Lab 1 – SuperU

PRODUCT DESCRIPTION (DRAFT)

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1. Introduction

Weightlifting, like many other sports, can be dangerous if performed under unsatisfactory physical and emotional conditions. At first sight, it seems as if it does not require much preparation to carry out the lifts properly and to achieve optimum results. Many weightlifters ignore key factors that are critical to increasing their lifts as effectively as possible. These factors include proper guidance, lack of decent quality sleep, and ignoring intensity goals. Not everyone can afford a real-life coach and without one, progress can be slow, and goals may not be achieved safely. With no real timeline, goal progression analysis can make progress hard to track. Another major key component in weightlifting that is often ignored, is the quality of sleep in athletes prior to a performance or during a workout plan.

According to the CDC 1 in 3 people do not get enough sleep on a day-to-day basis, something vital to weight training properly (Center for Desease Control and Prevention, 2016) and according to the US National Library of Medicine, there is mounting evidence showing that due to a variety of reasons, such as demanding training schedule, pre competition anxiety, and extensive traveling, athletes often experience sleep deprivation that in turn hinders their performance (Fowler, Duffield, & Vaile, 2015). With sleep deprivation, motor function, mood, and cognitive functions are all affected negatively, which can decrease performance and increase injury risks (Milewski, et al., 2014).

The tendency for people to train purely on percentages of a one rep max can also result in overtraining, as opposed to using Rate of Perceived Exertion scale (RPEs for short) to measure intensity of exercise. RPE is a scale from one to ten and it measures the intensity of an exercise,
the higher the number the higher the intensity. Weightlifters who use the RPE scale, have shown to increase weight more than those who use pure 1RM percentages, thus helping in avoiding undertraining or overtraining and reach target intensities. Because there is a lack of data correlation between individual sleep patterns, heart rate, height, weight, age, proper guidance, and tailored workout plans, SuperU is a smartphone app to solve that problem (Monsour & Dickson, 2020).

2. SuperU Product Description

SuperU is a mobile software application that works in tandem with the smart phone and smart-watch device, such as Fitbit, to provide weightlifting guidance and other training information in real-time. Additionally, it will be designed to create workout plans custom tailored to the user, based on a learning algorithm that takes the data gathered during each workout to allow users to progress safely and effectively towards their goals.

2.1 Key Product Features and Capabilities

SuperU, unlike other comparable products, aims at providing the fastest approach to results with personalization, use of good night sleep score to maximize results, guide users to workouts at most beneficial intensities, learn good training technique, prevent progress plateaus, and an easy to use/track progress. Some of the key components that are collected or measured to accomplish that, include heart rate (provided by Fitbit Pure Pulse), rep count, body weight, current max weight liftable, sleep score, RPE, change in body weight, and change in weight liftable. The workout plan generator algorithm will then provide, based on these parameters, the best workout plan to follow for maximum results.
2.2 Major Components (Hardware/Software)

SuperU will target both Apple iOS and Google Android mobile operating systems. For Android OS we will make use of Android Studio and the de facto standard Java as language to develop the application, while on iOS XCode and Swift are going to be used for native development. However, both platforms will include SQLite for local temporary storage of data and Firebase for server/cloud side database management of all users. Integration with Fitbit wearables will be performed via Fitbit API which is available for free for anyone who wants to develop an application to access and modify a Fitbit user’s data on their behalf. Software version control and code management will be handled via free access to GitHub and Atlassian Jira for the project management of all. Jira will provide access to Agile reporting, scrum boards, issue tracking, roadmaps, while CI/CD is integrated through GitHub.

3. Identification of Customer Base

SuperU is designed to be used by anyone who wishes to become a weightlifter and being guided by a smart algorithm that can decide the best path to carry out that. It can also supply access as a trainer who analyze the progress and workout generated by the algorithm and is able to change the plan for a weightlifter or a group of them. Additionally, the app can also be a perfect solution for gyms where trainers and weightlifters can work with each other while keeping track and analyze the progress under one single pane of glass.
4. SuperU Product Prototype Description

4.1 Prototype Architecture (Hardware/Software)

4.2 Prototype Features and Capabilities

4.3 Prototype Development Challenges

5. Glossary

Ci/Cd – Continuous Integration, Continuous Delivery.

One Rep Max - In weight training is the maximum amount of weight that a person can lift for one repetition.

RPE - Rate of Perceived Exertion scale is a way of measuring physical activity intensity level based on objective parameters and the person’s experience.

UI/UX - User Interface and user experience design.

Weightlifter - One who lifts heavy weights for exercise, muscle strengthening, or athletic competition.

6. References

https://www.cdc.gov/physicalactivity/basics/measuring/exertion.htm#:~:text=The Borg Rating of Perceived, like your body is working


