
ISKOLETA+: INTELLIGENT WELLNESS AND SPORTS MANAGEMENT SYSTEM

A Comprehensive System for Enhancing Wellness, Monitoring Performance, and Bridging
Institutional Support

System Design and Implementation Document

Prepared For

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Identified Challenges and Institutional Relevance

Student-athletes face unique challenges in managing academics, training, and recovery. Without proper support, these demands can negatively affect their performance and well-being.

Studies show that recovery plays a critical role in preventing injuries and enhancing performance:

- **Petrovsky et al. (2022)** highlight how recovery directly influences athletic durability and injury prevention.
- **Teferi G. (2020)** and **Lopez & Daniels (2023)** found that well-rested student-athletes show better cognitive function, academic focus, and classroom resilience.

However, many universities—including PUP—still rely on manual check-ins and basic health declarations that can miss early signs of stress or fatigue.

At PUP, mental health is supported through **E-Konsulta**, but email-based communication delays intervention and risks prolonged stress or burnout (**Birion, 2025**).

Injury rates remain high:

- **Naderi & Mohammadi (2024)** report that **24.2% of student-athletes** suffer sport-related injuries, often leading to lower health, academic performance, and social engagement.
- **Stavitz et al. (2025)** found that poor wellness tracking and weak institutional communication result in emotional exhaustion and sport dropout.

To address these gaps, **ISKOLETA+** is introduced as a smart platform for student-athlete wellness and performance monitoring. It features:

- **Academic Eligibility Checks.** Student-athletes can submit their grades at the end of each semester. The system automatically flags those with academic deficiencies, notifying SDPO for timely support and intervention.
- **Athletic Profile Submission and Tracking.** Student-athletes can input and update their athletic information—including sport discipline, team status, position, and competition history, directly through ISKOLETA+. This data is then submitted to SDPO, enabling them to maintain accurate records, monitor athlete involvement, and provide more personalized support.
- **AI-Powered Recovery Tracking and Recommendations:** Athlete activity and recovery are monitored through smart logging. The system provides tailored suggestions based on recent performance, sleep, and stress input.

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- **Training Readiness and Alerts** Coaches and SDPO receive alerts when athletes are not physically or mentally prepared for training, helping avoid burnout or injury.
 - **AI-Powered Motivation and Wellness Prompts** The system monitors emotional wellness indicators such as stress logs, sleep quality, and recent performance data. Based on this input, ISKOLETA+ provides tailored prompts and suggestions to help student-athletes stay motivated and emotionally balanced. If consistent signs of stress or burnout are detected, the system automatically recommends scheduling time with PUP's guidance office for support.
 - **Centralized Training Scheduling** All training plans and session schedules are managed in one unified calendar, easily accessible by athletes and coaches. At the same time, the SDPO has a clear overview of daily sport-specific training, enabling seamless coordination and avoiding potential scheduling overload.

With ISKOLETA+, PUP can build a responsive support system that promotes both athletic excellence and academic achievement—while strengthening collaboration between athletes, coaches, and SDPO.

Objective of the Feature

ISKOLETA+ is designed to provide a centralized platform that monitors wellness, academic standing, recovery status, and training readiness for student-athletes at the Polytechnic University of the Philippines (PUP). It integrates wearable technology that allows biometric data, such as heart rate variability, sleep duration, and step count, to be synced from devices like the Samsung Galaxy Watch6.

Studies by Bloomfield et al. (2024) and Jafarlou et al. (2022) underscore the value of wearables in real-time wellness tracking, while Bhole (2024) and Gatla (2024) highlight the power of AI in stress detection, particularly through physiological signals. This research

informs the system’s AI Wellness Trigger, which evaluates biometric trends to detect fatigue, stress, or burnout, prompting immediate recovery suggestions.

Academically, student-athletes' eligibility is tracked through a dedicated monitoring system that evaluates their qualification status. By submitting midterm and final grades directly into the platform, they enable timely and transparent assessments. This not only streamlines academic oversight but also promotes trust and coordination between academic and athletic departments, which empowers proactive interventions and data-informed support.

Simultaneously, the Smart Recovery Calendar syncs training schedules with individual recovery needs, based on their biometric inputs and readiness scores to personalize recovery suggestions. With this, coaches gain insights through their dashboard analytics that visualize performance flags as supported by Mahabub et al. (2024), which enables them to target the interventions.

Mental health is also the target into the system through mood check-ins and discreet prompts, providing non-invasive support and referral suggestions aligned with findings from Sujanthi et al. (2025). This feature complements the Smart Recovery Calendar by addressing emotional wellness alongside physical recovery, ensuring that student-athletes receive holistic care.

Altogether, these tools form a cohesive, data-driven ecosystem that promotes academic eligibility, mental resilience, and performance readiness, reinforcing PUP’s commitment to student-athlete well-being.

Features	Objectives
Wearable Integration	Collect biometric data (HRV, sleep, steps) via smartwatches for real-time wellness tracking
AI Wellness Trigger	Detect early signs of fatigue, stress, or burnout and prompt recovery actions
Academic Eligibility Monitoring	Evaluate midterm and final grades to determine qualification status and flag at-risk athletes

Smart Recovery Calendar	Align training schedules with recovery needs based on biometric trends
Mood Check-ins & Mental Health Prompts	Provide discreet emotional support and suggest referrals when multiple stress is detected
Coach Dashboard & Analytics	Enable coaches to view readiness scores, wellness flags, and academic status for informed planning
Challenge Tracker & Engagement Tools	Motivate athletes through wellness challenges and progress streaks

SDPO Functional Overview

This document outlines the core functionalities available to the **Student Development and Program Office (SDPO)** within the ISKOLETA+ Intelligent Wellness and Sports Management System. These features support centralized athlete management, monitoring, and institutional coordination.

SDPO Core Features

- **View and Manage Athlete Information.** Access athlete profiles including sport discipline, position, and academic status; update records as needed.
- **Access Eligibility Reports & COR Submission.** View athlete-submitted grades each semester and generate reports for academic eligibility and Certificate of Registration (COR) tracking.

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- **Create Coach Account / Assign Sport.** Register coaches into the system and assign them to specific sports programs for streamlined collaboration.
 - **Set Athlete Status.** Update student-athlete status (e.g., Active, Inactive, Graduated) to reflect academic progression and athletic participation.
 - **Monitor System-Wide Analytics & Wellness Flags.** Access aggregated data insights such as flagged stress levels, academic risk profiles, and wellness concerns across all sports.
 - **Notifications Dashboard.** Receive system-generated alerts regarding academic risks, wellness prompts, stress indicators, and semester grade submissions.
 - **View & Manage Coach Profiles.** Oversee registered coach accounts, update credentials, and manage sport assignment changes when necessary.
 - **View Sports-Specific and Whole-System Wellness Trends.** Monitor analytics for individual sports or system-wide trends, including athlete readiness, academic performance, and emotional wellness flags.

Benefits to SDPO

- Strengthens decision-making through timely and accurate insights.
- Enhances coordination across academic, wellness, and athletic domains.
- Promotes early intervention for at-risk student-athletes.
- Supports policy development and long-term athlete monitoring.

Coach Functional Overview

This section outlines the features available to **coaches** in the ISKOLETA+ platform. These tools support streamlined athlete monitoring, performance-based decision-making, and team coordination.

Coach Core Features

- **Approve/Verify Athlete Profile.** Coaches can review athlete-submitted profiles, confirming accuracy and verifying sport affiliation and position before system integration.

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- **View Athlete Status.** View each athlete's current status (Active, Inactive, Graduated) to inform coaching plans, athlete lineup planning, and participation planning.
 - **View & Manage Athlete Profiles.** Access athlete information relevant to sport assignment and team coordination—including current status, academic performance, and sport affiliation—for monitoring and planning purposes.
 - **View Academic Grades & Verify Submissions.** Check submitted grades for academic eligibility. Coaches can verify accuracy and coordinate with SDPO on at-risk athletes.
 - **Receive AI Recommendations & Team Wellness Trends.** The system provides data-driven suggestions when a student-athlete shows signs of fatigue or stress. Based on wellness logs and recent activity, the system recommends adjusting training intensity or scheduling rest to prevent burnout.
 - **Training Schedule Management & Adjustment Suggestions.** Coaches manage weekly and seasonal training plans. ISKOLETA+ offers smart recommendation adjustments based on athlete wellness flags, academic schedules, and upcoming competitions.

Benefits to Coaches

- Promotes athlete-centered coaching through data-driven insights
- Help prevent overtraining and burnout
- Aligns athletic plans with academic and emotional wellness
- Supports early intervention for individual athletes or whole-team concerns

Student-Athlete Functional Overview

This section outlines the digital tools and features available to **student-athletes** within the ISKOLETA+ platform. These features are designed to support athlete self-management, wellness tracking, and institutional coordination.

Student-Athletes Core Features

- **Registration of account.** Student-athletes can register for an account to create and manage their profile, track progress, and view notifications.

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- **Fill Up and Submit Athletic Information.** Student-athletes provide personal athletic details—such as sport discipline, team affiliation, and competition history—within the platform. Once completed, this information is **automatically shared** with both SDPO and the assigned coach, enabling informed support, proper documentation, and sport-specific coordination.
 - **View Eligibility Status.** Real-time visibility of academic standing and eligibility based on submitted grades and SDPO feedback.
 - **Recovery Check-in.** Athletes log physical and emotional wellness indicators (e.g., stress levels, sleep quality, fatigue) to support AI analysis.
 - **Weekly Wellness Challenges.** Each week, ISKOLETA+ presents student-athletes with a curated selection of optional wellness challenges, personalized based on their recent sleep patterns, stress signals, and engagement history. Athletes have full control to choose which challenge (if any) they'd like to take on, such as hydration goals, sleep improvement, or mindfulness tasks. Once a challenge is completed, the athlete earns a digital badge as recognition for their effort and progress, which serves as a motivational milestone that encourage healthier routines in a fun and flexible way.
 - **Passive Text Recommendations.** The system delivers an AI-powered gentle prompts and suggestions based on logged data—addressing wellness, focus, and recovery.
 - **Smart Recovery Calendar.** Analyzes each student-athlete's recent wellness data to compute a daily recovery percentage, indicating their current state of readiness for training. Based on this assessment, the system provides an AI-powered personalized suggestions, such as sleep targets, hydration strategies, or light recovery activities, to help the athlete improve their recovery level and prepare effectively for the next training session.

Benefits for Student-Athletes

- Enables self-awareness and proactive wellness habits
- Promote consistency in academic and physical readiness
- Strengthens communication with coaches and SDPO
- Supports early intervention for fatigue and academic risks

Device Needed

(SDPO, Coaches, Student-Athlete)

To ensure ISKOLETA+ functions well as an integrated system, **each stakeholder group** (SDPO personnel, coaches, and student-athletes) requires specific devices to fulfill their roles effectively.

For **Student-Athletes**, wearable technology such as the Samsung Galaxy Watch6 is essential for continuous monitoring of biometric indicators, including heart rate variability, sleep quality, and physical activity. As supported by Jafarlou et al. (2022) and Bhole (2024), wearables are crucial in facilitating early stress detection and personalized wellness interventions. The device serves as input to the AI Wellness Trigger and Smart Recovery Calendar, helping to detect stress, burnout, or overtraining.

For **Coaches**, laptops or personal computers equipped with dashboard analytics interfaces, enabling visualization of athlete readiness, academic standing, and wellness flags. Mahabub et al. (2024) underscore the role of such analytical platforms in driving informed coaching decisions and reducing athlete dropout risk.

SDPO needed centralized monitoring tools, typically desktop systems with secure access to ISKOLETA+'s to monitor the dashboard and data management portals to ensure the authentication audits, academic eligibility review, and institutional reporting. The importance of such systems in managing academic records and coordinating interventions between departments (López-Belmonte et al, 2020)

The devices mentioned ensure seamless data collection, visualization, and action across roles, reinforcing ISKOLETA+'s goal of creating a transparent, wellness-first ecosystem for student-athletes.

Why did we choose the Samsung smartwatch as a startup?

Samsung Galaxy Watch6 has the capability to manage the ISKOLETA+ system. The biometric tracking capabilities, seamless software integration, and broad accessibility among student-athletes. Samsung smartwatches offer affordability without compromising advanced health

metrics such as heart rate variability, sleep monitoring, step count, and SpO2 levels, which are vital to AI Wellness Trigger and Smart Recovery Calendar to function. Real-time biometric data in early stress detection and personalized intervention (Jafarlou et al, 2022) and the device reliability of mainstream consumer wearables in clinical-grade research (Bloomfield et al, 2024). The study points to Samsung's compatibility with Android platforms, which dominate the Philippine market (Statista, 2024). The API framework also supports data portability and backend integration, aligning with the backend (Gathla, 2024), which enables secure and scalable architecture plans. By selecting Samsung as the wearable device, it prioritizes cost-efficiency, integration readiness while maintaining high standards for athlete wellness monitoring.

References:

- **Bhole, Y. (2024).** *Stress detection using AI and machine learning. International Journal of Engineering Research & Technology (IJERT)*, 13(08). <https://www.ijert.org/research/stress-detection-using-ai-and-machine-learning-IJERTV13IS080017.pdf>
- **Bloomfield, L. S. P., Fudolig, M. I., Kim, J., Llorin, J., Lovato, J. L., McGinnis, E. W., McGinnis, R. S., Price, M., Ricketts, T. H., Dodds, P. S., Stanton, K., & Danforth, C. M. (2024).** *Predicting stress in first-year college students using sleep data from wearable devices. PLOS Digital Health*, 3(4), e0000473. <https://doi.org/10.1371/journal.pdig.0000473>
- **Gatla, T. R. (2024).** *A next-generation device utilizing artificial intelligence for detecting heart rate variability and stress management. International Journal of Creative Research Thoughts*, 12(3), Article IJCRT2403744. https://www.researchgate.net/profile/Teja-Gatla/publication/380732439_A_Next-Generation_Device_Utilizing_Artificial_Intelligence_For_Detecting_Heart_Rate_Variability_And_Stress_Management/links/664c1fa3bc86444c72f28b39/A-Next-Generation-Device-Utilizing-Artificial-Intelligence-For-Detecting-Heart-Rate-Variability-And-Stress-Management.pdf
- **Jafarlou, S., Lai, J., Mousavi, Z., Labbaf, S., Jain, R., Dutt, N., Borelli, J., & Rahmani, A. (2022).** *Objective prediction of tomorrow's affect using Multi-Modal Physiological data and Personal Chronicles: A study of monitoring college student well-being in 2020.* arXiv. <https://arxiv.org/abs/2201.11230>
- **Lopez, M., & Daniels, R. (2023).** *Grit and resilience as predictors of subjective well-being among university student-athletes. International Journal of Physical Education*,

- **López-Belmonte, J., Segura-Robles, A., Moreno-Guerrero, A. J., & Parra-González, M. E. (2020).** *Effects of physical exercise on academic performance in university students: A systematic review.* *Journal of Health and Physical Education*, 9(1), 67–76. <https://hpe.researchcommons.org/journal/vol9/iss1/9>
- **Mahabub, S., Jahan, I., Islam, M. N., & Das, B. C. (2024).** *The impact of wearable technology on health monitoring: A data-driven analysis with real-world case studies and innovations.* *Journal of Engineering Science*, 15(4). <https://journal.esrgroups.org/jes/article/view/7105>
- **Naderi, A., & Mohammadi, M. (2024).** *Prevalence of sports injuries among school student-athletes and their effects on the mental and physical health.* *Journal of Clinical Research in Paramedical Sciences*, 13(2), 45–52. <https://brieflands.com/articles/jcrps-140117.pdf>
- **Petrovsky, D. V., Pustovoyt, V. I., Nikolsky, K. S., Malsagova, K. A., Kopylov, A. T., Stepanov, A. A., Rudnev, V. R., Balakin, E. I., & Kaysheva, A. L. (2022).** *Tracking health, performance and recovery in athletes using machine learning.* *Sports*, 10, 160. <https://doi.org/10.3390/sports10100160>
- **Stavitz, J., Porcelli, R., Block-Lerner, J., Marks, D. R., & Katzman, H. B. (2025).** *Burnout, identity loss and institutional gaps: A qualitative examination of sport discontinuation among NCAA Division III athletes.* *Sports*, 13, 116. <https://doi.org/10.3390/sports13040116>
- **Sujanthi, S., Raghavan, A. V. B., Poovizhi, M., Kayathri, T. L., Balaji, P., & Hariharan, M. (2025).** *Smart wellness system for stress detection using AI and IoT technologies.* In *2025 International Conference on Multi-Agent Systems for Collaborative Intelligence (ICMSCI)*. IEEE. <https://ieeexplore.ieee.org/abstract/document/10894366>
- **Teferi, G. (2020).** *The effect of physical activity on academic performance and mental health: Systematic review.* *American Journal of Science, Engineering and Technology*, 5(3), 118–123. <https://doi.org/10.11648/j.ajset.20200503.12>

