

# **End to End Project for Business Analyst**

**Diwakar Singh**

# **PROJECT SCOPE DOCUMENT**

### ***Project Title:***

## **Health Monitoring Application for Professional Ice Hockey Players**

### ***Project Objective:***

To develop a health monitoring mobile and tablet application designed for professional ice hockey players in Korea, aged 20-30, that allows athletes to track key health metrics (meals, water consumption, physical activity, goals, weight) and enables coaches to monitor this data in real-time using tablets.

### ***Project Justification:***

Professional ice hockey players dedicate all their time to rigorous training and require optimized health and performance tracking. The app will facilitate easy logging and tracking of vital health metrics, improving performance and communication between athletes and coaches. This solution will also integrate with

professional vital tracking devices for accurate data collection, thus enhancing decision-making in training and nutrition plans.

### ***Project Stakeholders:***

- **Primary Stakeholders:**

- Athletes (users of the health tracking app)
- Coaches (users of the monitoring tool on tablets)

- **Secondary Stakeholders:**

- App Development Team (developers, UI/UX designers)
- Product Owner (management team overseeing app development)
- Data Privacy Officer (ensuring compliance with data security regulations)
- Performance Analysts (users of the app data for trend analysis)
- Device Manufacturers (integrating tracking devices with the app)

### ***AS-IS State:***

Currently, athletes and coaches manually track health metrics (meals, water intake, physical activity, and weight) using traditional methods like notebooks or generic health apps, which lack customization for the needs of ice hockey players. The process is uncoordinated, and coaches often receive delayed updates on player progress.

### ***TO-BE State:***

The new app will allow real-time, automated tracking of meals, water intake, physical activity, and weight, synced directly from professional-grade tracking devices to a unified interface. Athletes will enter their data into the app, while coaches can instantly view the information on their tablets, ensuring they can adapt training plans quickly and effectively.

## ***Project In-Scope Use Case:***

### **1. Athlete Use Case:**

- a. Enter personal information: height, current weight, and target weight.
- b. Log meals consumed with calorie and nutrient details.
- c. Log water consumption (in liters).
- d. Log physical activity, workouts, and training sessions.
- e. Track progress toward fitness goals (e.g., weight, endurance).

### **2. Coach Use Case:**

- a. View athlete health data, including meals, water intake, activity, and weight.
- b. Receive real-time updates from athlete's vital tracking device.
- c. Analyze trends and suggest adjustments to training plans.

### **3. Vital Device Integration:**

- a. Sync real-time data from athlete's professional vital tracking device to the app.

- b. Automatic update of relevant health metrics like physical activity and weight.

### ***Project Out-of-Scope Use Case:***

#### **1. General Public Use Case:**

The app will not be developed for use by individuals outside the target group of professional ice hockey players and their coaches.

#### **2. Advanced Medical Diagnostics Use Case:**

The app will not provide advanced medical diagnostics or replace professional medical assessments.

### ***Other In-Scope Deliverable:***

#### **1. Dashboard Design for Coaches:**

- a. Provide a user-friendly interface for coaches to easily view and monitor data on tablets.

#### **2. Performance Analytics:**

- a. Simple trend analysis features for coaches to analyze athlete progress over time.

### **3. Multi-language Support:**

- a. The app will support both Korean and English.

### **4. Data Privacy and Security Compliance:**

- a. Ensure the app complies with local Korean regulations related to the handling of health data.

## ***Other Out-of-Scope Deliverable:***

### **1. Integration with Third-Party Fitness Apps:**

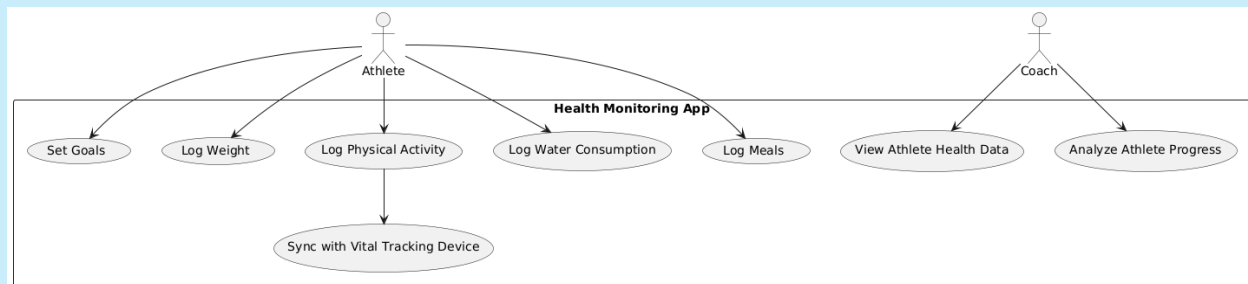
The app will not integrate with other existing fitness or health tracking apps used by the public.

### **2. Diet or Exercise Recommendations:**

The app will not provide automated diet or exercise plans or recommendations.



## Use Case Diagram:



## Project Risks:

- **Data Privacy Risk:**

Risk of personal health data exposure if data is not securely encrypted or transmitted.

- **Device Integration Risk:**

Possible technical challenges in integrating the app with various vital tracking devices, leading to delayed data syncing.

- **User Adoption Risk:**

Athletes and coaches may find it difficult to adopt the new technology if it is not user-friendly.

- **Technical Downtime Risk:**

Risk of app outages or issues that could delay athletes from entering or syncing data in real time.

### ***Project Assumptions:***

- Athletes and coaches are familiar with using tablets and mobile devices.
- All athletes have reliable access to the internet for syncing data from their vital tracking devices.
- The tracking devices used by athletes are capable of syncing seamlessly with the app via APIs.
- Coaches have adequate technical knowledge to use the dashboard for monitoring athletes' data.

### ***Project Constraints:***

- **Budgetary Constraints:**

Limited budget for development, requiring careful prioritization of features.

- **Time Constraints:**

The app must be developed and deployed within six months to meet the start of the next ice hockey season.

- **Regulatory Constraints:**

Compliance with Korean data privacy laws regarding the handling of health and fitness data.

### *Project Issues:*

- **Device Compatibility Issues:**

Ensuring compatibility with multiple professional-grade tracking devices could introduce complexities during development.

- **Data Entry Errors:**

Athletes might incorrectly input health data, leading to inaccurate tracking and analysis.

- **Performance Monitoring Accuracy:**

Relying on third-party tracking devices may lead to discrepancies in data accuracy.

## ***Project Dependencies:***

- **Vital Device Manufacturer:**

Integration with the vital tracking devices used by athletes will depend on the API capabilities of the device manufacturer.

- **Mobile App Development Team:**

Timely completion of front-end and back-end app development.

- **Data Privacy Compliance Team:**

Ensuring that the app meets all regulatory requirements for storing and transmitting health data.

## ***Glossary:***

- **Vital Tracking Device:** A professional-grade device worn by athletes to measure vital signs like

heart rate, physical activity, and sometimes weight.

- **Athlete Dashboard:** The interface used by athletes to log their meals, water intake, activity, and weight.
- **Coach Dashboard:** The interface used by coaches to view the real-time health metrics of athletes.
- **Sync:** The process of data being transmitted from the athlete's vital tracking device to the app.
- **API (Application Programming Interface):** A set of tools that allows two applications (the app and the vital tracking device) to communicate and exchange data.

# **GAP ANALYSIS REPORT**

Current State	Future State	Gap Identified	Steps to Cover the Gap
Athletes and coaches manually track health metrics using traditional methods (e.g., notebooks, generic apps).	Health metrics (meals, water, activity, goals, weight) tracked digitally through a mobile app in real-time.	Lack of centralized and streamlined health tracking for athletes and real-time visibility for coaches.	Develop a mobile application with user-friendly interfaces for athletes and coaches, and ensure real-time synchronization.
Data entry is delayed or inconsistently reported, leading to	Data is automatically synced from athletes'	Inconsistent and manual data entry	Integrate the app with athletes' vital tracking devices to

miscommunication between athletes and coaches.	vital tracking devices to the app for immediate coach visibility.	causing delays in coaching decisions.	automate data syncing and ensure real-time updates for coaches.
No automated system for setting or tracking goals and progress.	Athletes can set and track fitness goals (e.g., weight, endurance) within the app.	No structured goal-setting and progress tracking system for athletes.	Add a goal-setting feature to the app, allowing athletes to define and track their progress toward specific health goals.
Coaches have limited insights into real-time trends or	Coaches can monitor health metrics in	Limited ability for coaches to make data-	Implement a real-time dashboard for coaches that provides a



health metrics beyond manual reports.	real-time via tablets and analyze trends.	driven decisions in real time.	comprehensive view of athletes' health metrics and trends.
No standardization in health metric tracking (meals, water intake, activity logs) between athletes and coaches.	Standardize tracking for meals, water intake, physical activity, and weight across all athletes and coaches.	Lack of standardized process for tracking and analyzing health metrics.	Standardize health metric tracking within the app, ensuring all athletes log data in a consistent format for coach evaluation.
No compliance with data privacy regulation	Health data complies with Korean data privacy regulations, ensuring	Risk of non-compliance with health data	Ensure the app is developed with data encryption, secure login processes, and

s for health-related information in Korea.	secure storage and transmission .	privacy regulations in Korea.	compliance with Korea's health data privacy laws.
Athletes manually enter health data, leading to potential inaccuracies and errors.	Automatic syncing from vital tracking devices to reduce manual entry errors.	High chance of data inaccuracies due to manual input by athletes.	Automate data collection from the athletes' devices to reduce manual entry, improving data accuracy and reducing human



# **ROOT CAUSE ANALYSIS**

## Functionality Problem:

**Athletes are reporting inconsistencies in their physical activity data that syncs from their professional tracking devices to the application. The data occasionally shows incorrect or missing workout entries, leading to confusion for both athletes and coaches when monitoring progress.**

## Root Cause Analysis:

### *Step 1: Identify the Problem*

- **Problem Statement:** Athletes' physical activity data is either incorrect or missing after syncing from their professional tracking devices to the health monitoring application. This issue negatively impacts the accuracy of data that coaches rely on to monitor progress and adjust training plans.

## ***Step 2: Gather Data***

- Athletes report discrepancies between the activity data shown in their tracking devices and what is reflected in the app.
- In some cases, data is completely missing for certain workout sessions, while in others, the duration or type of activity is incorrect.
- The problem seems to occur randomly and affects some athletes more frequently than others.
- The syncing process between the devices and the app is reported to take longer than expected, especially in low internet connectivity scenarios.

## ***Step 3: Use the "5 Whys" Technique to Identify the Root Cause***

### **1. Why is the physical activity data incorrect or missing in the app?**

The app is not consistently receiving or processing the data from the athletes' tracking devices.

## **2. Why is the app not consistently receiving or processing the data?**

The syncing process between the tracking devices and the app appears to be interrupted or delayed at times.

## **3. Why is the syncing process interrupted or delayed?**

The app relies on internet connectivity for syncing, and in low or inconsistent network conditions, the syncing fails or times out.

## **4. Why does the app fail to sync in low or inconsistent network conditions?**

The app does not have an efficient retry mechanism or offline data storage feature, so it cannot queue data to sync later when the network is stable.

## **5. Why doesn't the app have an offline data storage and retry mechanism?**

The development team didn't account for the possibility of athletes experiencing intermittent internet connectivity during initial requirements gathering.

## ***Root Cause:***

The app lacks a robust offline mode and retry mechanism for syncing data from tracking devices. This results in sync failures when athletes experience poor or intermittent network connectivity. Without an automatic retry or data queueing mechanism, the app cannot recover from connectivity issues, causing missing or incorrect physical activity data.

## **Steps to Address the Root Cause:**

### **1. Implement Offline Data Storage:**

- a. Develop an offline mode where the app stores physical activity data locally on the athlete's mobile device if the internet connection is unstable.
- b. Once the network connection is restored, the app should automatically sync the stored data with the server.

### **2. Add a Retry Mechanism:**



- a. Create a robust retry mechanism that attempts to re-sync data at regular intervals if the initial sync attempt fails due to poor connectivity.
- b. Introduce a notification system to inform athletes if their data hasn't synced yet and prompt them when it does.

### **3. Optimize Syncing Algorithm:**

- a. Optimize the syncing algorithm to handle data transfers efficiently, even in low-bandwidth conditions.
- b. Ensure that the app can compress the data to reduce network load and speed up the syncing process.

### **4. Enhance Error Logging and Reporting:**

- a. Integrate better error logging and reporting within the app to detect and log sync issues in real-time.
- b. Provide feedback to the development team on syncing errors, and alert athletes and coaches in case of any issues with the syncing process.

## **5. Educate Athletes on Best Practices:**

- a. Inform athletes on best practices for using the app, such as ensuring they have a stable internet connection when syncing data, to prevent potential issues.

## **Additional Considerations:**

- **Testing in Real Environments:** Conduct real-world testing in various environments where internet connectivity may fluctuate to assess how the app performs under different conditions.
- **User Feedback Mechanism:** Incorporate a feedback mechanism in the app so athletes can easily report issues with data syncing, allowing for faster identification and resolution of problems.

# **Business Requirements Document (BRD)**

### ***Project Name:***

Health Monitoring Application for Professional Ice Hockey Players

### ***Project Objective:***

To develop a health monitoring application for professional ice hockey players aged 20-30 in Korea. The app will enable athletes to track meals, water consumption, physical activity, goals, and weight. Coaches will have real-time access to athletes' health data using tablets.

### ***Project Justification:***

Professional ice hockey players require optimized health tracking to enhance their performance. The current manual methods of tracking health metrics are inefficient and do not provide real-time data for coaches to make informed decisions. This app will

digitize and streamline the process, improving communication between athletes and coaches.

### ***Business Problem:***

Manual tracking of health metrics (meals, water intake, physical activity, and weight) is inefficient and leads to delays in coaching decisions. Coaches currently have no centralized way of viewing athletes' real-time health data, impacting their ability to tailor training programs effectively.

### ***AS-IS State:***

Athletes and coaches manually track health metrics using notebooks or generic fitness apps. There is no integration between devices, resulting in delays, data inconsistencies, and inefficient communication between athletes and coaches.

## ***TO-BE State:***

A health monitoring application will allow athletes to log their health metrics and sync data from their vital tracking devices in real-time. Coaches will be able to view this data via a tablet-friendly dashboard, facilitating timely adjustments to training and nutrition plans.

## ***Project Stakeholders:***

- **Primary Stakeholders:**

- Athletes
- Coaches

- **Secondary Stakeholders:**

- Development Team (Developers, UI/UX Designers)
- Product Owner
- Data Privacy Officer
- Performance Analysts
- Device Manufacturers

## ***RACI Matrix:***

<b>Task</b>	<b>Responsible</b>	<b>Accountable</b>	<b>Consulted</b>	<b>Informed</b>
Requirements Gathering	Business Analyst	Product Owner	Coaches, Athletes	Development Team
UI/UX Design	UI/UX Designer	Product Owner	Coaches, Athletes	Development Team
Development	Developers	Development Lead	UI/UX Designers	Stakeholders
Device Integration	Developers	Development Lead	Device Manufacturers	Product Owner
Testing	QA Team	QA Lead	Athletes, Coaches	Development Team
Data Privacy and Compliance	Data Privacy Officer	Product Owner	Legal, Compliance	All Stakeholders

Deployment	DevOps	Development Lead	Product Owner	Athletes, Coaches
------------	--------	------------------	---------------	-------------------

### ***Project In-Scope Use Case:***

#### **1.Athlete Use Case:**

- a. Enter personal information (height, weight, target weight).
- b. Log meals, water intake, physical activity, and set fitness goals.
- c. Sync real-time data from professional vital tracking devices.

#### **2.Coach Use Case:**

- a. View athlete health data in real-time.
- b. Analyze trends and adjust training programs based on athlete progress.

### ***Project Out-of-Scope Use Case:***

#### **1.General Public Use Case:**



The app is not intended for non-professional athletes or the general public.

## **2. Medical Diagnostics:**

The app will not provide medical diagnoses or substitute professional medical advice.

## ***Business Requirements:***

1. The app should allow athletes to log health metrics (meals, water intake, physical activity, weight).
2. The app should provide real-time syncing with athletes' vital tracking devices.
3. Coaches must have access to athletes' health data through a tablet-friendly dashboard.
4. The app must support both Korean and English languages.
5. The system should comply with Korea's health data privacy regulations.
6. The app must enable goal-setting and provide a view of athletes' progress toward goals.

## ***Functional Requirements:***

### **1. Athlete Functions:**

- a. Log meals, water consumption, physical activity, and weight.
- b. Enter personal details (height, current weight, target weight).
- c. Sync data automatically from professional tracking devices.

### **2. Coach Functions:**

- a. View health metrics of each athlete.
- b. Analyze trends via visual graphs and reports.
- c. Adjust athlete goals or provide feedback based on data.

### **3. Admin Functions:**

- a. Manage athlete and coach accounts.
- b. Monitor data syncing and performance reports.

## ***Non-Functional Requirements:***

### **1. Performance:**

The app must sync data in real-time with minimal latency (less than 5 seconds delay) under stable network conditions.

### **2. Scalability:**

The system must be able to handle up to 1,000 users simultaneously.

### **3. Security:**

All health data must be encrypted during transmission and storage, and the app must comply with data privacy laws in Korea (e.g., PIPA).

### **4. Usability:**

The app must have an intuitive user interface, optimized for mobile and tablet use.

### **5. Reliability:**

The app should have a 99.9% uptime to ensure continuous monitoring.

## ***API Requirements:***

### **1. Vital Tracking Device API:**

- a. API to sync data from athletes' professional tracking devices (e.g., heart rate, physical activity).
- b. Endpoints for data retrieval (e.g., activity logs, calorie count).

### **2. User Authentication API:**

- a. Secure login system using OAuth2.0 for athletes and coaches.

### **3. Data Sync API:**

- a. APIs to enable real-time syncing of health metrics between the app and the server.

## ***Integration Requirements:***

### **1. Vital Tracking Device Integration:**

- a. The app must integrate with multiple professional-grade tracking devices, allowing for seamless data syncing.

## **2. Tablet Integration for Coaches:**

- a. Ensure the app is fully compatible with tablets, enabling coaches to access real-time athlete data.

## ***Database Requirements:***

### **1. Athlete Profile Database:**

- a. Store personal information like height, weight, and target weight.

### **2. Health Metrics Database:**

- a. Track and store logged meals, water intake, physical activity, and weight over time.

### **3. Sync Data Storage:**

- a. Store synced data from athletes' vital tracking devices.

## ***Transition Requirements:***

### **1. Data Migration:**

- a. Migrate any existing health tracking data that athletes may have in legacy systems or external apps.

## 2.Training:

- a. Provide training sessions for coaches and athletes on how to use the app effectively.

### *Data Dictionary:*

Field Name	Description
Athlete_ID	Unique identifier for each athlete
Coach_ID	Unique identifier for each coach
Meal_Log	Stores details about meals logged by the athlete
Water_Intake	Stores details of water consumption
Activity_Log	Logs physical activity of the athlete

Weight _Log	Logs athlete's weight over time
Sync_S tatus	Status of data sync from tracking device (success/fail)

### ***Project Risks:***

#### **1.Data Privacy Risk:**

Health data must be securely stored and comply with Korean privacy laws to avoid regulatory penalties.

#### **2.Device Integration Risk:**

Challenges with syncing data from diverse vital tracking devices could lead to delayed feature releases.

#### **3.User Adoption Risk:**

Athletes and coaches may be slow to adopt the new technology if the app is not user-friendly.

## ***Project Dependencies:***

### **1. Device Manufacturers:**

Dependency on the device manufacturers to provide APIs for data integration.

### **2. Data Privacy Compliance:**

Must adhere to privacy laws and obtain legal approvals before launch.

## ***Project Issues:***

### **1. Data Sync Failures:**

Initial testing reveals occasional syncing issues from athletes' devices, which may impact data accuracy.

### **2. Training Needs:**

Coaches may require more time to adapt to the dashboard interface than originally planned.



## ***Project Constraints:***

### **1. Budget Constraint:**

Limited budget for additional device integration testing may impact the scope of supported devices.

### **2. Time Constraint:**

The app must be developed and launched before the start of the next ice hockey season in six months.

## ***Project Assumptions:***

1. All athletes and coaches have access to stable internet connections.
2. The professional-grade tracking devices used by athletes can integrate with the app using available APIs.
3. The app will be used exclusively in Korea, so localization is only required for Korean and English languages.

## ***Glossary:***

- **Vital Tracking Device:**

A professional device that tracks health metrics like heart rate, activity, and weight in real-time.

- **API (Application Programming Interface):**

A set of functions that allows apps to communicate with other software (e.g., tracking devices).

- **Sync:**

The process of automatically updating data between devices and applications.

# **Software Requirements Specification (SRS)**

## ***Project Name:***

Health Monitoring Application for Professional Ice Hockey Players

## **1. Introduction**

### ***1.1 Purpose:***

The purpose of this Software Requirements Specification (SRS) document is to define the functional and non-functional requirements for the Health Monitoring Application. The application will be designed to help professional ice hockey players in Korea track their health metrics, including meals, water consumption, physical activity, weight, and goals, and allow coaches to monitor this data in real-time using tablets.

## ***1.2 Scope:***

The Health Monitoring Application will enable athletes to log their personal information and track daily health metrics. It will integrate with professional-grade vital tracking devices to automatically sync data and provide coaches with a tablet-friendly dashboard to view and analyze the athletes' progress. The app must comply with Korea's health data privacy regulations and be localized for both Korean and English users.

## ***1.3 Intended Audience and Reading Suggestions:***

This document is intended for developers, testers, project managers, business analysts, and other stakeholders involved in the development and implementation of the Health Monitoring Application. It provides detailed information on the system's functionality, interfaces, constraints, and performance requirements.

## ***1.4 Product Overview:***

- **Target Users:**

Professional ice hockey players aged 20-30 and their coaches in Korea.

- **System Interfaces:**

Integration with professional-grade vital tracking devices for real-time syncing of health data.

- **Main Functions:**

Athletes can log their meals, water intake, physical activity, weight, and goals. Coaches can view athlete health data in real-time and adjust training programs accordingly.

## **2. System Requirements**

### ***2.1 Functional Requirements***

#### **2.1.1 Athlete Functionality:**

##### **1. Log Health Metrics:**

**a. Description:**

Athletes must be able to log their daily meals, water consumption, physical activity, and weight. The app should provide intuitive forms for entering the data.

**b. Input:**

Athletes enter values for meal details, water intake (in liters), physical activity (type, duration), and weight.

**c. Output:**

Data is stored and displayed on the athlete's dashboard.

**2. Sync with Vital Tracking Device:**

**a. Description:**

The app will automatically sync data from the athlete's professional vital tracking device to capture physical activity metrics like heart rate and workout intensity.

**b. Input:**

Data from the tracking device.

**c. Output:**

Automatically updated physical activity metrics on the athlete's dashboard.

**3. Set and Track Fitness Goals:**

**a. Description:**

Athletes can set health and fitness goals (e.g., target weight) and track their progress towards these goals.

**b. Input:**

Personal goal information.

**c. Output:**

Progress tracking displayed on the athlete's dashboard.

**4. Enter Personal Information:**

**a. Description:**

Athletes must provide personal details such as height, current weight, and target weight.

**b. Input:**

Athlete personal details.

**c. Output:**

Data is stored in the athlete's profile.



## **2.1.2 Coach Functionality:**

### **1.View Athlete Health Data:**

#### **a. Description:**

Coaches can view the health metrics of their athletes in real-time, including meal logs, water intake, physical activity, weight, and progress toward goals.

#### **b. Input:**

Data synced from the athletes' entries and tracking devices.

#### **c. Output:**

Health metrics displayed on the coach's tablet dashboard.

### **2.Analyze Trends and Adjust Training Programs:**

#### **a. Description:**

Coaches can analyze athlete trends and adjust training programs based on data insights. The app will provide basic visualization (graphs) for this purpose.

#### **b. Input:**

Athlete health data.

**c. Output:**

Trend analysis and training program adjustments.

### **2.1.3 Admin Functionality:**

#### **1. Manage Accounts:**

**a. Description:**

Admins can create, update, and delete athlete and coach accounts.

**b. Input:**

Athlete and coach profile information.

**c. Output:**

Updated profile and account management.

### **2.2 Non-Functional Requirements**

#### **1. Performance:**

- a. The app must be able to handle real-time syncing of data from up to 1,000 users simultaneously with a sync delay of less than 5 seconds.

## **2.Security:**

- a.All health data must be encrypted both in transit and at rest. User authentication will require secure login with multi-factor authentication (MFA) for both athletes and coaches.

## **3.Usability:**

- a.The app must provide an intuitive user interface for both athletes and coaches, optimized for mobile and tablet devices.

## **4.Reliability:**

- a.The system should have 99.9% uptime to ensure continuous availability, especially during critical training sessions.

## **5.Localization:**

- a.The app will support both Korean and English, with users able to switch languages from the settings menu.

## **6.Data Privacy Compliance:**

- a.The app must comply with Korea's Personal Information Protection Act (PIPA) and ensure

proper handling and storage of sensitive health data.

## ***2.3 Interface Requirements***

### **2.3.1 API Requirements:**

#### **1. Vital Tracking Device API:**

##### **a. Description:**

The app must integrate with APIs provided by the professional-grade tracking device manufacturers to sync real-time data for physical activity, heart rate, and other metrics.

##### **b. Endpoints:**

Retrieve workout duration, intensity, heart rate, and calories burned.

#### **2. User Authentication API:**

##### **a. Description:**

Implement OAuth 2.0 for secure user authentication and session management.

**b. Endpoints:**

Login, logout, token refresh, and MFA validation.

**3. Data Sync API:**

**a. Description:**

APIs to sync health metrics between the athlete's mobile app and the coach's tablet dashboard.

**b. Endpoints:**

Sync health metrics, retrieve athlete data, update progress.

**2.3.2 Integration Requirements:**

**1. Vital Tracking Device Integration:**

- a. The app must seamlessly integrate with professional tracking devices using their available APIs to automatically pull physical activity data.

**2. Tablet Dashboard Integration:**

- a. Coaches must be able to use the app on tablets, ensuring that the user interface is

optimized for larger screens and touch interactions.

## ***2.4 Database Requirements***

### **1. Athlete Profile Database:**

#### **a. Description:**

The system will store athlete details such as height, weight, target weight, and personal goals.

### **2. Health Metrics Database:**

#### **a. Description:**

All health data (meals, water intake, activity, weight) logged by athletes will be stored in a structured format, allowing coaches to access and review the data.

### **3. Sync Log Database:**

#### **a. Description:**

Store logs of data sync events, detailing timestamps and success/failure status for each sync.

## 2.5 Transition Requirements

### 1.Data Migration:

- a.The system must provide mechanisms for importing any existing health data athletes may have in legacy systems.

### 2.User Training:

- a.Provide training resources (e.g., video tutorials) for athletes and coaches to understand how to use the app and its features.

## 3. Data Dictionary

Field Name	Description	Type
Athlete_ID	Unique identifier for each athlete	Integer
Coach_ID	Unique identifier for each coach	Integer
Meal_Log	Stores details about meals logged by the athlete	String

Field Name	Description	Type
Water_In take	Stores details about water consumption	Float
Activity_Log	Logs details of physical activity (type, duration)	String
Weight_Log	Logs athlete's weight data	Float
Sync_Status	Status of data sync (success/failure)	String
Goal_ID	Unique identifier for each goal	Integer
Goal_Type	Type of goal (e.g., weight, endurance)	String
Target_Weight	Target weight entered by the athlete	Float
Current_Weight	Current weight entered by the athlete	Float
Height	Athlete's height	Float
Progress	Progress toward the set goal	Float



## 5. Project Risks

<b>Risk</b>	<b>Description</b>
<b>Data Privacy Risk</b>	Risk of health data exposure if security measures (encryption, authentication) fail.
<b>Integration Risk</b>	Difficulties in integrating with different tracking devices may lead to delays or data sync issues.
<b>Adoption Risk</b>	Athletes and coaches may be slow to adopt the app if it is not user-friendly or well-trained.
<b>Connectivity Risk</b>	Sync failures or delays in low internet connectivity areas may affect data accuracy.
<b>Compliance Risk</b>	The app must ensure compliance with Korea's health data privacy laws (PIPA).

## 6. Project Dependencies

Dependence	Description
Device Manufacturer API	Dependence on vital tracking device manufacturers to provide reliable and open APIs for integration.
Data Privacy Compliance	Dependence on legal and compliance teams to ensure adherence to Korean health data privacy laws.
Stable Internet Connection	Dependence on athletes and coaches having stable internet connections for data syncing.

## 7. Project Issues

Issue	Description
Sync Delays	Intermittent data sync delays from athletes' tracking devices affecting real-time data accuracy.

<b>User Training</b>	Athletes and coaches may require additional time and training to fully adapt to the system.
----------------------	---

## 8. Project Constraints

<b>Constraint</b>	<b>Description</b>
<b>Budget Constraints</b>	Limited budget for development may restrict device compatibility testing.
<b>Time Constraints</b>	The project must be completed within six months to align with the start of the ice hockey season.
<b>Regulatory Compliance</b>	The app must comply with all relevant data privacy regulations in Korea.

## 9. Project Assumptions

<b>Assumption</b>	<b>Description</b>
<b>Stable Internet Access</b>	Athletes and coaches will have stable internet connections to sync data in real-time.
<b>API Availability</b>	All professional-grade tracking devices used by athletes will provide APIs that the app can integrate with.
<b>Single Market Focus</b>	The app will only be launched in Korea, and localization will only be needed for Korean and English languages.

## 10. Glossary

<b>Term</b>	<b>Definition</b>
<b>Vital Tracking Device</b>	A professional-grade device worn by athletes to monitor vital signs like heart rate, activity levels, and workout intensity.

<b>Sync</b>	The process of updating or transferring data between the tracking device and the app in real-time.
<b>Goal</b>	A personal target set by athletes (e.g., weight goal, activity goal) for tracking progress over time.
<b>Dashboard</b>	A graphical interface that displays athletes' health metrics and progress in an easily accessible format.
<b>API (Application Programmin g Interface)</b>	A set of tools that allows software applications (e.g., the app and tracking devices) to communicate with each other.
<b>PIPA (Personal Information Protection Act)</b>	The Korean law governing the collection, use, and storage of personal information, especially health-related data.

# **User Story and Acceptance Criteria**

## **User Story 1: Log Meals**

**As an athlete,**

**I want** to log the meals I consume daily,

**So that** I can track my calorie and nutrient intake to maintain a balanced diet.

### **Acceptance Criteria:**

- The athlete can access a "Log Meal" form from the dashboard.
- The form must include fields for meal name, meal type (breakfast, lunch, dinner, snack), and calories.
- The athlete can add multiple entries for a day.
- The meal log must display the total calorie count for the day on the athlete's dashboard.
- The athlete can edit or delete any meal entry.

## **User Story 2: Track Water Consumption**

**As an athlete,**

**I want** to track my daily water consumption,  
**So that** I can ensure I stay properly hydrated.

**Acceptance Criteria:**

- The athlete can log water consumption in liters using a "Track Water" feature.
- The app should display the cumulative total of water consumed for the day.
- The athlete can edit or delete previous water entries.
- A daily reminder should be triggered if water consumption falls below a predefined threshold (e.g., less than 2 liters by 5 PM).
- The total daily water intake should be visible on the dashboard.

**User Story 3: Log Physical Activity**

**As an** athlete,

**I want** to log my physical activity,

**So that** I can track my workout intensity and type.



## Acceptance Criteria:

- The athlete can log activity type (e.g., cardio, strength, flexibility), duration, and intensity (low, medium, high).
- The app must display the total duration of activities for the day.
- The athlete can edit or delete previous physical activity logs.
- The app should sync physical activity data from the athlete's vital tracking device automatically, overriding manual entries if synced data is available.
- The app should display a summary of all physical activities for the week.

## User Story 4: Set and Track Fitness Goals

**As an** athlete,

**I want** to set personal fitness goals (e.g., target weight),

**So that** I can track my progress over time.

## Acceptance Criteria:

- The athlete can set specific fitness goals, including target weight, activity duration, or endurance.
- The app must show current progress towards these goals (e.g., current weight vs. target weight).
- The app should generate visual progress bars or graphs to track goal achievement.
- The athlete can edit or adjust the goals at any time.
- A notification should alert the athlete when they are nearing or surpassing their goals.

## User Story 5: View Athlete Health Data (Coach)

**As a** coach,

**I want** to view the health data of my athletes in real-time,

**So that** I can monitor their progress and make informed decisions on training adjustments.

## Acceptance Criteria:

- Coaches can view an athlete's daily meal logs, water consumption, physical activity, weight, and progress toward fitness goals on a tablet-friendly dashboard.
- The dashboard must display real-time synced data from athletes' tracking devices.
- Coaches can filter data by date range (e.g., daily, weekly, monthly views).
- The coach can view summary reports of athletes' performance trends over time (e.g., average daily calorie intake, total workout hours per week).
- The coach can receive alerts if an athlete's data (e.g., weight or activity levels) shows sudden changes or falls below expected performance targets.

## **User Story 6: Sync Data from Vital Tracking Device**

**As an athlete,**

**I want** the app to sync my physical activity data from my professional-grade tracking device,

**So that** my workout metrics are automatically updated without manual input.

### **Acceptance Criteria:**

- The app must integrate with the professional vital tracking device to automatically sync physical activity data (e.g., duration, heart rate, calories burned).
- The synced data should be displayed on the athlete's dashboard in real-time.
- The app should check for data from the tracking device at regular intervals or when an internet connection is detected.
- If data sync fails, the app should retry or notify the athlete to manually sync.
- The athlete should receive confirmation when data has successfully synced.

### **User Story 7: Data Privacy and Security**

**As a** user (athlete/coach),

**I want** my health data to be securely stored and transmitted,

**So that** my personal information is protected and complies with privacy regulations.

**Acceptance Criteria:**

- All health data must be encrypted both in transit and at rest using secure encryption standards (e.g., AES-256).
- User authentication must use secure methods, such as OAuth 2.0, and include multi-factor authentication (MFA).
- The app must comply with Korea's data privacy regulations (PIPA).
- The athlete and coach should receive clear data usage consent forms before first use.
- A data breach response plan should be implemented, ensuring users are notified if any security vulnerabilities arise.

## User Story 8: Athlete Personal Information Entry

**As an athlete,**

**I want** to enter my personal information (e.g., height, current weight, target weight),

**So that** I can accurately track my progress toward fitness goals.

### Acceptance Criteria:

- The athlete can enter their height, current weight, and target weight when first setting up the app.
- The app must allow the athlete to update their personal information at any time.
- Personal data should be validated to ensure accuracy (e.g., height must be between 100 cm and 250 cm).
- The athlete's weight data must be displayed alongside their fitness goals, showing current progress.
- The app should store personal information securely and comply with privacy regulations.

## **User Story 9: Notification and Reminder System**

**As an athlete,**

**I want** to receive reminders and notifications for tracking my meals, water intake, and physical activity,

**So that** I stay on track with my daily health goals.

### **Acceptance Criteria:**

- The athlete should receive reminders to log meals at predefined times (e.g., breakfast, lunch, dinner).
- The athlete should receive water intake reminders throughout the day if intake falls below daily recommendations.
- The athlete should receive notifications if their physical activity is below a certain threshold for the day.
- Notifications must be configurable, allowing athletes to turn them on/off or adjust timing.
- Coaches should receive notifications if any significant deviation in the athlete's health

metrics is detected (e.g., sudden weight loss or increase in inactivity).

## **User Story 10: View Progress Reports**

**As an athlete,**

**I want** to view detailed reports of my health data over time,

**So that** I can analyze trends and track long-term progress.

### **Acceptance Criteria:**

- The athlete can view reports that summarize their logged data over different periods (daily, weekly, monthly).
- The app must generate visual reports with graphs showing trends in calorie intake, water consumption, activity levels, and weight.
- Reports should be downloadable in PDF format.
- The athlete can share reports with their coach directly from the app.



- The report must highlight any deviations from personal goals (e.g., weight fluctuation).

# Use Cases

## Use Case 1: Log Meals

- **Use Case ID:** UC001
- **Use Case Name:** Log Meals
- **Use Case Description:** This use case describes how an athlete logs their meals for tracking calorie and nutrient intake.
- **Primary Actor:** Athlete
- **Supporting Actor:** None
- **Pre-Condition:** The athlete is logged into the app.
- **Post Condition:** The meal data is successfully stored in the system, and the total calorie count for the day is updated.

### *Main Flow:*

1. **Actor Action:** The athlete selects the "Log Meal" option from the dashboard.

**System Response:** The system displays a form to log meal details (meal name, type, and calorie count).

2. **Actor Action:** The athlete enters the meal details and submits the form.

**System Response:** The system validates the entered data and stores the meal log in the database.

3. **Actor Action:** The athlete views the dashboard after logging the meal.

**System Response:** The system updates the total daily calorie count and displays it on the dashboard.

### *Alternate Flow:*

- If the athlete wants to edit or delete a meal entry:
  - **Actor Action:** The athlete selects an existing meal log to edit or delete.

**System Response:** The system displays the edit/delete options for the selected meal entry.

- **Actor Action:** The athlete modifies or deletes the entry.

**System Response:** The system updates the meal log accordingly and adjusts the total calorie count.

### *Exception Flow:*

- If the meal details entered are invalid:

- **System Response:** The system displays an error message, prompting the athlete to correct the information before submission.

### ***Additional Requirements:***

- **Functional Requirements:**

- The system must validate meal details (e.g., calorie value must be numeric).
- The system must store the meal log in the athlete's profile.

- **Non-Functional Requirements:**

- The meal log must be saved within 3 seconds after submission.

- **Database Requirements:**

- A Meal\_Log table is required to store meal name, type, calorie count, and timestamp.

- **Technical Requirements:**

- The meal logging form must be optimized for mobile use.

## Use Case 2: Track Water Consumption

- **Use Case ID:** UC002
- **Use Case Name:** Track Water Consumption
- **Use Case Description:** This use case allows an athlete to log their daily water intake and monitor hydration levels.
- **Primary Actor:** Athlete
- **Supporting Actor:** None
- **Pre-Condition:** The athlete is logged into the app.
- **Post Condition:** The athlete's water consumption is logged, and the total daily water intake is updated.

### *Main Flow:*

1. **Actor Action:** The athlete selects the "Track Water" option from the dashboard.

**System Response:** The system displays a form for logging water intake (in liters).

2. **Actor Action:** The athlete enters the amount of water consumed and submits the form.

**System Response:** The system validates the input and logs the water intake in the database.

3. **Actor Action:** The athlete returns to the dashboard.

**System Response:** The system updates the total daily water intake and displays it on the dashboard.

***Alternate Flow:***

- If the athlete wants to edit or delete a previous water entry:
  - **Actor Action:** The athlete selects an existing water entry.

**System Response:** The system displays options to edit or delete the entry.

- **Actor Action:** The athlete modifies or deletes the entry.

**System Response:** The system updates the water log and adjusts the total daily water intake.

### ***Exception Flow:***

- If the water intake value is not valid (e.g., negative number):
  - **System Response:** The system displays an error message and prompts the athlete to enter a valid amount.

### ***Additional Requirements:***

- **Functional Requirements:**
  - The system must validate water intake (e.g., only numeric values).
  - The system should trigger reminders if daily intake is below a certain threshold.
- **Non-Functional Requirements:**
  - The app should allow real-time updating of water intake on the dashboard.
- **Database Requirements:**
  - A Water\_Intake table must store athlete ID, water amount, and timestamp.
- **Technical Requirements:**
  - The system should be responsive and handle real-time calculations efficiently.



## Use Case 3: Log Physical Activity

- **Use Case ID:** UC003
- **Use Case Name:** Log Physical Activity
- **Use Case Description:** This use case details how an athlete logs their daily physical activity, and the system syncs with their tracking device for automatic updates.
- **Primary Actor:** Athlete
- **Supporting Actor:** Vital Tracking Device
- **Pre-Condition:** The athlete is logged into the app, and the tracking device is connected to the app.
- **Post Condition:** Physical activity is logged, and data from the tracking device is synced in real-time.

### *Main Flow:*

1. **Actor Action:** The athlete selects the "Log Activity" option from the dashboard.

**System Response:** The system displays an activity log form.

2. **Actor Action:** The athlete enters the type, duration, and intensity of the physical activity and submits the form.

**System Response:** The system validates and logs the activity data.

3. **System Action:** The system automatically syncs physical activity data from the athlete's tracking device.

**System Response:** The system updates the activity log with synced data from the tracking device (e.g., heart rate, calories burned).

4. **Actor Action:** The athlete views their activity summary on the dashboard.

**System Response:** The system displays the updated activity summary, including manually entered and synced data.

### ***Alternate Flow:***

- If the tracking device is not available:

- **Actor Action:** The athlete manually logs their physical activity.

**System Response:** The system stores the manual activity log and updates the dashboard.

### ***Exception Flow:***

- If syncing from the tracking device fails:
  - **System Response:** The system notifies the athlete of the sync failure and prompts them to try again or manually log their activity.

### ***Additional Requirements:***

- **Functional Requirements:**
  - The system must sync activity data from the tracking device and update the log.
  - The system must allow manual logging of physical activity.
- **Non-Functional Requirements:**
  - Syncing from the tracking device should take no more than 5 seconds.
- **Database Requirements:**

- An Activity\_Log table must store the activity type, duration, intensity, and tracking device data (e.g., heart rate, calories burned).
- **Technical Requirements:**
  - API integration with the tracking device is required for real-time syncing.

## **Use Case 4: View Athlete Health Data (Coach)**

- **Use Case ID:** UC004
- **Use Case Name:** View Athlete Health Data
- **Use Case Description:** Coaches can view and analyze athlete health metrics (meals, water, activity, weight, and goals) in real-time through a tablet-friendly dashboard.
- **Primary Actor:** Coach
- **Supporting Actor:** Athlete, Vital Tracking Device
- **Pre-Condition:** The coach is logged into the system and has been assigned athletes to monitor.

- **Post Condition:** The coach can view and analyze athlete health data to make informed decisions about training programs.

### ***Main Flow:***

1. **Actor Action:** The coach selects an athlete from their list of assigned athletes.

**System Response:** The system retrieves and displays the athlete's health metrics, including meals, water intake, activity, weight, and goals.

2. **Actor Action:** The coach views the athlete's data summary for a selected time period (e.g., daily, weekly, monthly).

**System Response:** The system generates a visual summary of the athlete's performance (e.g., graphs and trends).

3. **Actor Action:** The coach analyzes the data and provides feedback or adjustments to the athlete's training program.

**System Response:** The system stores the coach's feedback and updates the athlete's profile if any adjustments are made.

### ***Alternate Flow:***

- If the coach wants to compare multiple athletes:
  - **Actor Action:** The coach selects multiple athletes for comparison.

**System Response:** The system displays a comparison chart of the selected athletes' health metrics.

### ***Exception Flow:***

- If data retrieval fails:
  - **System Response:** The system notifies the coach of the failure and suggests retrying or contacting support.

### ***Additional Requirements:***

- **Functional Requirements:**
  - The system must display real-time data from athletes' profiles and tracking devices.

- The coach must be able to filter data by date and specific metrics (e.g., meals, activity).
- **Non-Functional Requirements:**
  - Data retrieval and display must occur within 2 seconds.
  - The dashboard must be optimized for tablet use.
- **Database Requirements:**
  - The system must query multiple tables (e.g., Meal\_Log, Water\_Intake, Activity\_Log, Weight\_Log) for athlete data.
- **Technical Requirements:**
  - The app must support tablet-friendly views and provide real-time updates.