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**ISKOLETA+: A UNIFIED WELLNESS PLATFORM FOR  
MANAGING PHYSICAL FITNESS, MENTAL HEALTH, AND  
COMMUNITY ENGAGEMENT AT PUP**

**A Capstone Project**

**Presented to the Faculty of the College of Computer and Information  
Sciences**

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**Sta. Mesa, Manila**

**In Partial Fulfilment of the Requirements for the Degree**

**Bachelor of Science in Information Technology**

**by**

**Karyle C. Balaga**

**Claynne T. Casampol**

**Althea Anne T. De Jesus**

**Franz Albert A. Urbona**

**June 2025**

## APPROVAL SHEET

This capstone project ISKOLETA+: A UNIFIED WELLNESS PLATFORM FOR MANAGING PHYSICAL FITNESS, MENTAL HEALTH, AND COMMUNITY ENGAGEMENT AT PUP prepared and submitted by [Name of the Researchers (FN MI LN; Alphabetical Order)] in partial fulfilment of the requirements for the degree, Bachelor of Science in Information Technology has been:

Recommended for Approval and Acceptance:

Date:

---

Name MI Surname, MIT

Faculty in-Charge

---

Name MI Surname, MSIT

Adviser (omit if same as FIC or none)

**Approved by the Capstone Project Defense Panel:**

---

**Name MI Surname, DIT**

---

**Name MI Surname, MCS, LPT**

---

**Name MI Surname**

**Accepted for the Department of Information Technology:**

---

**John Dustin D. Santos, MIT**

**Chairperson**

**Accepted for the College of Computer and Information Sciences:**

---

**Melvin C. Roxas, MSGITS**

**Dean**

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***SAMPLE ONLY. YOU MAY CREATE YOUR OWN***

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(Note: Cite the people or organizations who provided technical, administrative, or funding assistance).



**J.D.C.**

**J.P.R.**

## **CERTIFICATION OF ORIGINALITY**

This is to certify that the research work presented in this capstone project, *ISKOLETA+: A UNIFIED WELLNESS PLATFORM FOR MANAGING PHYSICAL FITNESS, MENTAL HEALTH, AND COMMUNITY ENGAGEMENT AT PUP* for the degree Bachelor of Science in Information Technology at the Polytechnic University of the Philippines embodies the result of original and scholarly work carried out by the undersigned. This capstone project does not contain words or ideas taken from published sources or written works that have been accepted as basis for the award of a degree from any other higher education institution, except where proper referencing and acknowledgement were made.

**(Wet Signature)**

**BALAGA, KARYLE C.**

**CASAMPOL, CLAYNNE T.**

**DE JESUS, ALTHEA ANNE T.**

**URBONA, FRANZ ALBERT C.**

**Researchers**

**(Day Month Year)**

**Date Signed**

## **ABSTRACT**

**Title : Title of Capstone Project**

**Researcher : Name of the Researcher**

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**Year : 2025**

**Adviser/FIC : Name of Adviser or Faculty in-Charge**

**(Note: Abstract should be double-spaced, and not more than 250 words)**

**A good abstract explains in one paragraph why the paper is important. It then goes on to give a summary of your major results, preferably couched in numbers with error limits. The final sentences explain the major implications of your work. A good abstract is concise, readable, and quantitative. Length should be approximately 350-400 words. Abstracts generally do not have citations nor footnotes. Information in title should not be repeated. It should be explicit and use numbers where appropriate.**

**Answers to these questions should be found in the abstract: (1) What did you do?; (2) Why did you do it? What question were you trying to answer?; (3) How did you do it? State methods; (4) What did you learn? State major results; and (5) Why does it matter? Point out at least one significant implication.**

**Keywords: At least five (5) keywords must be given (To include “Polytechnic University of the Philippines”)**

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## Chapter 1

### INTRODUCTION

#### 1.1 Project Context

The Polytechnic University of the Philippines (PUP) promotes a dynamic environment that nurtures students, faculty, and staff, which plays a crucial role in shaping individuals by promoting discipline, collaboration, and resilience, which are essential for personal development and professional success of each individual in the PUP community. These attributes contribute significantly to the university's growth and recognition. However, despite these advantages, Polytechnic University of the Philippines (PUP) faces significant challenges in sports participation, event awareness, and wellness accessibility, limiting the community's ability to fully utilize available opportunities.

Holistic wellness has become increasingly important within the Polytechnic University of the Philippines (PUP), yet challenges in sports visibility, wellness tracking, and institutional event awareness persist. Despite its strong academic reputation, limited recognition and visibility hinder the community from actively participating in university sports and wellness programs. According to Lourence Angelo Marcellana (2025), Acting Sports Committee Head and former Editor-in-Chief of *The Communicator*, sports journalism within the College of Communication (COC) has only recently gained formal recognition, yet networking limitations continue to hinder coverage for student-athletes, making it difficult for their achievements to be consistently highlighted. Similarly, student sports enthusiast Mr. Delos Santos (2025) highlights the lack of consistent recognition for athletic achievements, as sports news is often only accessible during major events.

He believes that a dedicated sports section would ensure regular coverage, allowing athletes to receive proper acknowledgment while fostering greater student engagement. Sports Development Program Office (SDPO) Director Mr. Hubbard (2025) further emphasizes that while PUP primarily uses Facebook for sports announcements, the university still lacks a centralized system to actively promote student-athlete participation. He believes that an integrated platform would enhance recruitment, making tryouts more accessible to aspiring athletes and encouraging greater involvement in PUP sports.

Beyond sports engagement, studies emphasize the role of physical and mental wellness in student success. Research confirms that structured fitness programs positively impact academic performance and overall well-being (Rodríguez-Romo et al., 2023). However, PUP still lacks accessible mental health check-ins, injury recovery tracking, and fitness monitoring, particularly for student-athletes. While E-Konsulta provides guidance and support, its email-based approach limits immediate wellness tracking (Birion, 2025). Additionally, faculty members whose well-being directly influences student-athletes also struggle with barriers to physical activity, such as time constraints and limited institutional support (Bélanger, Barnett, & Thériault, 2023). Without a structured, digital platform, both students, faculty and staff miss valuable opportunities to enhance engagement in PUP's athletic culture and wellness initiatives.

Given these challenges, the community faces difficulties in accessing wellness programs, tracking events, and actively participating in athletics. Without proper recognition and structured engagement, opportunities within the university will remain underutilized, leading to lower participation rates and missed wellness benefits. To bridge these gaps, this study proposes the development of ISKOLETA+, a campus-



based digital application designed to enhance student engagement and holistic wellness in the PUP community. ISKOLETA+ integrates sports participation, fitness resources, mental health monitoring, and event tracking, ensuring that the PUP community remains informed and actively involved. By providing a centralized system for wellness and athletics, ISKOLETA+ aims to create a more connected, active, and thriving university environment.

## 1.2 Technical Background

The development and successful deployment of ISKOLETA+: PUP Community Sports and Wellness Management System requires a thorough understanding of the existing technical landscape within the Polytechnic University of the Philippines (PUP). The current equipment, software, human resources, network infrastructure, data handling processes, and policies that may impact the design and implementation of the proposed system.

### 1.2.1 Equipment/Hardware

**Table 1. Existing Equipment**

Equipment	Quantity
Laptops	4
Android Devices	20
Printers	2

The ISKOLETA+ system accessible via smartphones, which are widely used by PUP Community. The existing computing devices are sufficient for administrative access, while the mobile devices support student usage on-the-go.

### **1.2.2 Software**

Most offices in the university currently use Windows-based operating systems, alongside Microsoft Office and web-based tools such as Google Workspace. The proposed system will be compatible with:

- Windows and Android OS
- Modern web browsers (Chrome, Firefox, Edge)
- MySQL, Firebase Storage for database management
- PHP, Python, Express.js, Firebase Cloud Messaging (FCM) for backend operations

Since most users are familiar with the basic productivity software and browser-based platforms, the ISKOLETA+ application will support familiarity with an intuitive and user-friendly interface.

### **1.2.3 Peopleware/Manpower**

The intended users of ISKOLETA+ include students, student athletes, faculty, coaches, and administrative personnel. While some users may have basic IT proficiency, others may require support in system navigation and maintenance.

- Clients who have limited technical training.
- IT support staff that had experience in database management and system deployment.

To support guidance to users, short training workshops are conducted and provide user manuals for students, coaches, and faculty to ensure smooth adoption.

#### **1.2.4 Network Infrastructure/Architecture**

The university maintains a functional campus network that primarily provides Wi-Fi access in specific areas. The current network infrastructure may affect the real-time system performance due to bandwidth constraints depending on peak periods or situation. ISKOLETA+ designed as a mobile-first platform optimized for low network bandwidth environments so users can access via smartphones, so the system ensures smooth performance on mobile devices. Secured browser-based panel accessible within the existing network managed by administrative tasks. Student Information System (SIS) may require secure API protocol for future integration. Overall, the current infrastructure supports ISKOLETA+, though strategic development could further enhance system reliability and user experience.

#### **1.2.5 Storage, Backup, and Recovery Procedure**

The university's current data management practices rely on local storage and manual processing, limiting efficiency and scalability. The limitation of use of automated backup systems, which increases the risk of data loss due to

hardware failure, accidental deletion, or cyber threats. ISKOLETA+ addresses this by utilizing cloud-based storage to ensure data availability, scalability, and security. System implementation scheduled automatic backups, with daily incremental and weekly full backups to protect critical user and system data. In the event of data loss or system failure, the platform will allow for rapid recovery using point-in-time restoration features. This approach ensures continuous service availability and protects valuable user information across the PUP community.

#### **1.2.6 Security Procedures**

The university's current security limits its infrastructure, mainly relying on password-protected accounts and basic antivirus software. ISKOLETA+ will implement enhanced security measures to ensure confidentiality and integrity for the user's wellness and activity data. To restrict data visibility, multi-factor authentication (MFA) for all admin accounts and role-based access control (RBAC) were implemented. Data transmitted and stored on the platform will be encrypted using industry-standard protocols such as HTTPS, regular security audits and penetration testing conducted to detect and fix issues. These proactive measures aim to create a secure environment that protects both users and institutional data.

#### **1.2.7 Policies and Procedures**

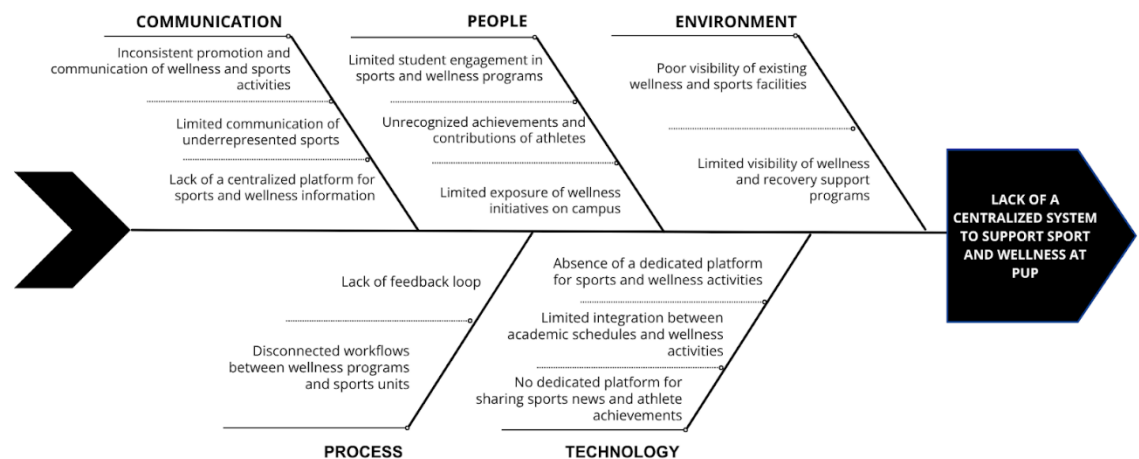
The university's existing policies must relate to programs existing in the study, which the system must align with. The system supports institutional procedures fitness program management, mental health consultations,

coordination to athlete programs. Event posting on ISKOLETA+ will follow university guidelines requiring prior validation by designated authorities. Fitness and mental wellness features must comply with data privacy regulations and ethical standards. Role-based access will be implemented to ensure that only specific users can access specific tasks permitted by their assigned roles. To achieve transparency in all system transactions, audit logs and validation workflows implementation will be conducted. The system will adopt PUP's formal policies and operational procedures, ISKOLETA+ ensures secure, compliant, and effective integration into the university's daily activities.

## 1.3 Problem Analysis

### 1.3.1 Fishbone Diagram

Figure 1. Fishbone Diagram



### **1.3.2 Problem and Solution Statement**

The Polytechnic University of the Philippines (PUP) currently lacks a centralized and accessible digital platform to manage wellness, fitness, and mental health support for its students, athletes, faculty, and administrative staff. This absence results in fragmented participation in campus-wide wellness activities, reduced opportunities for timely health interventions, and limited engagement in physical and mental wellness programs. Without integrated tools and accessible digital resources, the visibility, coordination, and effectiveness of support services and fitness initiatives across the university remain significantly constrained.

Moreover, essential support units such as the Guidance and Counseling Office and the Sports Development and Physical Optimization Office (SDPO) currently lack a digital database to manage important records. Athlete profiles, consultation histories, and follow-up notes are still documented manually and stored in physical folders. This outdated approach leads to difficulties in tracking individual progress, delays in delivering personalized interventions, and risks associated with data loss or inaccessibility, ultimately affecting the quality and continuity of support provided to the university community.

To address these challenges, ISKOLETA+ will be developed as a comprehensive mobile and web-based platform tailored to meet the diverse wellness, fitness, and mental health needs of the PUP community. The system will integrate features such as mood check-ins, guided breathing exercises, fitness tracking, AI-generated rehabilitation plans, educational wellness resources, and a gamified rewards system. It will also digitize key processes,

including athlete profiling, consultation tracking, and event participation monitoring. By offering centralized access to wellness data and university programs, ISKOLETA+ aims to foster proactive health management, streamline support services, increase community participation, and empower students, faculty, and administrators to take active control of their physical and mental well-being.

### 1.3.3 Problem-Requirements Matrix

**Table 2. Problem-Requirements Matrix**

Problem	Requirement
Lack of centralized wellness, fitness, and mental health support platform	The system shall be an integrated mobile and web-based platform (ISKOLETA+) to serve as a one-stop hub for wellness and engagement activities.
Limited engagement in campus-wide wellness initiatives due to lack of awareness and accessibility	The system shall include centralized access to campus events and programs to encourage unified and streamlined participation.
Lack of immediate accessibility to mental health resources	The system shall implement real-time mental health tools such as mood check-ins, mental health exercises, and wellness alerts to detect and respond promptly.

**Continuation of Table 2.**

Limited engagement in physical and mental wellness programs	The system shall incorporate leaderboard features, workout engagement and progress tracking, and event promotion to boost motivation and sustained participation.
Poor visibility and coordination of support services	The system shall offer centralized data and notification features for wellness activities and services to improve accessibility and administrative oversight.
Lack of educational resources on wellness	The system shall provide digital access to curated educational content related to physical and mental health.
Disconnection between different sectors (students, faculty, and admin) in wellness efforts	The system shall foster a shared platform where all community sectors can access, track, and contribute to wellness initiatives.
Lack of proper recognition for athletic achievements	The system shall provide a dedicated digital section for sports publications, ensuring regular updates and equal visibility across all athletic disciplines.
Absence of digital records for athlete profiles and mental health consultations	The system shall include modules for storing athlete profiles and digitized mental health consultation records to ensure efficient tracking, follow-ups, and data security.



## 1.4 Purpose and Description

The purpose of this project is to design and develop ISKOLETA+, a centralized digital platform that aims to improve the overall health, engagement, and performance of the Polytechnic University of the Philippines (PUP) community. The platform will serve as an integrated system for managing sports activities, wellness programs, mental health resources, and academic schedule synchronization.

The project addresses the fragmented and inefficient systems currently in use for promoting physical wellness, tracking athlete performance, disseminating event information, and supporting mental health. Through ISKOLETA+, students, faculty, coaches, and administrators will have access to an all-in-one platform that fosters holistic development and community involvement.

Specifically, the system aims to:

- Provide a unified platform for sports announcements, fitness tracking, and wellness program registration.
- Encourage participation in underrepresented sports through equal promotion and event visibility.
- Improve mental well-being by offering guided exercises, wellness check-ins, and referral systems for counseling services.
- Support student-athletes with tools for recovery monitoring, performance logging, and academic schedule alignment.

- Equip faculty and staff with wellness engagement tools to support work-life balance and productivity.
- Enable data-driven decision-making through dashboards and feedback mechanisms for administrative use.

ISKOLETA+ is not just a technical solution but a strategic initiative to build a healthier, more connected, and empowered campus community. By leveraging modern web and mobile technologies, the project envisions a digitally transformed environment that promotes unity, recognition, and wellness across all sectors of the PUP community.

### 1.5 Specific Objectives

1. **To develop a centralized platform** for communicating and managing sports and wellness activities across the PUP community.
2. **To promote inclusivity** by ensuring equal representation and support for underrepresented sports and fitness programs.
3. **To create a digital sports journalism space** where users can publish, access, and engage with news about athletic events and achievements.
4. **To integrate smart scheduling features** that align academic calendars with wellness activities for better time management and reduced stress.
5. **To provide mental health support tools** such as breathing exercises, yoga sessions, and access to professional counseling services.
6. **To offer fitness tracking features** that include video-based workouts, estimated calorie burn, and gamified elements like leaderboards.

7. **To enable structured injury recovery monitoring** through digital logging of treatments, doctor's notes, and rehab plans.
8. **To implement a user feedback system** for rating wellness and sports events to support continuous service improvement.
9. **To assist university administrators** in policy and program planning through analytics dashboards and wellness engagement metrics.

### 1.6 Scope and Limitations

This study focuses on the design, development, and evaluation of ISKOLETA+, a comprehensive mobile and web-based wellness platform specifically designed for the Polytechnic University of the Philippines (PUP) community. The platform aims to provide centralized and accessible tools for wellness, fitness, and mental health support, targeting students, faculty, and administrative staff at the PUP Sta. Mesa campus. ISKOLETA+ will offer key features such as mood check-ins, guided breathing exercises, personalized fitness tracking, digital educational resources on physical and mental well-being, a centralized calendar for campus-wide wellness events, and a gamified rewards system to enhance motivation and engagement. The scope of the study includes identifying user needs, designing a user-friendly interface, implementing core functionalities, and evaluating the system's usability and potential impact. The research and development activities are scheduled to take place within the current academic year, aligning with the university's health and wellness initiatives.

However, the study is subject to several limitations. Technological constraints may affect system accessibility, as ISKOLETA+ requires a stable internet connection and compatible mobile or desktop devices. Due to the limited project timeline, the study

may not fully capture long-term behavioral changes or allow for extensive testing. Budgetary constraints also limit the inclusion of advanced features, such as integration with wearable fitness devices or access to professional telehealth services. Additionally, the system is not intended to replace medical or psychological consultations, but rather to serve as a supplementary tool for wellness support. Lastly, user adoption may vary depending on factors such as digital literacy, awareness of the platform, and motivation to engage with wellness activities, particularly during the initial implementation at the PUP Sta. Mesa campus.

### 1.7 Definition of Terms

- **Activity Tracking.** A feature within ISKOLETA+ monitors users' participation in fitness exercises and sports events.
- **API (Application Programming Interface)** A protocol that allows ISKOLETA+ that will integrate Student Information System (SIS) for secure data exchange.
- **Encryption.** A security process that implements in the system to protect user;s data from unauthorized access
- **Firebase Cloud Messaging (FCM).** Enables ISKOLETA+ to send push notifications to users for event updates, wellness alerts, and reminders
- **IskoFit.** The fitness module of ISKOLETA+ provides engagement activities related to physical fitness
- **IskoMind.** The fitness module of ISKOLETA+ provides engagement activities related to mental wellness.
- **Role-Based Access Control (RBAC).** Framework that ensures users can only access features appropriate to their role (e.g., students, coaches, administrators).

- **Smart Scheduling.** Ensures that wellness activities are aligned with academic calendars
- **Wellness Alerts.** Automated notifications provide users with mental health tips, fitness reminders, and sports related events.

## **Chapter 2**

### **REVIEW OF LITERATURE, STUDIES, AND SYSTEMS**

This chapter presents a thematic review of literature, studies, and existing systems that provide the foundation for ISKOLETA+, a campus-based mobile and web application that integrates physical, mental, and social wellness for the Polytechnic University of the Philippines (PUP) community.

#### **2. 1 Physical Activity and Academic Performance**

Several studies have demonstrated a positive correlation between physical fitness and academic performance. Exercise offers well-documented mental health benefits, including reduced symptoms of depression and anxiety, improved sleep quality, and support in recovery from conditions such as schizophrenia and alcohol dependence (Mahindru, Patil, & Agrawal, 2023). Arufe-Giráldez et al. (2022) found that university students with higher physical fitness levels tend to exhibit enhanced cognitive function and better academic outcomes. Similarly, López-Belmonte et al. (2020) and Getu Teferi (2020) emphasized that regular physical activity not only improves physical health but also boosts concentration and lowers stress levels. These findings reinforce the value of ISKOLETA+'s fitness tracking features and its role in promoting a more active and mentally healthy campus community.

#### **2.2 Wellness and Student Engagement**

University students benefit from holistic approaches to wellness that extend beyond academic development. Majid et al. (2022) highlight that emotional and social wellness significantly influence academic outcomes. Bélanger et al. (2023) found that

both students and staff often encounter barriers to wellness, such as time constraints and lack of motivation. These challenges can be mitigated through structured institutional support. In response to these issues, ISKOLETA+ incorporates wellness-oriented features such as wellness tracking, access to mental health resources, and tools for balancing academic and athletic responsibilities to encourage sustained engagement and holistic student support. Similarly, El Aadmi-Laamech et al. (2024) introduced the "Well-being Journey," a digital tool that promotes student wellness through personalized, analytics-driven recommendations. Their findings stress the importance of aligning such digital interventions with student preferences to foster a supportive and responsive educational environment.

### **2.3 Mental Health Awareness and Support Systems**

"Mental health is a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community" (World Health Organization, 2022). Montgomery and Gouvea (2024) assert that chronic stress severely affects both physical and mental health in university students. Marshall-Seslar (2024) echoes this by advocating for proactive mental health programs within educational institutions.

Supporting this, a cross-sectional study conducted in Bangladesh found high rates of anxiety and depression among university students, particularly among females, driven by poor diet, limited physical activity, screen time, and income-related stress (Author, Year). The study emphasized the need for integrated mental health and lifestyle support systems within universities.

Mood check-ins, mindfulness tools, mental health resources, and referral features in ISKOLETA+ are designed in direct response to these findings, offering students accessible, technology-driven support that addresses both emotional and behavioral dimensions of well-being.

## **2.4 Athlete Wellness, Recognition, and Development**

Student-athletes face unique stressors related to balancing academic and athletic commitments. Abbas and Al-Zuhairi (2024) demonstrate that cognitive regulation influences performance in technical sports like volleyball. Recognition also plays a role in motivation and performance, as highlighted by Abigail.G.30 (2024). ISKOLETA+ includes performance tracking, achievements, and a reward system to motivate athletes and acknowledge their efforts.

## **2.5 Digital Wellness Platforms and Accessibility**

Existing wellness platforms often lack customization for specific communities like universities. Goyette et al. (2023) and the Corporate Wellness Magazine (n.d.) point out the need for accessible digital wellness programs that address digital equity. ISKOLETA+ bridges this gap by being a mobile-first, inclusive solution tailored for students, faculty, and staff.

## **2.6 Community Events and Campus Engagement**

Participation in sports and wellness events boosts engagement and school spirit. Newton and Lyons (2024) found that university sports engagement positively impacts both staff and students. Tianshan Yang et al. (2023) also highlight the potential of campus sports systems to drive healthy competition and community cohesion.



ISKOLETA+ includes features for centralized event registration and calendar syncing, increasing access and participation.

## **2.7 Technology-Driven Wellness Interventions in Universities**

Modern university wellness initiatives are increasingly digital. Lee and Shin (2023) demonstrated how university students using app-based health programs with real-time feedback experienced lower anxiety and better adherence to fitness routines.

Goyette et al. (2023) emphasized the role of accessible user experience and analytics-driven content in shaping student behavior. ISKOLETA+ reflects these recommendations by integrating mobile-first features, wellness data dashboards, and AI-driven suggestions for lifestyle improvements.

## **2.8 Academic-Wellness Integration and Time Management Tools**

Time conflicts between academics and wellness activities are a known cause of student burnout. Tang et al. (2024) found that students often fail to maintain physical activity routines due to poor time alignment with class schedules.

ISKOLETA+ addresses this gap with synchronized smart calendars that integrate academic timetables of student-athletes with campus events and wellness prompts. Grafnetterova et al. (2021) support this solution, arguing that integration tools reduce dropout risk among students balancing multiple responsibilities.

## **2.9 Gamification and Behavioral Motivation in Fitness and Wellness**

Motivation is key to sustained student wellness engagement. Pabba et al. (2022) found that gamification elements like leaderboards and badges improve user participation and retention in sports management systems.

ISKOLETA+ adopts similar principles by rewarding achievements in both physical and mental wellness activities, promoting consistent participation. This is aligned with findings from Move Sports (2024), which stress the importance of feedback loops and incentives in corporate and academic wellness programs alike.

## **2.10 Mental Health Literacy and Digital Engagement**

Choi et al. (2022) explored how digital platforms can enhance mental health literacy among university students. Their study found that apps combining educational resources, symptom checkers, and referral tools reduced stigma and increased willingness to seek help. ISKOLETA+ follows this model by embedding psychoeducational content alongside interactive mental health tools.

## **2.11 Student Burnout and Institutional Wellness Policies**

Rodríguez-Romo et al. (2023) conducted a study highlighting the impact of institutional wellness policies on reducing student burnout. They found that consistent engagement in wellness programs, especially those integrated into the academic ecosystem, led to better stress management and reduced absenteeism. ISKOLETA+ contributes to this goal by embedding wellness features within the students' academic routines, such as notifications for fitness and mental health activities.

## **2.12 Digital Equity in Campus Wellness Access**

Al-Zuhairi et al. (2023) investigated the digital divide in university wellness programs and emphasized the need for inclusive platforms. Their findings suggest that apps accessible on low-end devices and with multilingual interfaces ensure broader participation. ISKOLETA+ addresses this through mobile-first architecture and lightweight functionality to maximize accessibility across the PUP community.

## **2.13 Recognition and Motivation in Campus Sports**

Bautista and Mercado (2025) emphasized the role of formal recognition systems in boosting student-athlete motivation and participation. Their findings show that digital awards, progress badges, and public acknowledgments led to higher retention in extracurricular sports. ISKOLETA+ integrates similar features through an in-app recognition and achievement system.

## **2.14 Synthesis of the Study**

Researchers widely acknowledge the importance of structured fitness and mental wellness programs in higher education. However, perspectives vary regarding implementation and strategies, and accessibility challenges. Arufe-Giráldez et al. (2022) and Rodríguez-Romo et al. (2023) affirm that physical activity enhances mental function and academic performance, aligning with López-Belmonte et al. (2020), who emphasize the benefits of regular physical activity for managing stress. However, Tang et al. (2024) caution that university students frequently struggle to maintain physical activity routines due to scheduling conflicts, highlighting the necessity for academic-wellness integration strategies, as seen in ISKOLETA+.

Beyond physical well-being, research highlights mental health as a critical factor in student success. The World Health Organization (2022) defines mental well-being as the foundation for learning and professional growth. Supporting this, Montgomery & Gouvea (2024) emphasize that prolonged stress negatively affects both physical health and mental function, highlighting the need for institutional interventions. However, Marshall-Seslar (2024) advocates for self-guided wellness tools such as meditation and mood tracking as viable alternatives. ISKOLETA+ integrates both perspectives by offering real-time mood check-ins while maintaining institutional oversight through counseling referrals, ensuring the PUP community receives both autonomy and structured support.

With regards to sports engagement and athlete recognition, the discussion shifts toward acknowledgement and motivation. Bautista & Mercado (2025) emphasize the importance of formal recognition through digital awards and media coverage, whereas Abbas & Al-Zuhairi (2024) argue that cognitive factors play a more significant role in influencing athletic performance than external recognition. This contrast highlights ISKOLETA+'s integrated approach, combining athlete performance monitoring with a dedicated sports news publication for enhanced visibility. Similarly, Move Sports (2024) and Pabba et al. (2022) demonstrate that gamification, leaderboards, and rewards effectively improve student motivation, supporting ISKOLETA+'s integration of achievement badges and incentives to sustained engagement.

Ensuring inclusivity and equitable digital access remains a challenge in the university's wellness system. Goyette et al. (2023) emphasize the importance of accessible platforms that function on lower-end devices, a view supported by Al-Zuhairi et al. (2023), who highlight digital accessibility gaps in wellness programs. Corporate

Wellness Magazine (n.d.), however, suggests prioritizing customization over accessibility, which may lead to potential trade-offs between usability and inclusivity. ISKOLETA+ balances both perspectives by implementing a mobile-first, lightweight design that accommodates a wide range of users while preserving personalized features.

While researchers widely acknowledge the importance of structured wellness programs in higher education, several gaps remain, particularly with regard to the PUP community. Studies affirm the benefits of physical activity for mental function and stress management (Arufe-Giráldez et al., 2022; López-Belmonte et al., 2020), but only a few have explored the specific impact of screen exposure, digital fatigue, and sedentary behavior the impact students, faculty, and staff. These factors may contribute to mental overload, decreased physical activity, and heightened stress levels, requiring further research into how digital wellness platforms can mitigate these effects and enhance overall motivation.

Beyond individual well-being, the balance between academic workload and sports engagement remains another area that requires deeper exploration. While Bautista & Mercado (2025) emphasize the importance of athlete recognition, research rarely examines how university policies and scheduling flexibility affect students' academic success and mental health, whereas future studies could explore institutional strategies that combine adaptive scheduling, academic-sports counseling, or performance monitoring to foster both competitive participation and academic balance.

Moreover, contrasting perspectives exist regarding institutional versus self-guided wellness interventions (Montgomery & Gouvea, 2024; Marshall-Seslar, 2024). While institutional oversight ensures structured support, self-directed wellness tools empower independence. Future research could compare these models to identify which strategies lead to lasting community participation and measurable mental health improvements, ensuring that wellness solutions remain adaptable to diverse student needs.

By addressing these gaps through targeted research, universities can refine their wellness strategies and develop holistic, adaptable programs that effectively support the PUP Community in managing stress, maintaining physical health, and sustaining academic success.

## Chapter 3

### METHODOLOGY

#### 3.1 Requirements Analysis

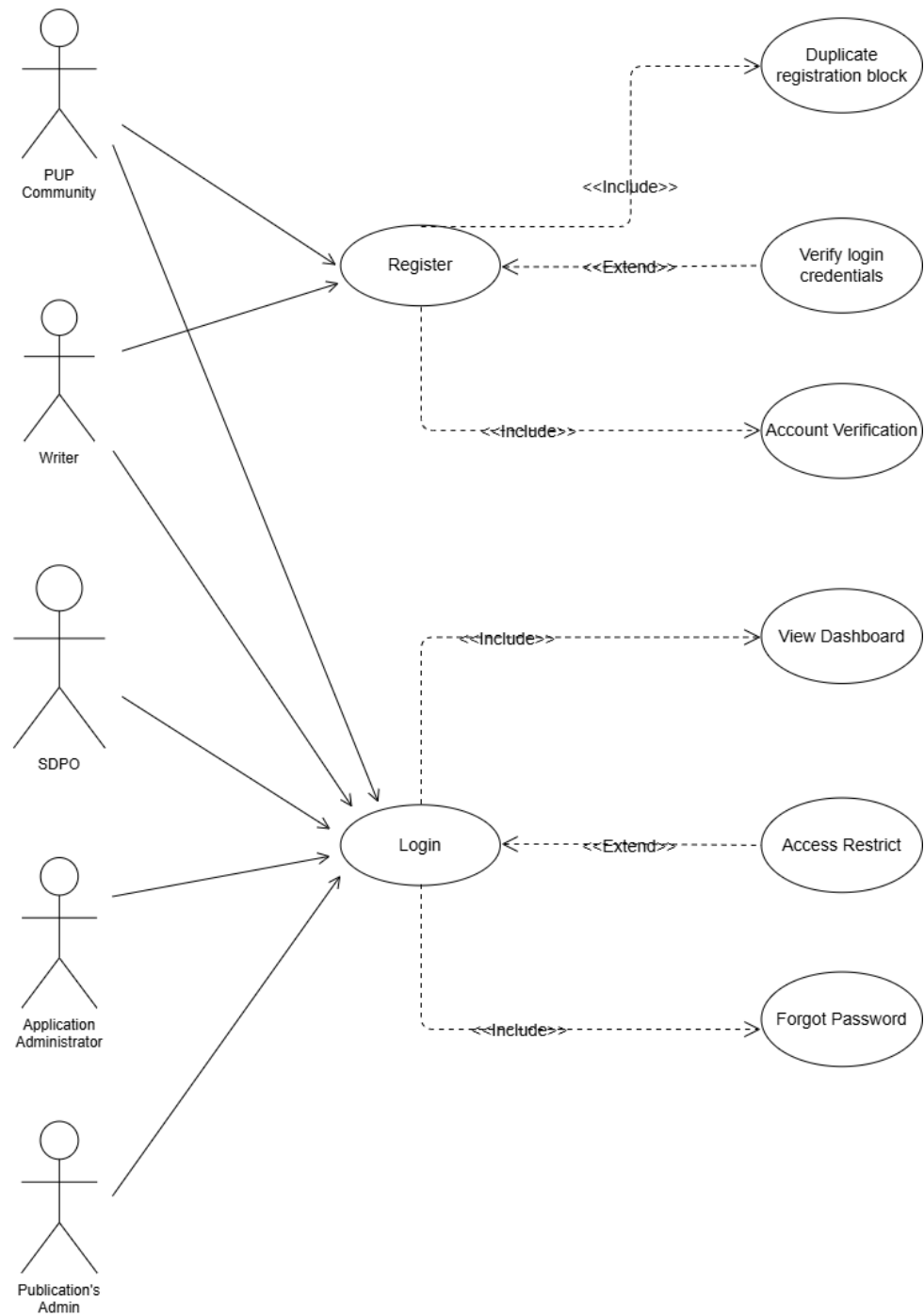
##### 3.1.1 Requirements – Features Matrix

**Table 3. Requirement-Feature Matrix**

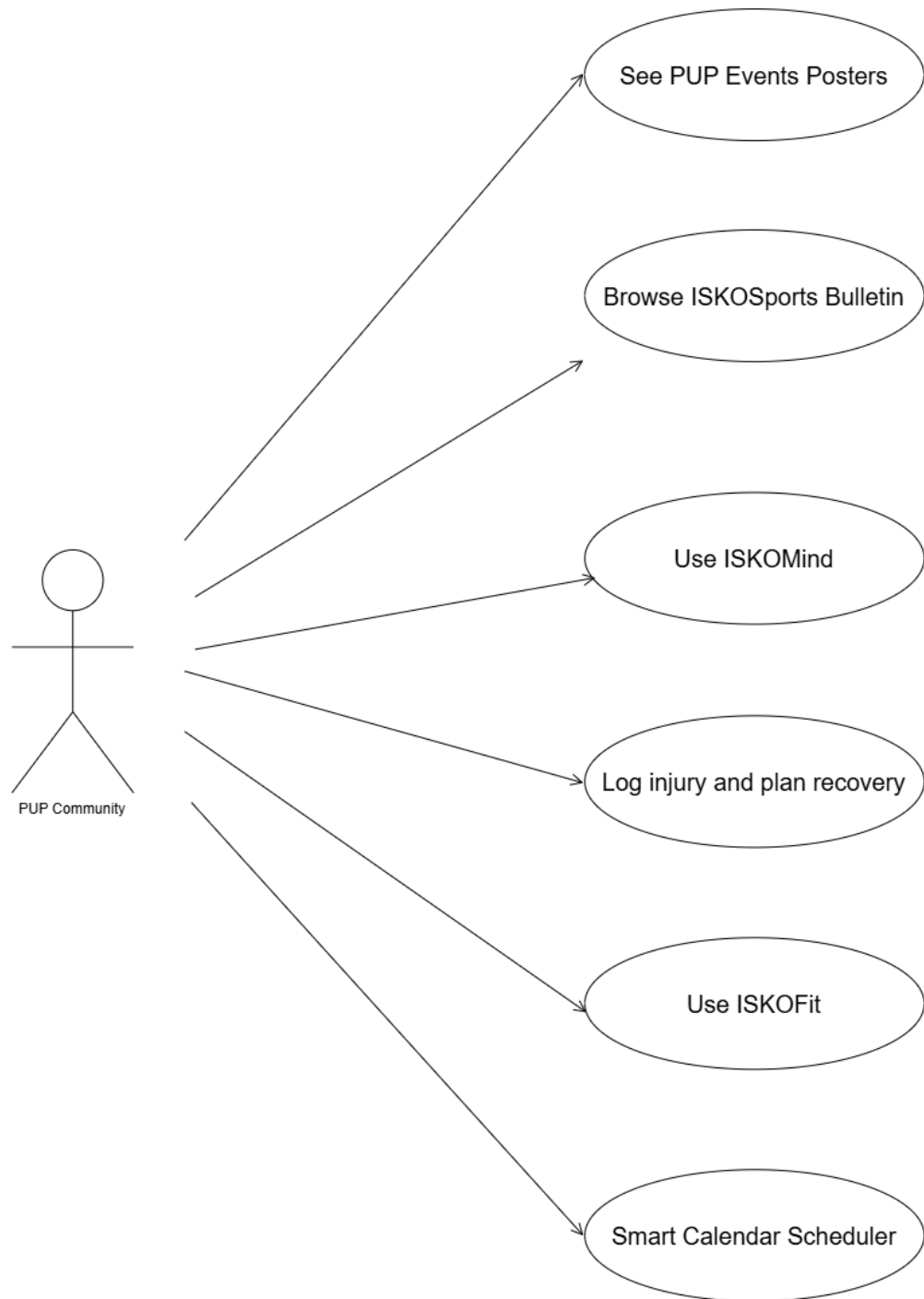
Requirement	Type	Feature	Priority	Status
The system should enforce varying access levels and permissions based on user roles.	Functional	Role-Based Access Control (RBAC)	High	Pending
The system should promote achievements in PUP sports by allowing users to read and like publications created by authorized PUP writers.	Functional	ISKOSports Bulletin– Athlete Recognition & Sports News	High	Pending
The system should allow writers to able to submit articles, athlete highlights, and event coverage.	Functional	ISKOSports Bulletin – Writer’s Submission	High	Pending
The system should enable publication admins to review and approve submitted articles before they are published on ISKOSports Bulletin.	Functional	ISKOSports Bulletin – Publication Review & Approval	Hugh	Pending
The system should sync student-athlete SIS academic schedules and integrate the official PUP calendar, events, and extracurricular activities for unified scheduling.	Functional	PUP Smart Calendar - Academic and Event Sync	High	Pending
The system should allow system administrators to upload posters for specific events, promoting university activities and fostering community engagement.	Functional	ISKO Event Poster Upload	Medium	Pending
The system should allow users to track their daily mood, access guided mental exercises, and receive intervention alerts.	Functional	ISKOMind -Mental Wellness Monitoting & Support	High	Pending
The system should promote fitness monitoring and motivation by providing interactive workout videos with monthly progress tracking and a leaderboard.	Functional	ISKOFit - Fitness Training	Medium	Pending
The system should allow users to connect with fitness coaches or clients by selecting their role and matching based on BMI and fitness goals.	Functional	ISKOFit - Coaching Matching	Medium	Pending
The system should support injury recovery for the PUP community by allowing users to record injury details, upload a doctor’s note for automated scanning and input, or manually log their recovery plan, including medication and rehabilitation schedules.	Functional	Injury and Recovery Tracking - Rehabilitation Planner	High	Pending
The system should allow SDPO to search, access, and manage student-athlete information efficiently.	Functional	SDPO Athlete Management Dashboard	High	Pending
The system should provide a streamlined process for PUP student-athletes to submit personal details application.	Functional	PUP Join Sports	High	Pending
The system should ensure a seamless user experience.	Non-Functional	Mobile-Responsiveness	High	Pending
The system should implement robust security measures, including authentication, encryption, and access control, to protect user data, prevent unauthorized access, and ensure safe interactions within the platform.	Non-Functional	ISKOLETA+ Secure Authentication & Data Protection	High	Pending

### 3.1.2 Use Case Diagrams

Figure 2. Register or Login of an Account





**Figure 3. PUP Community Dashboard**

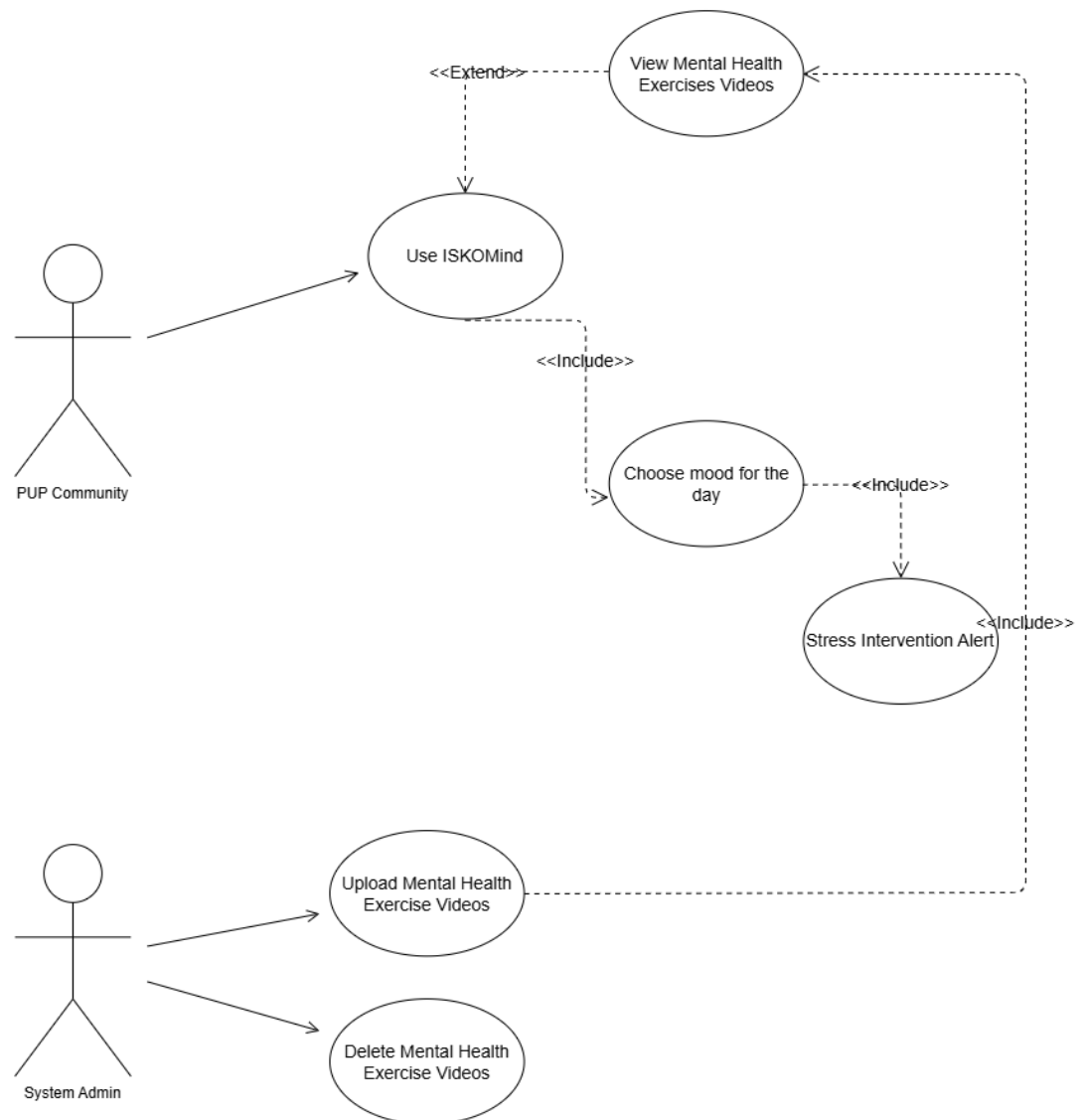
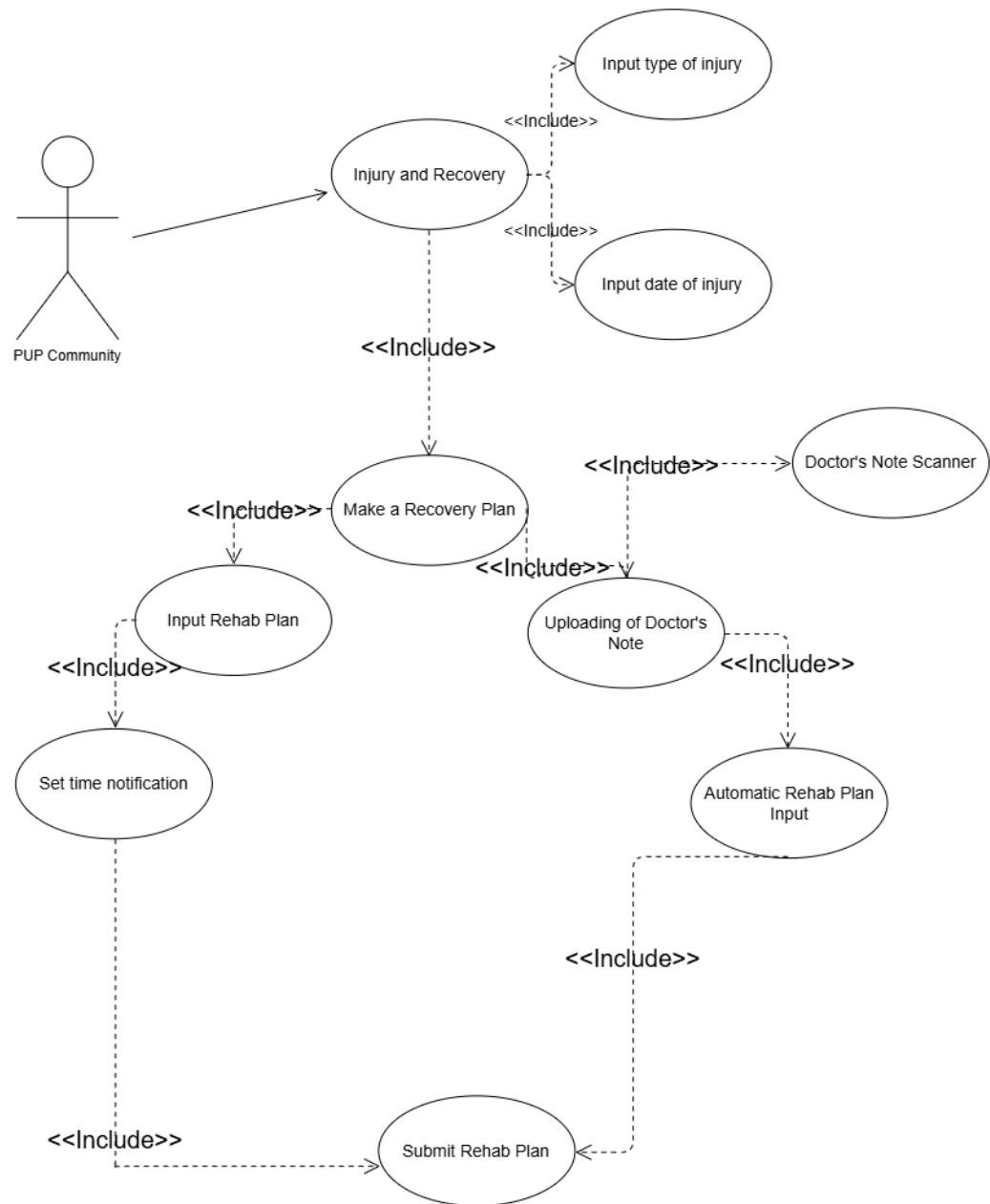
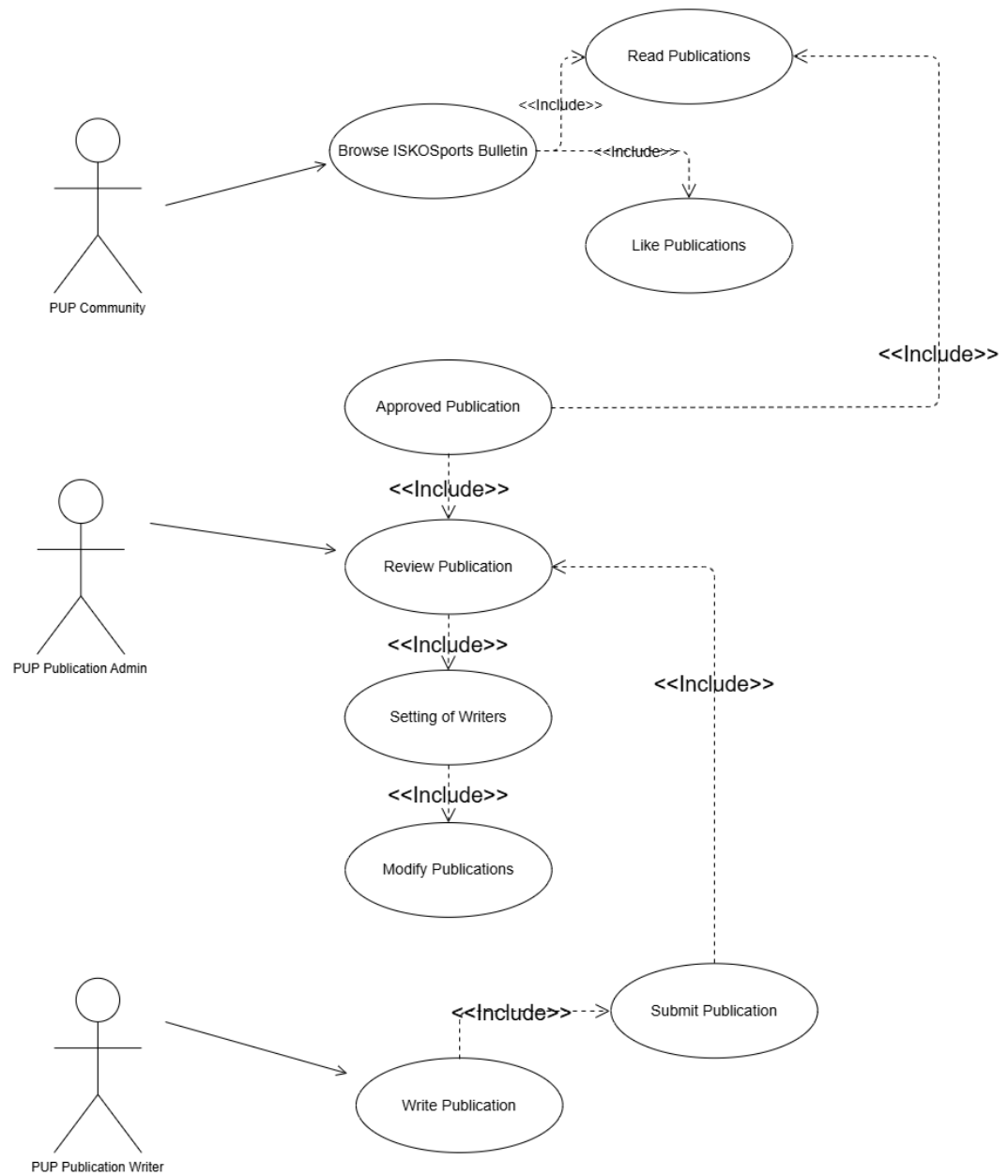
**Figure 4. ISKOMind Functionality and Management**

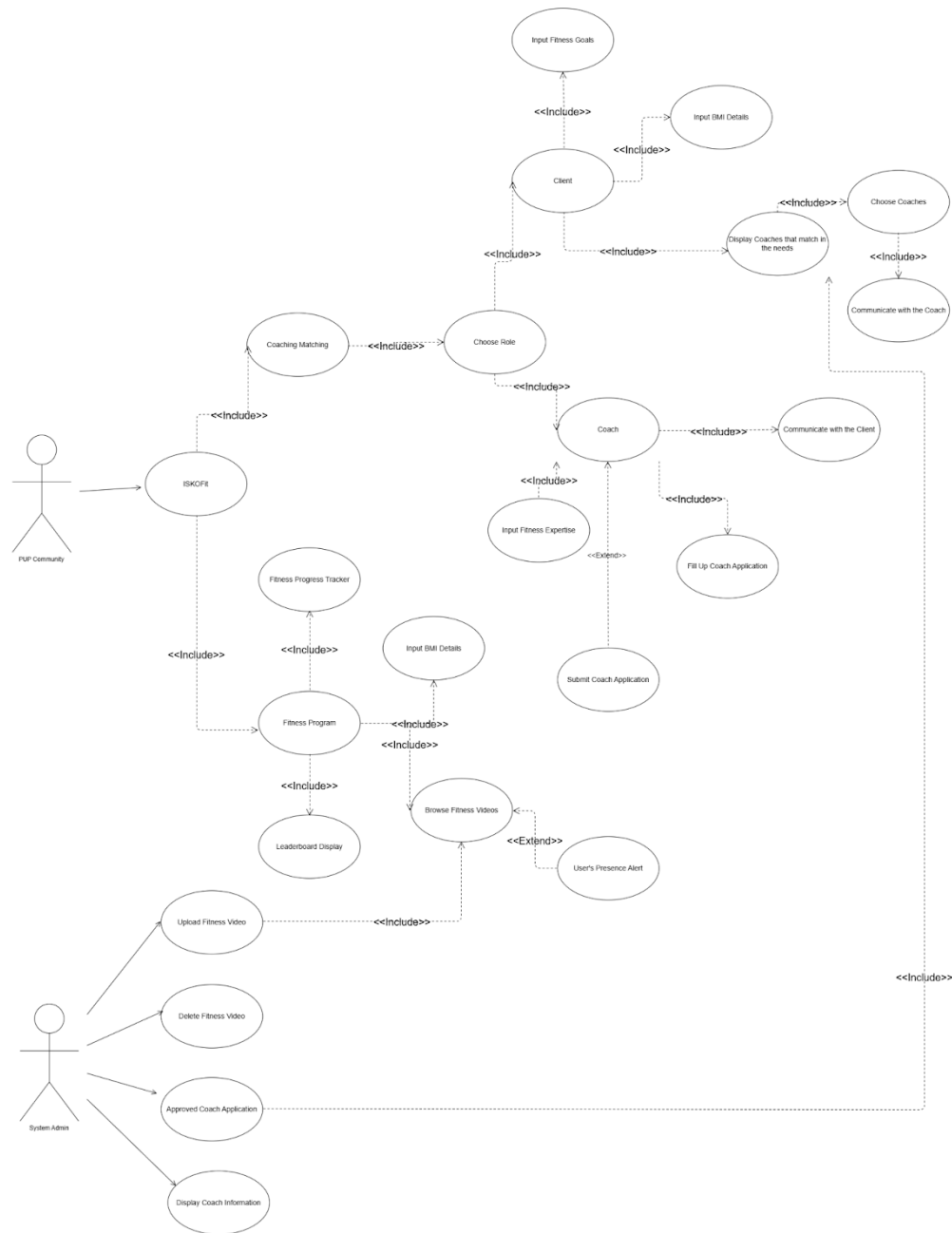
Figure 5. Read and Manage ISKOSports Bulletin



**Figure 6: Read and Manage ISKOSports Bulletin**



### Figure 7. Fitness, Matching and Managing of ISKOFit



**Figure 8: Join Sports and Management of PUP Join Sports**

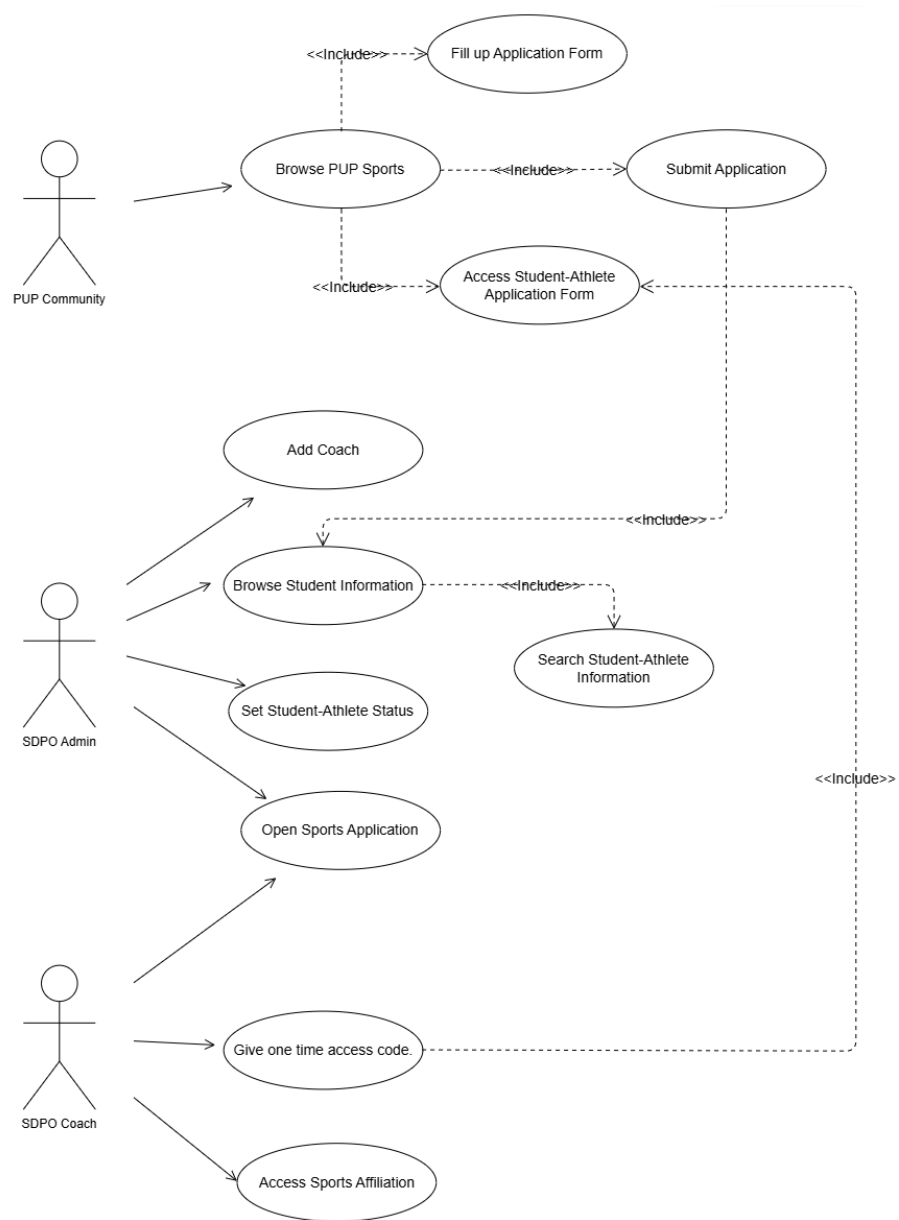
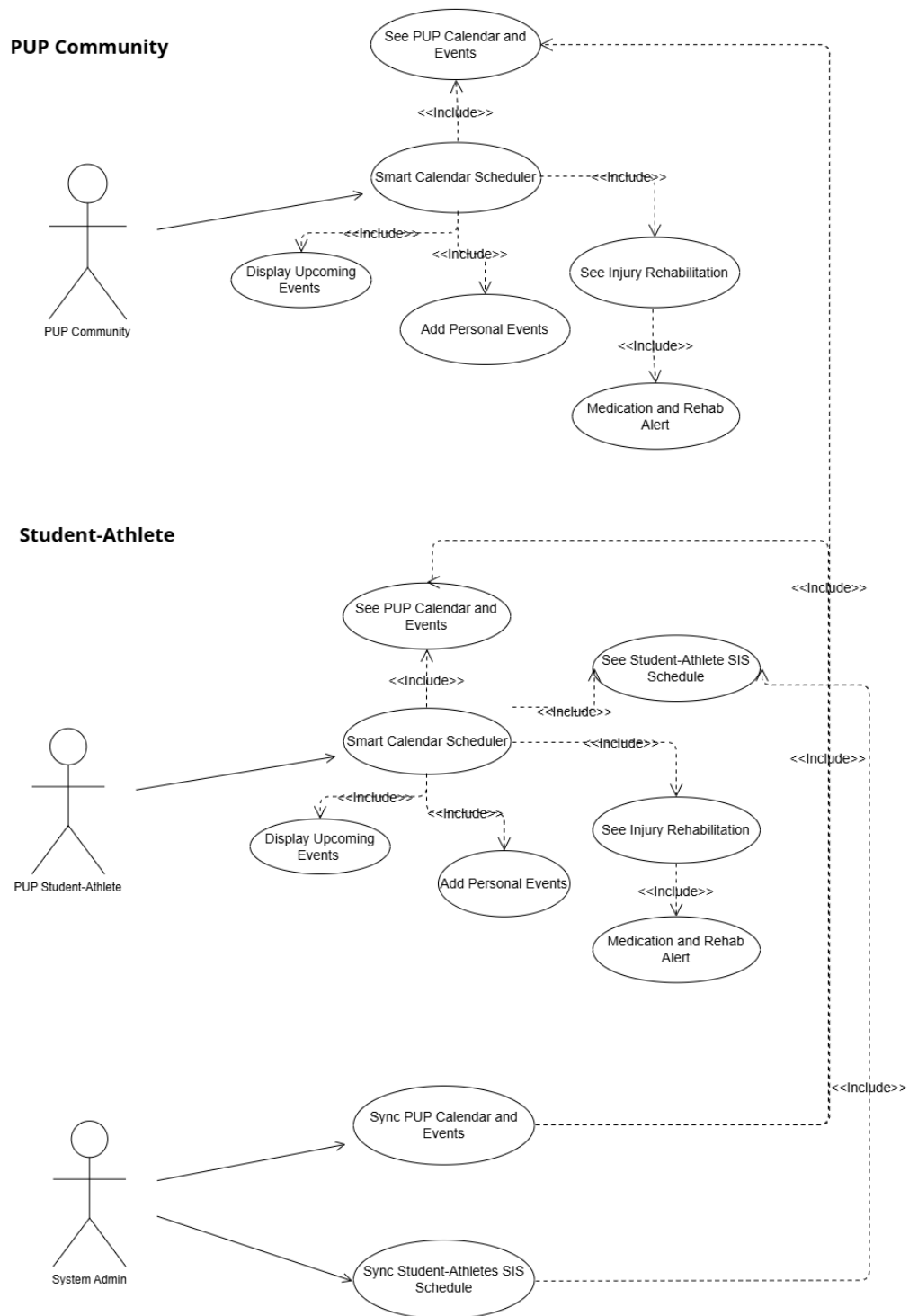


Figure 9. Smart Calendar Functionality



### 3.1.3 Use Case Reports

#### Use Case 1: Registration or Login of an Account

**Scenario:** A user creates a new account or logs into the system.

**Triggering Event:** User opens the ISKOLETA+ app or website.

**Brief Description:** Users register or log in using PUP email and credentials; role determines access level.

**Actors:** Student, Student Athlete, Faculty, Coach, Administrator

**Include Use Case(s):** View Dashboard, Verify Login Credentials, Account Verification

**Extend Use Case(s):** Forgot Password, Email Verification, Access Restriction

**Precondition:** User is not logged in.

**Postcondition:** User is authenticated and directed to their respective dashboard.

#### Flow of Events:

##### Actor:

1. User opens ISKOLETA+.
2. Select "Register" or "Login".
3. Inputs credentials or registration details.
4. Submits form.

##### System:

- 3.1. Validates email, password, and user role
- 4.1. For login: checks credentials; for registration: creates user record.
- 4.2. Redirects to role-specific dashboard

##### Exception Conditions:



3.1. Duplicate email during registration blocks the process.

4.1. Invalid login credentials prompt retry, or password reset.

4.2. If the role is not verified, display access restriction warning.

## **Use Case 2: PUP Community Dashboard**

**Scenario:** A user views their personalized dashboard.

**Triggering Event:** Successful login.

**Brief Description:** Displays relevant widgets and announcements based on role.

**Actors:** All Registered Users

**Include Use Case(s):** View Wellness Stats, Announcements, Event Schedule

**Extend Use Case(s):** Role-Based Content Display

**Precondition:** User must be logged in.

**Postcondition:** Dashboard content is dynamically loaded.

### **Flow of Events:**

#### **Actor:**

1. Logs in.
2. Navigates to dashboard.

#### **System:**

- 2.1. Loads of widgets (fitness, mental health, news, rewards).
- 2.2. Fetches role-based announcements and analytics

### **Exception Conditions:**

- 2.1. If data fetch fails, the system displays placeholder with retry option.
- 2.2. If user role is undefined, the dashboard displays limited info.

### **Use Case 3: ISKOMind Functionality and Management (Mental Health Tools)**

**Scenario:** A user who accesses wellness tools for mental health support.

**Triggering Event:** User clicks on the ISKOMind section.

**Brief Description:** Allows access to mood check-ins, mindfulness resources, and referral tools.

**Actors:** Students, Faculty

**Include Use Case(s):** Mood Check-In, Breathing Exercises, Counseling Request

**Extend Use Case(s):** AI Recommendations, Emergency Alert

**Precondition:** User is authenticated.

**Postcondition:** Activity is logged in user's wellness profile.

#### **Flow of Events:**

##### **Actor:**

1. Clicks ISKOMind.
2. Select a feature (e.g., Check-in or Exercise).

##### **System:**

- 2.1. Displays selected mental health tool.
- 2.2. Logs user's interaction for analytics or counselor review.

#### **Exception Conditions:**

- 2.2. Failed logging prompts retry.
- 2.3. User attempts to access counseling requests without internet — prompts offline notice.

#### **Use Case 4: ISKOMind Functionality and Management (Admin/Faculty Perspective)**

**Scenario:** Admins/faculty manage counseling services.

**Triggering Event:** Admin logs into counseling module.

**Brief Description:** Manage referrals, track mood patterns, and schedule counseling.

**Actors:** Counselor, Faculty with Access

**Include Use Case(s):** View Mood Logs, Respond to Requests

**Extend Use Case(s):** Schedule Notification

**Precondition:** Admin role with proper access.

**Postcondition:** Records are updated, and referrals are processed.

##### **Flow of Events:**

##### **Actor:**

1. Logs into an admin panel.
2. Selects "ISKOMind Admin Tools".
3. Reviews reports or referrals.

##### **System:**

- 3.1. Loads of user logs and wellness history.
- 3.2. Send updates or schedules sessions.

##### **Exception Conditions:**

- 3.1. If data is corrupted, the system prompts error and disables session.
- 3.2. Unauthorized access attempt logs out user.

#### **Use Case 5: Read and Manage ISKOSports Bulletin**

**Scenario:** User accesses sports articles and announcements.

**Triggering Event:** User selects ISKOSports section.

**Brief Description:** Provides regular updates about sports events and athlete achievements.

**Actors:** Students, Athletes, Coaches, Journalists

**Include Use Case(s):** View Article, Post Bulletin (Admin)

**Extend Use Case(s):** Comment, Share

**Precondition:** User is logged in.

**Postcondition:** Articles read, updated, or shared.

**Flow of Events:**

**Actor:**

1. Accesses ISKOSports
2. Select an article or news item.

System:

- 2.1. Loads of sports content dynamically
- 2.2. Tracks engagement (views/comments).

**Exception Conditions:**

- 2.1. Failed fetch displays "No Bulletin Found."
- 2.2. Unauthorized post/edit access blocks editor panel.

## **Use Case 6: Fitness, Matching and Managing of ISKOFit**

**Scenario:** User accesses fitness modules and personal tracking.

**triggering Event:** User enters ISKOFit section.

**Brief Description:** Tracks workouts, estimates calorie burns, and suggests routines.

**Actors:** Student, Athlete

**Include Use Case(s):** View Workout, Submit Progress, AI Suggestions

**Extend Use Case(s):** Match Workout Partners

**Precondition:** User is logged in and profile initialized.

**Postcondition:** Data updated on fitness dashboard.

**Flow of Events:**

**Actor:**

1. Opens ISKOFit.
2. Logs workout or views recommendations.

**System:**

- 2.1. Calculates progress.
- 2.2. Suggests next activity or recovery protocol.

**Exception Conditions:**

- 2.1. Missing profile info halts recommendations.
- 2.2. Server error disables logging temporarily.

## **Use Case 7: Join Sports and Management of PUP Join Sports**

**Scenario:** User joins a sports program or tryout.

**Triggering Event:** Clicks “Join Sports” on dashboard.

**Brief Description:** Lists open events/tryouts and enables registration.

**Actors:** Students, Athletes

**Include Use Case(s):** View Events, Register, Cancel Registration

**Extend Use Case(s):** Waitlisting, Team Assignment

**Precondition:** User is logged in.

**Postcondition:** Registration is stored; confirmation is shown.

**Flow of Events:**

**Actor:** Opens Join Sports section.

1. Select event to join.
2. Clicks register.

System:

- 3.1. Checks eligibility and slot availability.
- 3.2. Confirms registration and updates record.

**Exception Conditions:**

- 3.1. If the event is full, users are waitlisted.
- 3.2. If the user withdraws late, warnings are issued.

**Use Case 8: Smart Calendar Functionality (Student View)**

**Scenario:** User syncs academic and wellness schedules.

**Triggering Event:** Student opens the calendar tab.

**Brief Description:** Displays upcoming events, classes, and wellness reminders.

**Actors:** Students

**Include Use Case(s):** View Calendar, Set Reminders

**Extend Use Case(s):** Sync Academic Calendar

**Precondition:** User profile includes course schedule.

**Postcondition:** Synced schedule and event alerts are shown.

**Flow of Events:**

**Actor:**

1. Opens Smart Calendar.
2. Views upcoming schedules.

**System:**

- 2.1. Fetches academic data and events.
- 2.2. Generate alerts for upcoming activities.

**Exception Conditions:**

- 2.1. Unsynced data prompts calendar warning.
- 2.2. System fails to fetch events due to connectivity issues.

**Use Case 9: Smart Calendar Functionality (Admin/Organizer View)**

**Scenario:** Admin posts and manages event schedules.

**Triggering Event:** Logs into an admin panel and selects Calendar.

**Brief Description:** Allows posting and editing of sports and wellness events.

**Actors:** Admin, Faculty Organizer

**Include Use Case(s):** Post Event, Edit Schedule

**Extend Use Case(s):** Notifications, Recurrence Setup

**Precondition:** Admin is authenticated.

**Postcondition:** Event appears on all relevant calendars.

**Flow of Events:****Actor:**

- 1. Accesses admin calendar interface.
- 2. Adds or updates event information.

**System:**

- 2.1. Validates data and updates records.
- 2.2. Sends notifications to target users,

**Exception Conditions:**

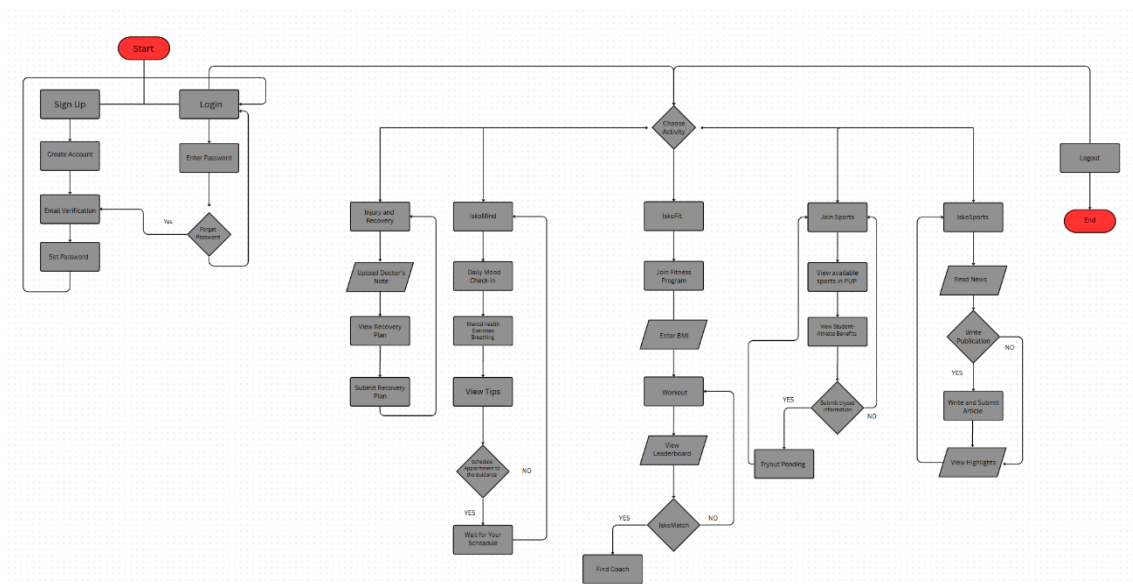
- 2.1. Overlapping schedule triggers conflict warning.
- 2.2. Unauthorized edit access is denied.

## 3.2 Design Specifications

### 3.2.1 Activity Diagram

This diagram emphasizes ISKOLETA+'s integrated approach to enhancing wellness, sports engagement, and digital accessibility for the PUP community. It outlines the key workflows and user interactions within the system highlighting the registration, activity selection, sports engagement, publication and physical and mental fitness. The structure flow of the system provides seamless navigation that promotes its accessibility and user-friendly innovation.

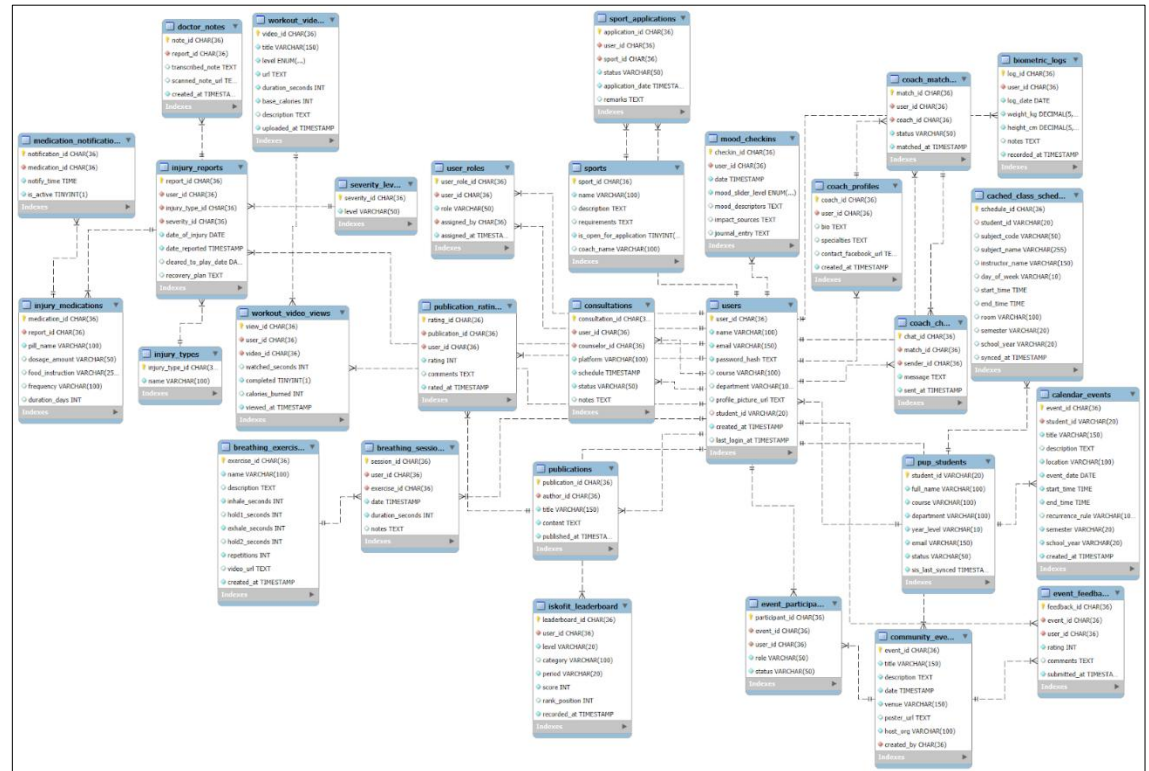
**Figure 11. Activity Diagram**





### 3.2.3 Database Schema

Figure 12. Database Schema



### 3.2.4 Data Dictionary

**Table 4. PUP Students**

Relation Name: pup_students							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
	<b>PK</b> student_id	VARCHAR	20	Alphanumeric	Required, Unique	Unique identifier from PUP SIS	2025-12345-MN-0
	full_name	VARCHAR	100	Any	Required	Full name of the student	Juan Dela Cruz
	course	VARCHAR	100	Valid PUP courses	Required	Student's course	BSIT
	department	VARCHAR	100	Valid departments	Required	Department of the student	College of Computer and Information Sciences

**Continuation of Table 4.**

	year_level	VARCHAR	10	e.g., "1st", "2nd"	Required	Current year level	3rd
	email	VARCHAR	150	Valid email	Required	Student email	juandelacruz@pup.edu.ph
	status	VARCHAR	50	e.g., "Active"	Required	Enrollment status	Active
	sis_last_synced	TIMESTAMP	–	DateTime	Required, Default Now	Last SIS sync date	2025-06-01 10:00:00

Table 5. Class Schedule

Relation Name: cached_class_schedule							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	schedule_id	CHAR	36	UUID	Required, Unique	Unique schedule identifier	a111b222-c333-d444-e555-f666-g777h888
FK	student_id	VARCHAR	20	Valid PUP student_id		Linked student	2021-12345-MN-0
	subject_code	VARCHAR	50	Any	Required	Subject code	IT301
	subject_name	VARCHAR	255	Any	Required	Name of the subject	Database Systems
	instructor_name	VARCHAR	150	Any	Optional	Class instructor	Prof. Maria Santos
	day_of_week	VARCHAR	10	Mon–Sun	Required	Class day	Monday

Continuation of Table 5.

	start_time	TIME	–	00:00–23:59	Required	Start time	08:00:00
	end_time	TIME	–	00:00–23:59	Required	End time	09:30:00
	room	VARCHAR	100	Any	Optional	Assigned room	N404
	semester	VARCHAR	20	1st/2nd/Mid year	Required	Semester of subject	2nd
	school_year	VARCHAR	20	e.g., 2024–2025	Required	School year	2024-2025
	synced_at	TIMESTAMP	–	Auto now	Default	Last update time	2025-06-01 12:00:00

Table 6. Users

Relation Name: users							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
<b>PK</b>	user_id	CHAR	36	UUID	Required, Unique	Unique system user ID	91dfbcde-4321-4321-9abc-def123456789
	name	VARCHAR	100	Any	Required	Name of user	Juan Dela Cruz
	email	VARCHAR	150	Valid email	Required, Unique	Email of user	juandelacruz@pup.edu.ph
	password_hash	TEXT	–	Hashed value	Required	Hashed user password	\$2a\$10\$...
	course	VARCHAR	100	Valid courses	Optional	User's enrolled course	BSCS
	department	VARCHAR	100	Valid departments	Optional	Department affiliation	CCIS
	profile_picture_url	TEXT	–	URL	Optional	Profile picture location	https://cdn.site.com/pics/jdc.png
	student_id	VARCHAR	20	Matches SIS ID	FK to pup_students	SIS Student link	2021-12345-MN-0
	created_at	TIMESTAMP	–	Auto now	Default Now	When user registered	2025-06-01 10:05:00
	last_login_at	TIMESTAMP	–	Auto now	Optional	Last login time	2025-06-01 13:23:00

Table 7. User Roles

Relation Name: user_roles							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	user_role_id	CHAR	36	UUID	Required, Unique	Unique role assignment ID	e8b53a1a-b1c3-44a6-a543-5f29215fae35
FK	user_id	CHAR	36	UUID		User assigned a role	91dfbcde-4321-4321-9abc-def123456789
	role	VARCHAR	50	e.g., "Admin", "Student", "Coach"	Required	Assigned user role	Student
FK	assigned_by	CHAR	36	UUID		Who assigned the role	4443fd12-d321-4321-9e12-7f11a67b8870
	assigned_at	TIMESTAMP	-	DateTime	Default Now	When role was assigned	2025-06-01 10:30:00

Table 8. Community Events

Relation Name: community_events							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	event_id	CHAR	36	UUID	Required, Unique	Unique identifier for the event	3fa85f64-5717-4562-b3fc-2c963f66afa6
	title	VARCHAR	150	Any	Required	Title of the event	Mental Health Awareness Fair
	description	TEXT	-	Any	Required	Full event details	A campus-wide event promoting mental wellness
	date	TIMESTAMP	-	Valid datetime	Required	Event date and time	2025-08-10 09:00:00
	venue	VARCHAR	150	Any	Required	Location of the event	Gymnasium

Continuation of Table 8.

Relation Name: community_events							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	event_id	CHAR	36	UUID	Required, Unique	Unique identifier for the event	3fa85f64-5717-4562-b3fc-2c963f66afa6
	title	VARCHAR	150	Any	Required	Title of the event	Mental Health Awareness Fair
	description	TEXT	-	Any	Required	Full event details	A campus-wide event promoting mental wellness
	date	TIMESTAMP	-	Valid datetime	Required	Event date and time	2025-08-10 09:00:00
	venue	VARCHAR	150	Any	Required	Location of the event	Gymnasium
	poster_url	TEXT	-	Valid URL	Optional	Poster or flyer image URL	https://cdn.site.com/event.jpg
	host_org	VARCHAR	100	Any	Required	Organizing department or group	PUP SDPO
FK	created_by	CHAR	36	UUID		Creator's user ID	e91276e2-2cf5-11ee-be56-0242ac120002

Table 9. Calendar Events

Relation Name: calendar_events							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	event_id	CHAR	36	UUID	Required, Unique	Personal calendar event ID	d23476e2-7cf5-91dd-ab56-0999fa3348ed
	student_id	VARCHAR	20	Existing student_id	FK to pup_students	Student this belongs to	2021-12345-MN-0
	title	VARCHAR	150	Any	Required	Title of the calendar item	Midterm Exam

Continuation of Table 9

	description	TEXT	-	Any	Optional	Description of the event	Includes all major subjects
	location	VARCHAR	100	Any	Required	Location of the activity	Room N502
	event_date	DATE	-	YYYY-MM-DD	Required	Date of the event	2025-10-05
	start_time	TIME	-	HH:MM:SS	Required	Start time	08:00:00
	end_time	TIME	-	HH:MM:SS	Required	End time	10:00:00
	recurrence_rule	VARCHAR	100	e.g., "weekly", "monthly"	Optional	Repetition pattern	weekly
	semester	VARCHAR	20	e.g., "1st", "2nd"	Required	Academic semester	1st
	school_year	VARCHAR	20	Format: YYYY-YYYY	Required	School year	2025-2026
	created_at	TIMESTAMP	-	Auto-generated	Default	When event was added	2025-06-01 14:00:00

Table 10. Event Feedback

Relation Name: event_feedback							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	feedback_id	CHAR	36	UUID	Required, Unique	Feedback record ID	f67aa1ac-b987-44cd-88df-0cbe1e99dd6c
	event_id	CHAR	36	UUID	FK to community_events	Linked event	3fa85f64-5717-4562-b3fc-2c963f66afa6
	user_id	CHAR	36	UUID	FK to users	User giving feedback	74fd93e2-cb4e-4df9-8123-ab123cd456ef
	rating	INT	-	1 to 5	Required	Event rating	5
	comments	TEXT	-	Any	Optional	User comments or suggestion	Excellent organization!
	submitted_at	TIMESTAMP	-	Auto-generated	Default	Time feedback submitted	2025-08-11 18:00:00

**Table 11. Event Participant**

Relation Name: event_participant							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	participant_id	CHAR	36	UUID	Required, Unique	Participant record ID	abcabc12-4567-8912-aabb-cddee1122
	event_id	CHAR	36	UUID	FK to community_events	Event attended	3fa85f64-5717-4562-b3fc-2c963f66afa6
	user_id	CHAR	36	UUID	FK to users	Participant's user ID	91dfbcde-4321-4321-9abc-def123456789
	role	VARCHAR	50	e.g., "Attendee", "Speaker"	Required	Participant's role	Attendee
	status	VARCHAR	50	"Confirmed", "Declined"	Required	Attendance status	Confirmed

**Table 12. Sports**

Relation Name: sports							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	sport_id	CHAR	36	UUID	Required, Unique	Sport record ID	93ac2eb3-402c-49f4-a3ef-22f16719aa11
	name	VARCHAR	100	Any	Required, Unique	Name of the sport	Basketball
	description	TEXT	-	Any	Optional	Overview of the sport	Competitive team sport played with a ball
	requirements	TEXT	-	Any	Optional	Requirements for participation	Health clearance, signed waiver
	is_open_for_application	BOOLEAN	-	TRUE/FALSE	Default FALSE	Whether sport is accepting applications	TRUE
	coach_name	VARCHAR	100	Any	Optional	Assigned coach	Coach Reyes



**Table 13. Sports Applications**

Relation Name: sports_application							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	application_id	CHAR	36	UUID	Required, Unique	Application ID	a1bc2345-d678-4abc-90ef-56789abcd123
FK	user_id	CHAR	36	UUID	FK to users	Applicant user	91dfbcde-4321-4321-9abc-def123456789
FK	sport_id	CHAR	36	UUID	FK to sports	Applied sport	93ac2eb3-402c-49f4-a3ef-22f16719aa11
	status	VARCHAR	50	Pending, Approved	Required	Application status	Approved
	application_date	TIMESTAMP	-	DateTime	Default now	When the application was submitted	2025-07-01 14:22:00
	remarks	TEXT	-	Any	Optional	Admin/coach remarks	Accepted for tryouts

**Table 13. Workout Videos**

Relation Name: workout_videos							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	video_id	CHAR	36	UUID	Required, Unique	Workout video ID	2023aabb-4e7f-11ed-bdc3-0242ac120002
	title	VARCHAR	150	Any	Required	Video title	Beginner Cardio Blast
	level	ENUM	-	Beginner, Intermediate, Advanced	Required	Workout difficulty level	Intermediate

Continuation of Table 13.

	url	TEXT	-	Valid video link	Required	Video file or streaming link	https://cdn.app/vids/cardio.mp4
	duration_seconds	INT	-	Positive	Required	Length of the video in seconds	900
	base_calories	INT	-	Positive	Default 0	Estimated calorie burn	150
	description	TEXT	-	Any	Optional	Summary of the workout	A fast-paced 15-minute workout
	uploaded_at	TIMESTAMP	-	Auto	Default now	Date uploaded	2025-06-01 08:45:00

Table 14. Workout Videos Views

Relation Name: workout_videos_views							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	view_id	CHAR	36	UUID	Required, Unique	View tracking ID	c234ef67-bf d2-4a88-bb 0e-c0bba3e 91234
FK	user_id	CHAR	36	UUID	FK to users	Viewer user ID	91dfbcde-4 321-4321-9 abc-def123 456789
FK	video_id	CHAR	36	UUID	FK to workout_videos	Video watched	2023aabb-4 e7f-11ed-bd c3-0242ac1 20002

Continuation of Table 14.

	watched_seconds	INT	-	$\geq 0$	Optional	Number of seconds viewed	850
	completed	BOOLEAN	-	TRUE/FALSE	Default FALSE	If the user finished the video	TRUE
	calories_burned	INT	-	$\geq 0$	Optional	Estimated calories burned	145
	viewed_at	TIMESTAMP	-	Auto	Default now	Time the video was viewed	2025-06-02 16:22:00

Table 15. Biometric Logs

Relation Name: biometric_logs							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	log_id	CHAR	36	UUID	Required, Unique	Biometric entry ID	09ac3456-d345-4b12-afc3-6b9e76ff6e00
FK	user_id	CHAR	36	UUID		Student logged	91dfbcde-4321-4321-9abc-def123456789
	log_date	DATE	-	YYYY-MM-DD	Required, Unique per user	When it was logged	2025-06-01
	weight_kg	DECIMAL	5,2	$\geq 0.00$	Required	Recorded weight in kg	63.50
	height_cm	DECIMAL	5,2	$\geq 0.00$	Required	Height in centimeters	170.25
	notes	TEXT	-	Any	Optional	Additional comments	Pre-training entry
	recorded_at	TIMESTAMP	-	Auto	Default now	Timestamp created	2025-06-01 08:45:00

Table 15. ISKOFit Leaderboards


Relation Name: iskotfit_leaderboard							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	leaderboard_id	CHAR	36	UUID	Required, Unique	Leaderboard row ID	4f12d8e2-b542-432f-803d-2902be5a6af2
FK	user_id	CHAR	36	UUID		User being ranked	91dfbcde-4321-4321-9abc-def123456789
	level	VARCHAR	20	Beginner, Intermediate, Pro	Required	Skill level category	Intermediate
	category	VARCHAR	100	e.g., "Workout Time"	Optional	Ranking category	Calories Burned
	period	VARCHAR	20	Weekly, Monthly, All-Time	Required	Time window for ranking	Weekly
	score	INT	-	$\geq 0$	Required	Numeric score	4500
	rank_position	INT	-	$\geq 1$	Optional	User's rank position	2
	recorded_at	TIMESTAMP	-	Auto	Default now	When score was recorded	2025-06-01 23:59:00

Table 16. Mood Check-ins

Relation Name: mood_checkins							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	checkin_id	CHAR	36	UUID	Required, Unique	Mood check-in ID	123e4567-e89b-12d3-a456-426614174000
FK	user_id	CHAR	36	UUID		User submitting mood	91dfbcde-4321-4321-9abc-def123456789
	date	TIMESTAMP	-	DateTime	Default now	When mood was recorded	2025-06-01 08:45:00
	mood_slider_level	ENUM	-	Very Unpleasant, Unpleasant, Slightly Unpleasant, Neutral, Slightly Pleasant, Pleasant, Very Pleasant	Required	Overall mood rating	Slightly Pleasant
	mood_descriptors	TEXT	-	Any descriptors	Optional	Words describing feeling (e.g., "calm, drained")	calm, drained
	impact_sources	TEXT	-	Source list	Optional	What's impacting mood (e.g., health, academics)	education, friends
	journal_entry	TEXT	-	Free text	Optional	Short journal entry	I feel better after morning walk

**Table 17. Consultations**

Relation Name: consultations							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	consultation_id	CHAR	36	UUID	Required, Unique	Consultation request ID	f5123aa9-2dc e-4b1f-a222- b12345abc77 7
FK	user_id	CHAR	36	UUID		Requesting user	91dfbcde-432 1-4321-9abc- def12345678 9
FK	counselor_id	CHAR	36			Assigned counselor (from Guidance Office)	8baedcf2-9e7 8-4f93-aadc- ef123456abc d
	platform	VARCHAR	100	e.g., Zoom, MS Teams	Required	Where it will take place	Google Meet
	schedule	TIMESTAMP	-	DateTime	Required	Scheduled date/time	2025-06-15 14:00:00
	status	VARCHAR	50	Pending, Approved, Completed	Required	Status of consultation	Approved
	notes	TEXT	-	Any	Optional	Admin or user notes	Reschedule requested due to conflict

**Table 18. Injury Types**

Relation Name: injury_types							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	injury_type_id	CHAR	36	UUID	Required, Unique	Unique ID for injury type	1111aaaa-bbbb -cccc-dddd-ee eeffff0001
	name	VARCHAR	100	Common injuries	Required, Unique	Name of the injury type	Ankle Sprain

**Table 19. Severity Levels**

Relation Name: severity_levels							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	severity_id	CHAR	36	UUID	Required, Unique	Severity level ID	2222aaaa-bbb-bcccc-dddd-eeeeffff0002
	level	VARCHAR	50	Mild, Moderate, Severe	Required, Unique	Severity level name	Moderate

**Table 20. Injury Reports**

Relation Name: injury_reports							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	report_id	CHAR	36	UUID	Required, Unique	Injury report ID	3333aaaa-bbbb-cccc-dddd-eeeeffff0003
FK	user_id	CHAR	36	UUID		Injured student	91dfbcde-4321-4321-9abc-def123456789
FK	injury_type_id	CHAR	36	UUID		Type of injury	1111aaaa-bbbb-cccc-dddd-eeeeffff0001
FK	severity_id	CHAR	36	UUID		Injury severity	2222aaaa-bbbb-cccc-dddd-eeeeffff0002
	date_of_injury	DATE	-	YYYY-MM-DD	Required	When the injury occurred	2025-05-20
	date_reported	TIMESTAMP	-	Auto now	Default	When report was filed	2025-05-21 09:00:00
	cleared_to_play_date	DATE	-	YYYY-MM-DD	Optional	Recovery clearance date	2025-06-15
	recovery_plan	TEXT	-	Any	Optional	Recovery instructions	Elevation and light exercises daily

Table 21. Doctor Notes

Relation Name: doctor_notes							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	note_id	CHAR	36	UUID	Required, Unique	Doctor note ID	4444aaaa-bbbb-cccc-dddd-eeeeefff0004
FK	report_id	CHAR	36	UUID		Associated injury report	3333aaaa-bbbb-cccc-dddd-eeeeefff0003
	transcribed_note	TEXT	-	Any	Optional	Editable text version	"Patient should rest for 5 days"
	scanned_note_url	TEXT	-	URL	Optional	Upload of doctor's scan	<a href="https://cdn.app/notes/note1.png">https://cdn.app/notes/note1.png</a>
	created_at	TIMESTAMP	-	Auto now	Default	Note creation time	2025-05-21 10:15:00



Table 22. Injury Medications

Relation Name: injury_medications							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	medication_id	CHAR	36	UUID	Required, Unique	Medication entry ID	5555aaaa-bbbb-cccc-dddd-eeee ffff0005
FK	report_id	CHAR	36	UUID		Associated injury report	3333aaaa-bbbb-cccc-dddd-eeee ffff0003
	pill_name	VARCHAR	100	Any	Required	Name of the medicine	Ibuprofen
	dosage_amount	VARCHAR	50	e.g., "200mg"	Optional	How much per intake	200mg
	food_instruction	VARCHAR	255	e.g., "After meals"	Optional	Dietary advice	After meals
	frequency	VARCHAR	100	e.g., "2x a day"	Optional	Frequency of intake	Twice a day
	duration_days	INT	-	Positive integer	Optional	Days to continue	5

Table 23. Medication Notification

Relation Name: medication_notifications							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	notification_id	CHAR	36	UUID	Required, Unique	Reminder entry ID	6666aaaa-bbbb-cccc-dddd-eeeef fff0006
FK	medication_id	CHAR	36	UUID		Medication to remind about	5555aaaa-bbbb-cccc-dddd-eeeef fff0005
	notify_time	TIME	-	00:00–23:59	Required	Notification time	07:00:00
	is_active	BOOLEAN	-	TRUE/FALSE	Default TRUE	Is reminder active	TRUE

Table 24. Breathing Exercises

Relation Name: breathing_exercises							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	exercise_id	CHAR	36	UUID	Required, Unique	Breathing exercise ID	a1b2c3d4-e5f6-7890-ab12-34567890abcd
	name	VARCHAR	100	Any	Required	Name of the exercise	Box Breathing
	description	TEXT	-	Any	Optional	Description of the technique	Inhale 4s, Hold 4s, Exhale 4s, Hold 4s
	inhale_seconds	INT	-	$\geq 0$	Required	Duration of inhale	4
	hold1_seconds	INT	-	$\geq 0$	Default 0	First hold duration	4
	exhale_seconds	INT	-	$\geq 0$	Required	Duration of exhale	4
	hold2_seconds	INT	-	$\geq 0$	Default 0	Second hold duration	4
	repetitions	INT	-	$\geq 1$	Required	Number of cycles	4
	video_url	TEXT	-	Valid URL	Optional	Instructional video	<a href="https://cdn.site.com/breathing.mp4">https://cdn.site.com/breathing.mp4</a>
	created_at	TIMESTAMP	-	Auto	Default now	Timestamp of creation	2025-06-01 08:00:00

Table 25. Breathing Sessions

Relation Name: breathing_sessions							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	session_id	CHAR	36	UUID	Required, Unique	Session log ID	b2233c44-9988-4777-91cc-aab bccddeeff
FK	user_id	CHAR	36	UUID		User doing the session	91dfbcde-4321-4321-9abc-def1 23456789
FK	exercise_id	CHAR	36	UUID		Breathing type	a1b2c3d4-e5f6-7890-ab12-3456 7890abcd
	date	TIMESTAMP	-	DateTime	Default now	When session was done	2025-06-01 08:30:00
	duration_seconds	INT	-	$\geq 0$	Required	Duration spent in seconds	180
	notes	TEXT	-	Any	Optional	Reflection (if applicable)	Helped reduce anxiety

Table 26. Publications

Relation Name: publications							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	publication_id	CHAR	36	UUID	Required, Unique	Publication/article ID	8899aabb-cdd-1234-5678-abcdefabcdef
FK	author_id	CHAR	36	UUID		Article author	91dfbcde-4321-4321-9abcdef123456789
	title	VARCHAR	150	Any	Required	Article title	PUP Wins National Volleyball Title
	content	TEXT	-	Any	Required	Full article content	The team triumphed after months of training...
	published_at	TIMESTAMP	-	Auto	Default now	Date posted	2025-06-05 09:00:00

Table 27. Publication Ratings

Relation Name: publication_ratings							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	rating_id	CHAR	36	UUID	Required, Unique	Rating record ID	4444eeee-dd dd-cccc-bbbb -aaaaffff1111
FK	publication_id	CHAR	36	UUID		Rated article	8899aabb-cc dd-1234-5678 -abcdefabcde f
FK	user_id	CHAR	36	UUID		Reviewer	91dfbcde-432 1-4321-9abc- def12345678 9
	rating	INT	-	1–5	Required	Score given	5
	comments	TEXT	-	Any	Optional	User feedback	Very insightful recap!
	rated_at	TIMESTAM P	-	Auto	Default now	When rated	2025-06-06 12:15:00

Table 28. Coach Profiles

Relation Name: coach_profiles							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	coach_id	CHAR	36	UUID	Required, Unique	Coach profile ID	c1c2c3c4-d5d6-7890-ab12-123456abcdef
FK	user_id	CHAR	36	UUID	FK to users	Associated user	91dfbcde-4321-4321-9abc-def123456789
	bio	TEXT	-	Any	Optional	Background and achievements	10 years coaching experience
	specialties	TEXT	-	Any	Optional	Areas of focus	Strength, endurance, flexibility
	contact_facebook_url	TEXT	-	URL	Optional	Social profile	https://facebook.com/coach123
	created_at	TIMESTAMP	-	Auto	Default now	Date created	2025-06-01 10:00:00

Table 29. Coach Matches

Relation Name: coach_matches							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	match_id	CHAR	36	UUID	Required, Unique	Match record ID	m1a2t3c4-h5j6-7890-ab12-334455667788
FK	user_id	CHAR	36	UUID		Matched student	91dfbcde-4321-4321-9abc-def123456789
FK	coach_id	CHAR	36	UUID		Coach matched to	c1c2c3c4-d5d6-7890-ab12-123456abcdef
	status	VARCHAR	50	Pending, Accepted	Required	Matching status	Accepted
	matched_at	TIMESTAMP	-	Auto	Default now	Time of match	2025-06-01 14:30:00



**Table30. Coach Chats**

Relation Name: coach_chats							
	Attribute Name	Data Type	Data Size	Allowable Values	Other Constraints	Description	Sample Value
PK	PK chat_id	CHAR	36	UUID	Required, Unique	Chat message ID	ch123abc-def4-5678-9012-abcdefabcdef
FK	match_id	CHAR	36	UUID		Match conversation	m1a2t3c4-h5j6-7890-ab12-334455667788
FK	sender_id	CHAR	36	UUID		User who sent the message	91dfbode-4321-4321-0abc-def123456789
	message	TEXT	-	Any	Required	Chat content	Hi coach, when can we start training?
	sent_at	TIMESTAMP	-	Auto	Default now	Time sent	2025-06-01 14:35:00

### 3.3 Development Methodology

#### 3.3.1 Process Model

For the development of the ISKOLETA+: PUP Community Sports and Wellness Management System, the team adopted the Agile Software Development Model. This model emphasizes iterative progress, collaboration, and adaptability—ideal for a feature-rich platform requiring continuous feedback from stakeholders such as students, athletes, faculty, and administrative staff.

#### Agile Process Overview

The Agile model breaks the project into incremental builds called sprints, usually spanning 2–3 weeks. Each sprint delivers functional modules that are tested and

reviewed, allowing the development team to incorporate stakeholder feedback early and continuously throughout the development lifecycle.

## **Phases in the Agile Model**

### **1. Planning and Requirements Gathering**

- a. Conducted initial consultations with stakeholders (e.g., SDPO, student-athletes, faculty).
- b. Identified core problems and translated them into user stories and system requirements.
- c. Defined sprint goals and backlog items for development.

### **2. Design**

- a. Created UI wireframes and mockups using Figma.
- b. Designed the database schema, data dictionary, and system architecture.
- c. Aligned design with responsive standards to support both web and mobile platforms.

### **3. Development (Sprint-based)**

- a. Developed functional modules in short iterations:
  - i. Sprint 1: User authentication, role-based access
  - ii. Sprint 2: Event calendar, wellness tracking
  - iii. Sprint 3: Sports publication module, feedback mechanism
- b. Used version control (GitHub) and automated CI/CD pipelines (GitHub Actions).

**4. Testing**

- a. Performed unit testing, integration testing, and user acceptance testing (UAT) during each sprint.
- b. Collected feedback from actual users (athletes, coaches, faculty) to validate features and adjust designs.

**5. Deployment****6.**

- a. Deployed the system on a test server for pilot implementation.
- b. Coordinated with SDPO and the Office of Guidance and Counseling for pilot testing sessions.

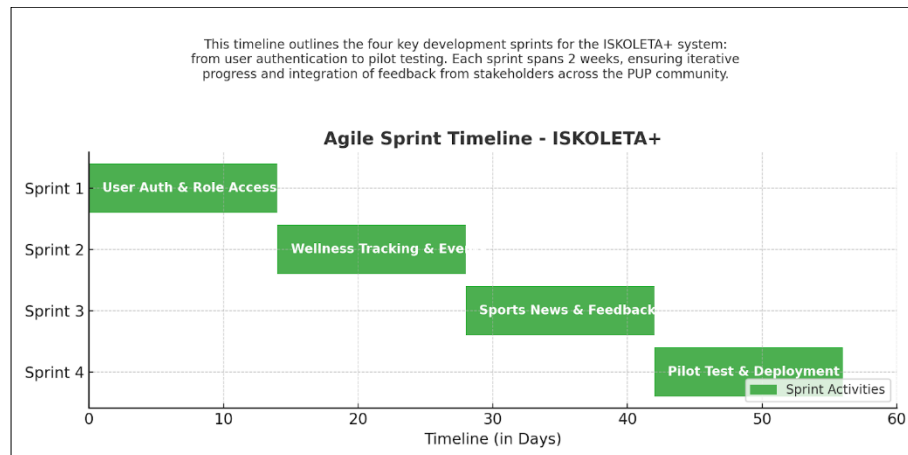
**7. Maintenance and Continuous Improvement**

- a. Monitored performance and collected usage data.
- b. Applied updates and optimizations based on user feedback and usage analytics.

Documented issues in the backlog for future sprint cycles.

- c.

**Figure 7. Agile Sprint Timeline**



### 3.3.2 Development Tools

This section outlines the tools and technologies used in the system's development, selected based on compatibility, efficiency, and ease of implementation. React.js was chosen to create an intuitive and dynamic mobile interface, ensuring a smooth user experience. The backend of the application is built using JavaScript and PHP, with Laravel Framework for server-side operations and structured coding. To manage the data, MySQL functions as the primary relational database, handling structured storage, while MongoDB manages dynamic content, such as user-generated publications. Git and GitHub also play a crucial role in version control, enabling collaborative development, branching, and merging for seamless teamwork. The SIS API was also used to integrate student-athlete academic syncing, ensuring relevant data is accurately incorporated, while Tesseract.js powers Optical Character Recognition (OCR) to extract text from doctor's notes for automatic rehab plan input.

As for the AI-driven functionalities are powered by Python, which enables coach matching algorithms and mood-based counseling recommendations, ensuring users

receive personalized guidance. To enhance real-time interactions and notifications, Firebase is implemented, while Node.js manages real-time passcode authentication and mood tracking, providing a seamless and secure user experience. Finally, Visual Studio Code (VS Code) serves as the primary integrated development environment (IDE) for coding, debugging, and extension support, optimizing the development workflow. Together, these technologies collectively support the implementation of ISKOLETA+, ensuring an efficient, scalable, and user-friendly system.

### **3.4 Test Methodology/Procedures**

This section explains the testing strategies used to validate the system's performance and functionality. Testing was conducted to identify and fix errors, ensure usability, and verify that all features work as specified in the requirements. The testing methodology for ISKOLETA+ aims to verify that the system meets both functional and non-functional requirements, ensuring reliability, accuracy, security, and user satisfaction. This approach involves checking that the system is built correctly (verification) and that it meets user requirements (validation).

#### **Testing Plan**

A structured testing plan was developed to guide the evaluation process. This plan outlined each testing step, including the action to be performed, the expected and actual outputs, the test result, relevant comments, and supporting evidence. For instance, a typical test case involved accessing the website, verifying the homepage loaded successfully, clicking the login button to ensure the modal appeared, and logging in using a valid account to confirm redirection to the user dashboard. Each of these steps was recorded, and actual outcomes

were compared with the expected results to determine whether the test passed or failed. Screenshots and observations were documented as supporting evidence. This process was consistently applied across all modules of the system to maintain accuracy and traceability.

### **Scope of Testing**

The testing scope covered both individual features and full system workflows. Key modules tested included user login and registration, profile customization, fitness activity logging, mood check-ins, mental health consultation scheduling, event participation, wellness resource management, performance reporting, leaderboard tracking, injury reporting, account creation, and user access control. These modules were prioritized based on their importance to ISKOLETA+'s core functionality. Each was evaluated for its ability to operate independently and as part of the integrated system, ensuring all components functioned according to the design specifications.

### **Testing Procedures**

The testing process was divided into several phases:

- **Unit Testing** was conducted immediately after the development of each module. This ensured that individual components operated correctly in isolation and met their respective functional requirements.
- **Integration Testing**, conducted after unit testing, involved combining related modules to check whether data flowed correctly and components interacted as expected. For example, this phase verified that mood logs were accurately reflected in user leaderboards.

- **System Testing** involved a full end-to-end assessment of the entire application. This ensured all modules functioned together cohesively and that the system supported complete user workflows without errors.
- **User Acceptance Testing (UAT)** was the final phase, where selected end-users such as students, guidance counselors, and administrative staff interacted with the system in real-world scenarios. Their feedback was collected to assess usability, identify potential issues, and suggest final refinements prior to deployment.

### 3.5 System Requirements

The following table presents the minimum and recommended system requirements necessary to run and maintain the ISKOLETA+ platform. These specifications ensure optimal performance for users and developers, especially during system testing and implementation phases.

**Table 30. System Requirements**

Category	Minimum Requirement	Recommended Specification
<b>Processor</b>	Intel Core i3 (2.4 GHz) or AMD equivalent	Intel Core i5/i7 (3.0 GHz) or AMD Ryzen 5/7
<b>RAM</b>	4 GB DDR4	8 GB DDR4 or higher
<b>Storage</b>	128 GB SSD or 500 GB HDD	256 GB SSD or higher

**Continuation of Table 30.**

<b>Operating System</b>	Windows 10 / macOS Catalina / Ubuntu 18.04 LTS	Windows 11 / macOS Ventura / Ubuntu 22.04 LTS
<b>Database</b>	MySQL 5.7 or higher	MySQL 8.0 with phpMyAdmin
<b>Backend</b>	PHP 7.4, Node.js 14, Python 3.8	PHP 8.1, Node.js 18, Python 3.11
<b>Frontend</b>	Modern browser (Chrome, Firefox, Edge)	Latest version of Google Chrome
<b>Frameworks</b>	React.js, Express.js	React 18, Express.js (latest stable)
<b>Mobile App</b>	Android 9.0 (API 28)	Android 12 or later
<b>Development Tools</b>	VS Code, Git, XAMPP	Docker, GitHub Actions, Firebase CLI
<b>Other Software</b>	Firebase (Auth, Cloud Messaging, Storage)	Firebase + integration with SIS API

### 3.6 Quality Plan

The ISKOLETA+ platform will be developed in accordance with the ISO 9126 international standard for software quality evaluation. This standard provides a structured framework to ensure that the system meets the expectations of its target users, including students, faculty, and administrative staff at PUP Sta. Mesa, in terms of functionality, reliability, usability, efficiency, maintainability, and portability. The table



below outlines how each ISO 9126 quality characteristic and its sub-characteristics apply to the ISKOLETA+ platform.

**Table 31. Quality Plan**

<b>Characteristic</b>	<b>Sub-characteristic</b>	<b>Application in ISKOLETA+</b>
Functionality	Suitability	ISKOLETA+ will provide features like mood check-ins, fitness tracking, and access to campus wellness events tailored to the wellness needs of PUP users.
	Accuracy	The platform will log data inputs (e.g., mood logs, fitness progress) accurately, providing reliable insights for users.
	Interoperability	ISKOLETA+ will be compatible with standard browsers and mobile operating systems to ensure smooth integration across devices.

**Continuation of Table 31.**

	Security	User data, especially sensitive mental health inputs, will be protected through encryption and secure authentication.
	Compliance	The system will adhere to data privacy laws (e.g., Data Privacy Act of 2012) and university data policies.
Reliability	Maturity	The system will undergo rigorous testing to minimize bugs and ensure stability under normal usage.
	Fault Tolerance	In case of minor input or connection errors, the system will maintain operation and prompt users for correction.
	Recoverability	The system will have backup and recovery mechanisms for user data in case of failure or crash.
Usability	Understandability	A simple and intuitive interface will help users easily understand how to use features like check-ins and activity logs.
	Learnability	Tutorials and onboarding prompts will be provided for new users to learn system functions quickly.

**Continuation of Table 31.**

	Operability	ISKOLETA+ will ensure smooth navigation, responsive controls, and accessible design (e.g., readable fonts, accessible colors).
	Attractiveness	A clean, modern interface design with gamified elements will enhance user engagement and visual appeal.
Efficiency	Time Behavior	The system will be optimized for fast response times when accessing pages, submitting logs, or loading content.
	Resource Utilization	The platform will be designed to run efficiently on both low- and high-spec devices without draining system resources.

**Continuation of Table 31.**

Maintainability	Analyzability	Modular code and logging will help developers diagnose and address bugs or issues efficiently.
	Changeability	The system will be built with scalability in mind, allowing easy updates for features and content.
	Stability	Feature changes or patches will be tested to ensure they don't unintentionally affect system performance.
	Testability	Automated and manual testing will be conducted regularly to ensure each component functions correctly.
Portability	Adaptability	ISKOLETA+ will function on different screen sizes (phones, tablets, desktops) and browsers.
	Installability	Mobile app versions will be easy to install via app stores, and web access will require no complex installation.

**Continuation of Table 31.**

	Co-existence	The platform will operate efficiently without interfering with other apps or systems on users' devices.
	Replaceability	If needed, ISKOLETA+ components can be replaced or upgraded with minimal disruption to users.

### 3.7 Evaluation Plan

The Evaluation Plan outlines how the system was assessed in terms of functionality, usability, and user satisfaction. The evaluation focused on gathering feedback from target users through methods such as surveys, interviews, or system testing sessions. These assessments helped determine whether the system met its objectives and user requirements.

Evaluation criteria included ease of use, accuracy, speed, and reliability. Users were asked to perform tasks using the system, and their feedback was analyzed to identify areas for improvement.

### 3.8 Ethical Considerations

This study will adhere to ethical standards, ensuring responsible conduct throughout the research process, including compliance with the Data Privacy Act of 2012 and future data protection regulations. Participants will be fully informed of the study's

objectives and their rights, with informed consent obtained prior to any data collection. Participation will be voluntary, and confidentiality will be maintained through data anonymization for research purposes.

Furthermore, the study will uphold academic integrity by avoiding plagiarism and properly citing all sources, thereby ensuring transparency and building trust. The research will also protect participant identities and data under the Data Privacy Act and relevant future frameworks.

### **3.9 Data Analysis (Procedure and Treatment)**

To thoroughly analyze user satisfaction, we conducted surveys and user testing to evaluate the usability, performance, and interface design of ISKOLETA+. Quantitative data was gathered through Likert scale ratings, multiple-choice questions, and open-ended feedback, allowing us to measure user experience and identify areas for improvement, using tools like Google Forms for efficient data collection. Meanwhile, qualitative data was collected through live usability testing, incorporating methods such as think-aloud protocols, task-based testing, and A/B comparisons to observe real-time user interactions and identify potential pain points. Once data collection was complete, quantitative analysis measured satisfaction scores across features, while qualitative analysis categorized user feedback to detect patterns in user concerns. The results are compiled into a Strengths and Weaknesses Report, highlighting well-received features and identifying areas requiring enhancement. Based on these findings, a system improvement strategy was developed to prioritize necessary fixes and implement necessary optimizations, followed by follow-up surveys to reassess effectiveness and ensure continuous improvement in user experience. By combining these quantitative and qualitative methods, the study ensured a well-rounded evaluation, allowing for data-

driven enhancements that align ISKOLETA+ with the actual needs and struggles of the PUP community.

### 3.10 Statistical Treatments

In this study, quantitative data gathered from respondents were analyzed using appropriate statistical tools to effectively address the research questions. It aimed to evaluate the usability, accessibility, and perceived effectiveness of the ISKOLETA+ system; the Weighted Mean was used. The measurement aims to summarize and determine the average perception of respondents based on responses. The formula used is presented below:

$$WM = \sum FW / N$$

Where WM represents the weighted mean, FW is the product of frequency and assigned weight for each response, and N is the total number of respondents.

The results were interpreted using a five-point Likert Scale, with the following scale:

- 4.21 – 5.00: Very High (Strongly Agree)
  - 3.41 – 4.20: High (Agree)
  - 2.61 – 3.40: Moderate (Neutral)
  - 1.81 – 2.60: Low (Disagree)
  - 1.00 – 1.80: Very Low (Strongly Disagree)

The interpretation levels aimed to provide a better understanding of the overall insights of users regarding system features. To examine the relationship between two

key variables, such as user engagement and perceived system effectiveness, Pearson's research was utilized. This statistical method measures the strength and direction of the linear relationship between paired data. The formula is:

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

where  $n$  is the number of data pairs,  $xy$  is the sum of the products of paired scores,  $x$  and  $y$  are the sums of each data set, and  $x^2$  and  $y^2$  are the sums of squared values of each set. The resulting coefficient was interpreted using the following guideline:

- 0.90 – 1.00 (or -0.90 – -1.00): Very High Positive (Negative) Correlation
- 0.70 – 0.89 (or -0.70 – -0.89): High Positive (Negative) Correlation
- 0.50 – 0.69 (or -0.50 – -0.69): Moderate Positive (Negative) Correlation
- 0.30 – 0.49 (or -0.30 – -0.49): Low Positive (Negative) Correlation
- 0.00 – 0.29 (or -0.00 – -0.29): Negligible Correlation

Data analysis was conducted using tools such as Google Sheets and Microsoft Excel to ensure statistical reliability and accuracy in interpretation.

Furthermore, there was recognition of the potential to integrate standard deviation and frequency distribution to capture variability in user responses more effectively. These would provide deeper insights into how consistent system features were perceived across different user demographics. The analyses helped inform recommendations for future iterations of ISKOLETA+, ensuring it remains responsive to the evolving wellness needs of the PUP community.



## **Chapter 4**

### **RESULTS AND DISCUSSION**

**This chapter provides a detailed analysis of how the system performs, how well it meets its objectives, and how users interact with it. The discussion interprets the results, highlights strengths and limitations, and may compare the system with existing solutions.**

**Example: The Level of Accuracy of the Developed Image Processing Tool**

**Discuss your results in accordance with the problem stated in Chapter 1. When discussing, do not just repeat what is presented in the table, discuss what your observations are which affect the results.**

## **Chapter 5**

### **SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS**

#### **Summary of Findings**

The Summary of Findings presents the major results obtained from system testing, user feedback, and performance evaluations. This section should be concise, highlighting the most significant observations. Key aspects often discussed include system functionality, usability, performance efficiency, security measures, and overall user satisfaction. Findings may include statistical data, feedback trends, or specific technical improvements that resulted from testing. If the system was compared to existing solutions, the summary should outline how it performed relative to those benchmarks.

For example, if a student management system was developed, findings might indicate that it successfully automated record-keeping, reduced processing time by a certain percentage, and received positive usability ratings from users. Any issues or limitations discovered during

testing should also be briefly mentioned, setting the stage for conclusions and recommendations.

## **Conclusions**

The Conclusions section provides a general assessment of the project based on the findings. It directly addresses whether the system met the research objectives and how effectively it solved the identified problem. This section should align with the project's problem statement and objectives from earlier chapters, ensuring a logical flow in the manuscript.

Conclusions should be well-supported by the findings, summarizing key takeaways without introducing new data. For instance, if a mobile application for online booking was developed, the conclusion might state that the system significantly improved booking efficiency and user experience while maintaining data security. If some objectives were only partially met, this section should acknowledge those gaps and their possible causes.

## **Recommendations**

The Recommendations section provides suggestions for improving the system, addressing its limitations, and exploring future research directions.

For example, if a web-based inventory system was developed, recommendations might include integrating predictive analytics for stock management or adding a mobile app version for accessibility.

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# APPENDICES

## **Appendix 1**

### **DATA GATHERING INSTRUMENT**

**This includes Survey Questionnaire and other tools used in data gathering**

## **Appendix 2**

### **CLIENT FORMS AND REPORTS**

**Present here the forms and reports currently used by the client / target user.**

## **Appendix 3**

### **EVALUATION TOOLS, TEST DOCUMENTS, AND TEST RESULTS**

**This includes tools used in testing and evaluating your system.**

## **Appendix 4**

### **USER'S MANUAL**

## **Appendix 5**

### **SAMPLE GENERATED OUTPUTS**

**Sample generated outputs by your developed system.**

**Appendix 6****CERTIFICATION OF SIMILARITY CHECK**

## Appendix 7

### CERTIFICATION OF EDITING

#### CERTIFICATION OF EDITING

This is to certify that the capstone project entitled **St. Peter Life Plan Web and Mobile Application** by **Juan Dela Cruz, Antonio Reyes, Lualhati Santos, Juan Morga** was proofread and edited by the undersigned.

This certification is being issued for whatever legal purpose it may serve.

Signed: Maria Gracieferlyn B. Aurora  
(Signature over Printed Name)

Affiliation: Sample Organization of the Philippines

Contact Number: 09991234567

Email Address: email@email.com

Date: March 9, 2025

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## **Appendix 8**

### **IMPLEMENTATION REPORT**

## **Appendix 9**

### **CAPSTONE PROJECT REVISION MATRICES**

## **Appendix 10**

### **ETHICS CLEARANCE AND TERMINAL REPORT**

## Appendix 11

### BIOGRAPHICAL STATEMENT

**YOUR  
PICTURE  
HERE**

Juan Dela Cruz is a fourth-year Bachelor of Science in Information Technology (BSIT) student with a strong interest in software development, database management, and cybersecurity. Throughout his academic journey, he has gained experience in various programming languages, system development methodologies, and emerging technologies. His dedication to innovation and problem-solving has been evident in his capstone project, which aims to address real-world challenges through technology. As he completes his undergraduate studies, Juan remains committed to continuous learning and contributing to the field of information technology.