness, and smart phones can help in monitoring the diet every day. Whether cutting on calories and fat or focusing on high protein foods to lose weight or gain muscle, there's an app that can help people track their food intake and simultaneously provide low carbs, low calorie and. Weight Watchers Mobile and iWeight Deluxe are just two of the many apps that can help you track your diet to stay on the path toward total fitness[11].

Limitations of fitness applications

Many frequent users of wellness and fitness apps are becoming increasingly dependent on this technology to give them information on their health. Certain apps echo popular websites like WebMD or Healthline, which offer information about different symptoms and illnesses but aren't necessarily capable of accurately diagnosing patients — and certainly aren't as qualified as clinicians. Regardless, many users rely on these websites and apps rather than seeking professional help, which is far from ideal: A 2015 study from Harvard Medical School and the RAND Corporation found that of the top 23 online symptom checkers, correct diagnoses were listed first in only 34% of standardized patient evaluations. Further, these symptom checkers listed the correct diagnosis within the top 20 possible diagnoses in only 58% of standardized patient evaluations. While these apps are certainly useful for what they are intended and a great supplement to your exercise routine, they are not a substitute for personal training. Users can get programming and tracking through the applications and even record nutritional content, but they lack the aspect of accountability and corrective coaching.

One of the many reasons people find personal training a successful addition to their exercise regimen is that their trainer holds them accountable for exercising and eating correctly which apps are incapable of providing. In addition, apps are not able to provide the coaching aspect of personal training which includes correcting exercise technique to avoid injuries and achieve the desired results if the person is performing them incorrectly. Coaching is really the main negative to the applications. Coaching includes correcting movement patterns, providing motivational feedback and insuring exercises are performed as intended with the correct weight[10].

CONCLUSION

The rising popularity of wearable fitness trackers and smart phone health applications (apps) is contributing heavily to the internet generation. Eventually, people are exercising and maintaining healthy diets, and doing so consistently. This technology gives people incentive to become involved and interested in their own health and to have fun while doing so, unlike many other apps, which tend to act more as video games and result in a lack of physical activity. Historically, a trainer has only had the ability to monitor what their client has achieved during their session and had then hoped they had followed their prescription away from the gym, but apps and tech devices are now able to tract activity levels and nutritional information providing the trainer with more tools to assist their client in achieving their desired results. Whether you choose to utilize a fitness app or one of the fitness technology devices on the market is up to you, but understanding their function and limitations is extremely important. Individual coaching and accountability are two important aspects of every exercise program that the apps or devices can't replace, but essential benefits of a change in the lifestyle for the willing users can certainly be acquired.

References

[1]. Google's Android OS captured 97 per cent share of the India's smartphone market in Q2 2016, while Apple iOS fell 35 per cent annually, Published: August 6, 2016. http://indianexpress.com/article/technology/googles-android-captured-97-indian-smartphone-market-share-in-q2-2016-report-2957566.

[2]. https://en.wikipedia.org//Fitness_culture.

[3]. 15 best Android fitness apps and workout apps, January 17, 2017. http://www.androidauthority.com/best-android-fitness-apps-and-workout-apps-567999/

[4]. The 25 Best Fitness Apps of 2017, By Jill Duffy Dec. 29, 2016. http://www.pcmag.com/article2/0,2817,2485287,00.asp.

[5]. Yalantis: iOS, Android and Web App Development Company.https://yalantis.com/blog/health-fitness-apps-development-location-based-activity-trackers-workout-apps-technology/30-day fit challenge Leap Fitness Group

[6]. https://play.google.com/store/apps/details?id=com.popularapp.thirtydayfitnesschallenge&hl=en

[7]. THE TEN BEST FITNESS APPS by Elsa Vulliamy, Wednesday 7 August 2013. http://www.independent.co.uk/life-style/gadgets- and-tech/features/the- 10-best- fitness-apps-8750925.html

[8]. GOOGLE FIT: Fitness tracking, Google Inc. Health & Fitness, https://play.google.com/store/apps/details?id=com.google.android.apps.fitness&hl=en.

[9]. Litman, L., et al. Mobile exercise apps and increased leisure time exercise activity: a moderated mediation analysis of the role of self-efficacy and barriers. Journal of Medical Internet Research.2015; 17(8).doi: 10.2196/jmir.4142.

[10]. MISSION FITNESS: The limitations of fitness technology, June 11, 2013, by JOHN DOUTHITT. http://www.oaoa.com/people/health/mission_fitness/article_3e54444c-d23a-11e2- bb89-001a4bcf6878.html

[11]. Benefits of using fitness applications, Website Services December 20th, 2016. http://www.toddwestmedia.com/469/5-benefits- of-using- health-and- fitness-apps.html

[12]. Garima Pandey, Diksha Dani, "Android Mobile Application Build on Eclipse", International Journal of Scientific and Research Publications, Volume 4, Issue 2, Feb. 2014 ISSN 2250-3153, pp. 1-5.

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