

# Designing a Fitness Application: Integrating Exercise Physiology and Biomechanics Into Workout Design

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## Importance of this Application

Many people build their exercise regimens solely thinking of the concept of gaining strength, without knowing the finer biological level of how exercise results in strength gain. Additionally, there are other important aspects of exercise that do not include strength. This includes muscular endurance, aerobic capacity, and anaerobic capacity. This application is to help people build their workouts, using concepts of exercise physiology and biomechanics as the fundamentals of their workout regimen.

## Methods Used to Develop

To create this application, I went for a design based approach, using wireframing technique rather than coding. I implemented concepts I learned in exercise physiology (PE-320) and biomechanics (PE-330) to the concepts of the application.

## Application Sections and Features

Four main features of the application include:

- Exercise Database
- Workout Builder
- Sport Drill & Conditioning Builder
- Exercise Based Rhythm & Reaction Game

## Database

In this section, individual exercises can be viewed in a database. Each exercise will list information pertaining to the exercise, how to perform it, what equipment is required, what target muscles the exercise targets, and more. There will be a list of physiological and biomechanical factors that occur during the exercise, including muscle activation, muscle fiber recruitment, planes and axes of the body, and more.

## Workout Builder

This section will include an interactable exercise sequence builder, allowing the user to choose exercises from the database and create their personalized workout plan. They can plan and archive workouts specific to their goals, which can include improving their muscular strength, muscular endurance, aerobic capacity, and anaerobic capacity.

## Sport Drill and Conditioning Database

This section is similar to the exercise database, with an extensive, informative list of sport-specific drills and conditioning routines that athletes can use to target specific skills. Using the workout builder, the user can create a dedicated plan for specific skills they want to improve on in their sport.

## Rhythm/Reaction Game

This section serves as a casual, entertaining method of physical activity. For those who may not have access to free weights or equipment, younger athletes, and users who would enjoy a fun workout experience can benefit from this game. It uses music and rhythms, having the user perform a certain set of activities to the rhythm of the song. The difficulty and speed progresses as the session's time increases.