



Progresso – A Digital Fitness Diary

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ABSTRACT

Progressive overload is a fundamental principle in exercise science that aims to optimize physical performance and induce physiological adaptations. The research paper outlines the importance of progressive overload and discusses the benefits of utilizing a website-based workout tracking system. It then introduces a formula that takes into account the individual's BMI and past workout performance to determine the optimal progressive overload for subsequent workouts. By leveraging a website-based tracking system- Progresso, individuals can easily apply this formula and monitor their progress towards achieving their fitness goals. The findings emphasize the significance of progressive overload and demonstrate how a website-based tracking system can enhance workout effectiveness and facilitate continuous improvement in physical performance.

Keywords: Progressive Overload, Workout Tracking, Workout Effectiveness, Targeted Progression.

I. INTRODUCTION

The challenge of maintaining proper diet can be facilitated by the use of mobile phones. Mobile phones provide a fair infrastructure, which can be used to provide cost-effective, high-quality aids to behavior monitoring and modification. This web application is a one stop solution workout tracking and monitoring. The project objectives are straightforward, users will be able to keep track of their current exercise through continuous usage of the app, this means that all the data about their previous workouts, will be logged and saved into the database for further process and then display to the users when it is needed. The users can have a better idea about their workout progression since they can keep track and view the stored data in organized form.

Likewise, the second objective is to help the users to practice consistent exercise routines according to the result analyzed from the data stored in the database by motivating them through extrinsic motivation.

We analyzed the data of 10 candidates over a period of 3 months to gain a substantial knowledge about their workout patterns using Progresso and came up with a progressive overload calculation formula that will help users to facilitate continuous improvement in physical performance with time.

II. RELATED WORK

Through research of similar apps, we found a number of features that seemed useful in our design:

Simplistic Design: Overall, we found that the Moves app presented an extremely clean and simplistic layout that presented important information as soon as it was opened. We decided to model our app with this same mentality of keeping screens simplistic and present important data upfront.

Separate screens to display different lifestyle aspects: In addition, we appreciated how the Argus app had separate screens for a breakdown of activities and sleep, as well as the other data it tracked. Although we did not agree with the overall layout Argus presented, we drew inspiration for separate detailed screen for each activity, sleep, and workout tracking. We modeled our tabbed interface after this idea.

Table 1 Related Research Papers

S.No.	Paper Name	Author(s)	Publication Year	Methodology
1.	Progressive overload without progressing load? The effects of load or repetition progression on muscular adaptations	Daniel Plotkin	2022	This study aimed to compare the effects of two resistance training programs: (1) increasing load while keeping repetition range constant vs (2) increasing repetitions while keeping load constant.

2.	Workout Recording Log: Implementing Progressive Overload	McMenimen, Daniel	2022	Implement an effective work out log to record a participant's progress of a designed workout plan.
3.	Improving muscle size with Weider's principle of progressive overload in non-performance athletes	Vlad Adrian GEANTĂ Viorel Petru Ardelean	2021	Within the limits of their experiment, they consider that by only using the PPO(Principle of Progressive Overload), significant improvements can be obtained on the targeted muscle groups.
4.	The Effect of Autoregulatory Progressive Resistance Exercise vs. Linear Periodization on Strength Improvement in College Athletes	Mann, J Bryan	2016	To compare the effect of an APRE training program vs. a traditional LP training program on strength improvement in National Collegiate Athletic Association (NCAA) division.

Table 2 Related Fitness Applications

S.No.	Application Name	Developer	Publication Year	Methodology
1.	Moves App	Josh	2022	Clean and simplistic layout that presented important information.
2.	Step Tracker App	Leap Fitness Group	2019	Calculating the steps taken using sensor data.
3.	Argus App	Azumio.inc	2018	Separate screens for a breakdown of activities and sleep, as well as the other data it tracked.

III. METHODOLOGY

We defined the purpose and goals of the workout tracking application and identified the target audience to be students and working professionals who better want to track their workouts and apply progressive overload. Determine the features and functionalities required in the application.

Methodology - We designed wireframes or mock-ups to visualize the user interface and user experience (UI/UX). And implemented the user interface design using HTML for structure, CSS for styling, and JavaScript for interactivity to ensure the application is responsive, user-friendly, and accessible across different devices and screen sizes and incorporate interactive elements, such as forms and buttons, to allow users to input and track their workout data.

For the backend we set up a MongoDB database to store user information, workout data, and other relevant data. Used a server-side JavaScript runtime environment like Node.js for back-end development and implemented the application's logic and functionality, including data retrieval, and storage. Thereafter, we integrated the front-end and back-end components, ensuring seamless communication.

Algorithm – After analysing the workout data generated by 10 candidates over a period of one month we came up with a formula for progressive overload calculation that takes into account BMI (Body Mass Index) and previous workouts:

$$\text{Progressive Overload} = (\text{Previous Workout Load}) + (\text{BMI} * \text{Weight Multiplier})$$

In this formula, the weight multiplier is a constant that scales the BMI value to determine the additional load to be added to the previous workout load. You can adjust the weight multiplier according to your specific goals and preferences.

Here's an example of how you can use the formula:

Let's say your previous workout load was 100 kg, and your BMI is 25. The weight multiplier you choose is 0.5.

$$\text{Progressive Overload} = (100 \text{ kg}) + (25 * 0.5) = 100 \text{ kg} + 12.5 \text{ kg} = 112.5 \text{ kg}$$

In this example, you would increase the load for your next workout to 112.5 kg to apply progressive overload based on your BMI and previous workout load.

Remember that this formula is just a guideline, and it's essential to listen to your body, gradually increase the load, and ensure proper form and technique during exercises. Adjust the weight multiplier and other variables according to your specific needs and consult with a fitness professional if needed.

Dataset - The dataset for the application consists of information gathered from 10 candidates over a period of one month of their workouts and progression using the Progresso web application.

IV. RESULT

By combining progressive overload and workout tracking using a website includes the following:

Enhanced Goal Setting and Progress Monitoring: Using a website for tracking workouts allows individuals to set specific goals and track their progress effectively. They can define targets for various parameters such as weight lifted, repetitions performed, or workout duration. Tracking these metrics through a website-based platform provides visual representations of progress, enabling individuals to stay motivated and focused on their goals.

Optimized Training Progression: Progressive overload, when combined with workout tracking, allows for optimized training progression. By gradually increasing the intensity, volume, or complexity of workouts over time, individuals can challenge their bodies and continuously stimulate adaptation. Tracking workouts on a website helps individuals identify when it's time to progress to the next level, ensuring steady improvement and avoiding stagnation.

Accountability and Compliance: One significant advantage of using a website for tracking workouts is the accountability it provides. The social aspect of these platforms can foster a sense of community and support, making individuals more likely to remain consistent with their training.

Improved Performance Analysis: Websites designed for workout tracking provide performance analysis features. They can generate reports, charts, and summaries of workout data, allowing individuals to gain valuable insights into their progress. These analyses can reveal patterns, strengths, and areas for improvement, facilitating informed decision-making regarding training adjustments or modifications.

Injury Prevention and Safety: Using a website for tracking workouts can contribute to injury prevention and safety.

Long-Term Behavior Change: The combination of progressive overload and workout tracking on a website promotes long-term behavior change. By establishing a routine of setting goals, tracking progress, and progressively challenging oneself, individuals can develop sustainable habits. These habits support a consistent approach to training, leading to long-term health and fitness benefits.

Convenience and Accessibility: Websites for tracking workouts offer convenience and accessibility, as they are accessible from various devices, including smartphones, tablets, and computers.

This accessibility allows individuals to log workouts, track progress, and access their training plans anywhere and at any time, making it easier to maintain consistency and stay on track with their fitness journey.

In summary, the advantages of combining progressive overload and workout tracking using a website include enhanced goal setting, optimized training progression, personalized training programs, accountability, improved performance analysis, increased knowledge and education, injury prevention and safety, long-term behavior change, and convenience and accessibility. These benefits contribute to improved workout effectiveness, better performance, better performance, and increased adherence to fitness goals.

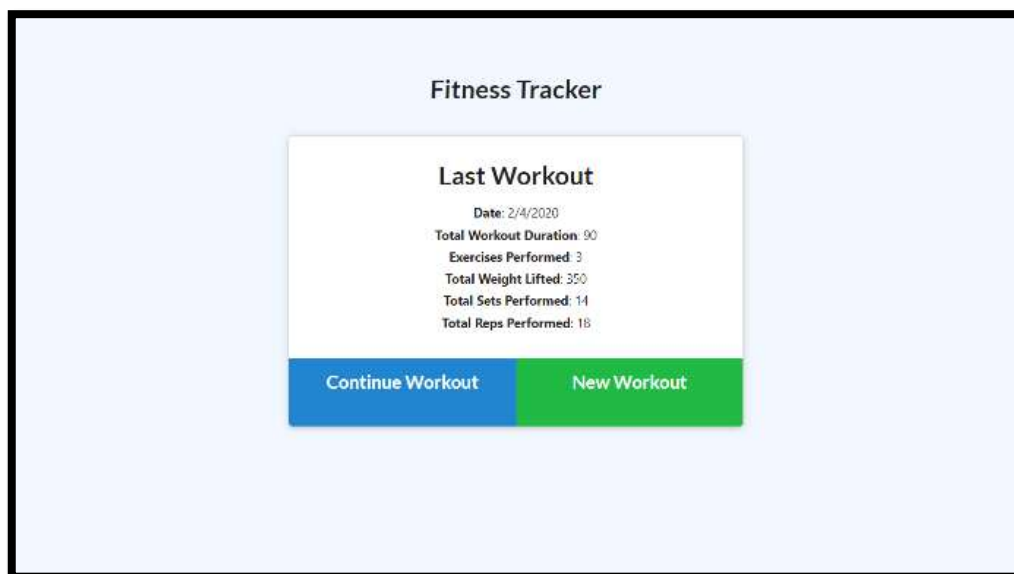


Fig 1. Home page

Fig 2. Resistance workout

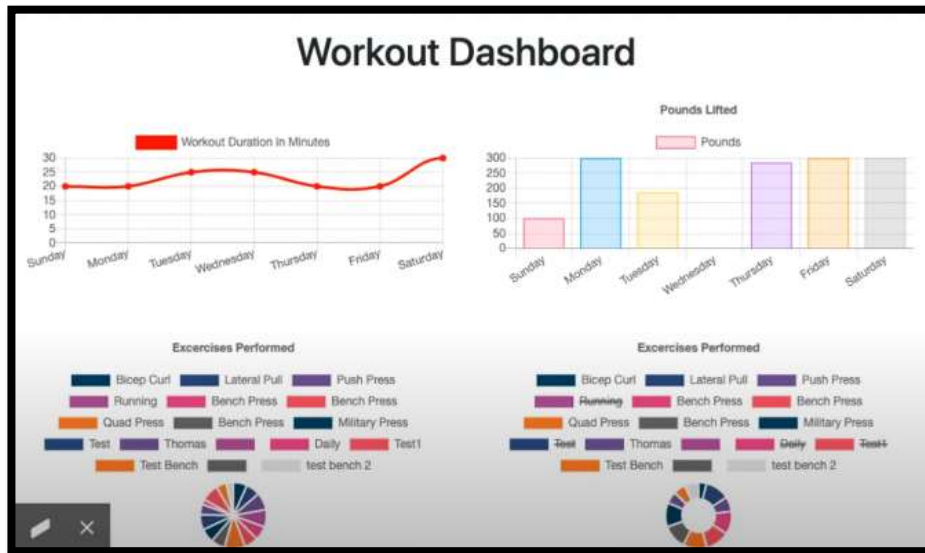


Fig 3. Workout dashboard cardio

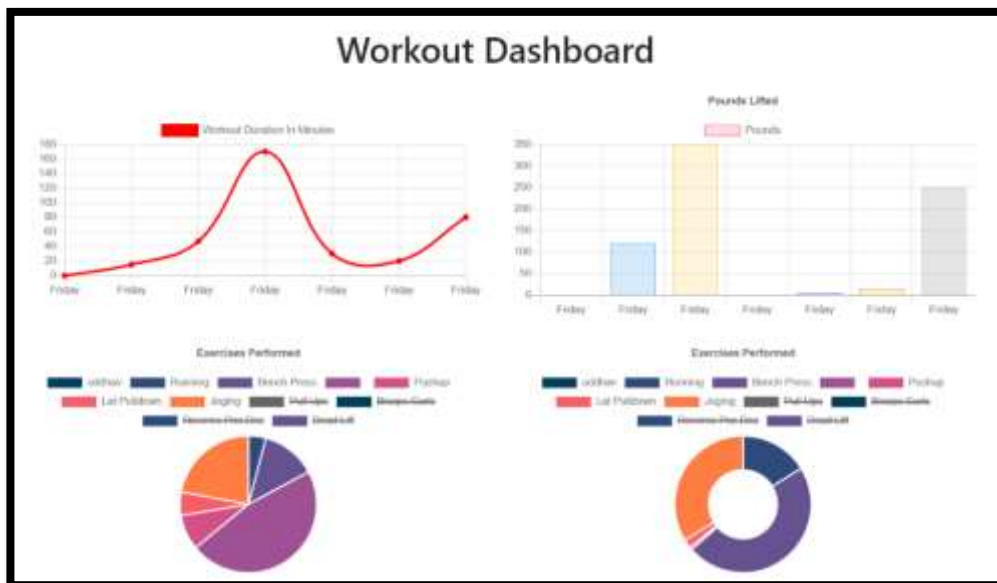


Fig 4. Workout dashboard resistance

V. CONCLUSION

Progressive overload is a fundamental principle in exercise science that drives performance improvements and physiological adaptations. The application of a progressive overload calculation formula based on an individual's BMI and previous workout data, and a website-based workout tracking system, offers several advantages and results. These include precision and customization, targeted progression, enhanced progress tracking, increased motivation and goal setting, optimization of physiological adaptations, reduction in plateaus, and long-term progression. By leveraging this approach, individuals can optimize their training routines, achieve continuous progress, and enhance their overall fitness and performance levels.

VI. REFERENCES

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