**Project Name:** **Ohio University Women's Cross Country Performance Program**

**Group Member Info:**

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**Client Info:**

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Clinical Professor in Physical Therapy and Director of Performance Program

**Future Availability:**

Fridays - are open

Tu/th 11:00am - Noon office hours

**Initial Project Description from client:**

**Intro:**

The injury rates associated with running are relatively high per hour of participation. Unfortunately, when injury does occur the sports medicine staff must retrospectively attempt to determine the cause of the injury. This is a difficult process as injury can occur because of multiple factors (training loads, biomechanical factors, clinical issues, nutrition, etc.), be very individualized, and more importantly most runners use rudimentary metrics such as mileage to track training loads. Our client is currently working with an interdisciplinary team consisting of faculty from Physical Therapy, Nutrition, Exercise Physiology, Athletic Training, Athletics, and local physicians to attempt to reduce injury rates in our Women’s Cross Country Team. They conduct biomechanical, nutritional, clinical, and physiological testing to help develop a comprehensive look into the quantity and magnitude of training each runner experiences throughout a single run and across a whole season. Each athlete is individually modeled and tracked throughout the season to help the program team better understand injury when it occurs. They also track metrics like sleep patterns, dietary patterns, objective/subjective sensations of injury on a daily basis. Their overall goal is to individualize care for each athlete, and create more informed decisions for their sports medicine staff to help each runner prevent injury as opposed to coping with it once it occurs.

**Goals:**

* Provide Interdisciplinary approach to improving wellness, performance, and rehabilitation
* Create a platform to enhance education amongst professionals and student athletes
* Enhance knowledge through the involvement of community, campus, and the student body

**Project Description:**

The client needs assistance with creating a user interface that is easier and more intuitive for each athlete to use and record the required information. An iPhone app, or online platform where they can go in and log their daily information and see and learn about their own trends in training. The platform also needs to allow staff to update formulas and data of each athlete that impacts the internal calculations. Currently, the client has built a model within Microsoft Excel that houses all of the calculations, formulas, and data. The plan is to implement an excel page for each runner this year using a cloud system where they can update items on a daily basis (Microsoft Onenote or BOX), but the system does not allow staff to review the daily logs of each runner sufficiently nor does it elegantly output required data in an organized fashion. The ideal platform would export the data from all athletes into a concise excel file or similar format.

**Intended User Base:**

* Student Athletes
* Coaches
* Training Staff
* Educational Staff

**First Adopter user group:**

* Alpha: Development team
* Beta: Women’s cross country team
* Full release: Could go to all athletes at OU

**Equipment needs:**

* Tier 1: Data storage
* Tier 2: iOS / Android mobile devices
* Tier 3: Wearable technology: Garmin watch with software such as Garmin Connect / Strava

**Detailed feature list:**

Note: The client has described 3 different tiers of progress. The first tier should be the absolute minimum achieved. Tier 2 may be possible depending on our progress and may be initialized/designed for continuation for another group at a later time. Tier 3 incorporates ideas that may not be achievable within the year.

* Tier 1 feature list:
  + Allow athlete to input the following data:
    - Personal Information (Weight, height, body composition, etc.)
    - Time
    - Distance
    - Perceived Effort (scalar)
    - Hours of Sleep
    - Health Status
      * Healthy, injury, illness
      * Details of each state
      * Perceived level of health (scalar)
    - Nutritional Status
      * Perceived level of nutrition for the day (scalar)
    - Start of menstrual cycle
    - Personal notes
  + Output the following data
    - Time in Zone (Chart)
    - Distance in Zone (Chart)
    - Overall Pace
    - Training load (Chart)
      * Perceived effort \* time of exercise bout
    - Energy expenditure (Chart)
      * Mileage \* 1.6 kcals/mile/kg
    - Hours of Sleep (Chart)
    - Health issues (Chart)
  + Real time visualization of data such as graphs of mileage, time, and training load in each zone.
  + Privacy through the use of secure, private accounts.
  + Personalization through unique user-based training zones that are based on physiological testing.
  + Output that illustrates a summary of all of the team data by date.
* Tier 2 feature list:
  + Inclusion of mobile applications that are able to communicate with the platform such as iOS and Android.
  + The ability to manipulate calculations, and manipulate/add additional equations.
* Tier 3 feature list:
  + The ability to input second by second data from mobile technology.
  + The ability to allow other sports to utilize this software that is fluid.

**Set of initial use cases or usage scenarios:**

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| Use case name: Athlete Enters Data  Participating Actors: Athlete  Preconditions:   1. Athlete has not entered data for this day   Flow of Events:   1. Athlete opens application 2. Athlete signs into application 3. Application verifies athlete 4. Athlete chooses date to enter data 5. Application redirects to data entry screen 6. Athlete enters all data for date selected and presses an enter button 7. Data is saved to a database on a server   Post conditions:   1. Athlete’s data for day is stored in database and accessible to that athlete and his/her trainers. |

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| Use case name: Athlete Adjusts Data  Participating Actors: Athlete  Preconditions:   1. Athlete has submitted a workout report   Flow of Events:   1. Athlete opens application 2. Athlete signs into application 3. Application verifies athlete 4. Athlete selects workout information they would like to edit 5. Applications redirects to data entry screen 6. Athlete enters new data 7. Data is saved to a database on a server   Post conditions:   1. Athlete’s data for day is stored in database and accessible to that athlete and his/her trainers. |

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| Use case name: Trainer/Administrator Gets Data Dump  Participating Actor(s): Trainer/Administrator  Precondition:   1. Data has been collected for a week/month   Flow of Events:   1. Trainer opens application 2. Trainer signs into application 3. Trainer’s identity is verified 4. Trainer selects section/timeframe of data they would like to download 5. Application allows user to download data dump of specified timeframe/section   Postcondition:   1. Trainer has access to raw data in preferred format (likely .csv) to perform physiological analysis on. |

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| Use case name: Athlete Deletes Workout  Participating Actors: Athlete  Preconditions:   1. Athlete has submitted a workout report   Flow of Events:   1. Athlete opens application 2. Athlete signs into application 3. Application verifies athlete 4. Athlete selects workout information they would like to delete 5. Applications asks for confirmation to delete data 6. Athlete confirms request to delete 7. Data is removed from database on a server   Post conditions:   1. Data for the workout that was stored on server and available to trainer is no longer part of the database |

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| Use case name: Admin adds Athlete to application  Participating Actors: Admin, Athlete  Preconditions:   1. Athlete is not currently a part of application 2. Athlete has specific personalized equation based on testing   Flow of Events:   1. Admin opens application 2. Admin signs into application 3. Application verifies admin 4. Admin chooses to add new athlete 5. Admin enters athlete’s individualized equations and user id 6. Equations and user id are saved to database 7. Athlete signs into application to create password 8. Password is saved to database   Post conditions:   1. Athlete can now use application to enter daily information |

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| Use case name: Trainer/Administrator Changes Equation  Participating Actor(s): Trainer/Administrator  Precondition:   1. Athlete has specific personalized equation based on testing   Flow of Events:   1. Trainer opens application 2. Trainer signs into application 3. Trainer’s identity is verified 4. Trainer selects athlete they’d like to edit equation. 5. Trainer selects which equation they’d like to edit. 6. Trainer edits equation   Postcondition:   1. Calculation for zones will then be changed in future (and maybe retroactively?) |

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| Use case name: Trainer/Administrator views athlete data in application  Participating Actor(s): Trainer/Administrator  Precondition:   1. Athlete has specific personalized equation based on testing   Flow of Events:   1. Trainer opens application 2. Trainer signs into application 3. Trainer’s identity is verified 4. Trainer selects athlete they’d like to view data on 5. Application brings up data tables and charts   Postcondition:   1. Trainer has access to athlete data visualization with in the web application |

**Informal non-functional requirements:**

* 3 tiers of user groups: Administrators, trainers, athletes to comply with privacy regulations (HIPAA, etc) as well as security of data.