**CHAPTER 1**

# Introduction

In this chapter, there are 6 parts of introduction which are Motivation, Problem Statement, Objectives of the Project, Scope of the Project, Expected Benefits of the Project, and Organization of the Document. Their focus will be on how the application was developed, why there is a need for the application, and what were the benefits of the application.

* 1. **Motivation**

Whether it is a training, preparation, or competing, the common problems with athlete are injuries and the illnesses. These problems can affect the physical training, performance of the athletes at that time, and the success of winning competitive. Therefore, to prevent these things, it is important to keep track of athletes regularly and monitor their health and ailments. Collecting the data from athlete tracking help personnel in many fields such as the coaches of the athlete, the information can help them for planning about training and competition session, the medical teams (e.g., general practitioners, specialists, physical therapists), the information can help to know the predominant injury and illness type so that it can prevent and treat injury and illness in that time. Other information besides illness and injury also affects training and competition such as stressing level, athlete sleep time or else that effect to athletes meatal. So, these are very important to check for the athletes to have a more stable mind and better intentions.

* 1. **Problem Statement**

Collecting data from the Athletes via Questionnaires form is difficult to manage in terms of sorting out between Medical team and Athletes. To make athletes feel comfortable to use our application is also hard to analyze since we need to get the feedback from athletes as much as possible.

* 1. **Objectives of the Project**
* Develop SIATS system capable of managing data on both sport injuries and sport psychology.
* Make it possible for athletes to monitor their present level of physical and mental wellness.
* Enable coaches and the medical staff to use athlete health data and provide coaching and treatment input to specific athletes
  1. **Scope of the Project**

A computing application that allows athletes to check their physical condition through online channels. The application is designed to facilitate both athletes and coaches and healthcare professionals with functionality that meets the needs of teams that care for athletes. Athletes and officials can view athlete statistics and check for ailments.

* 1. **Expected Benefits**
* Benefits to users
  + Make the athlete are prepared to compete
  + enable athletes to be monitored and assessed weekly by the medical staff.
* Benefits to developers
  + Practice using firebase in actual work.
  + Practice creating applications.
  + Developing the programming skills such as Dart.
  + Improving problem-solving skills.
  + Practice designing UX/UI
  1. **Organization of the Document**

This project consists of 6 chapters including:

1. The first chapter introduces the project. The Motivation, Problem Statement, Project Objectives, Project Scope, Expected Benefits for Users and Developers, and Document Organization are all included in the Introduction.
2. The second chapter contains background knowledge which includes literature review.
3. The third chapter presents the Analysis and Design of the project. It contains information on the project's design, including an overview of the system architecture, a system structure chart, and the design of the web-based service.
4. The fourth chapter presents the Implementation contains hardware and system environment and Implementation Guide and Techniques.
5. The fifth chapter contains testing and evaluation process, spread pattern results, and discussion.
6. The sixth chapter contains conclusion, benefits, problem and limitations, and future work.

**CHAPTER 2**

**BACKGROUND**

**2.1 Literature review**

2.1.1 The Oslo Sports Trauma Research Center questionnaire on health problems.

Research on sports injury prevention was previously mainly observational studies outlining injury risk in various sports, their incidence, pattern, and severity. However, few studies had been designed to provide in-depth information on injury mechanisms and risk factors – information needed in order to propose relevant preventive measures.

Based on this background, the Oslo Sports Trauma Research Center was established in May 2000 - as a joint venture between Oslo University Hospital and the Norwegian School of Sport Sciences.

In 2009, the Oslo Sports Trauma Research Center was inaugurated as a FIFA Medical Center of Excellence. The same year the center was also selected as one of the four inaugural IOC Research Centers for Prevention of Injury and Protection of Athlete Health, now counting eleven such centers around the world. [1]

2.1.2 Improved reporting of overuse injuries and health problems in sport

This report presents updates to the OSTRC questionnaires, OSTRC believe that these changes will provide a better experience for the respondents and, in turn, maximize their adherence

These perceptions are dependent on contextual factors such as athlete experience, level of sports, type of sport, and time of the season. This means that data collected from different cohorts of athletes will not necessarily be comparable. We encourage further research to explore the psychometric properties of the OSTRC questionnaires across different contexts and populations. [2]

Users from a range of sports research and clinical environments have gained experience using the OSTRC questionnaires and have identified areas in which they could be improved. In this paper, to provide greater clarity and consistency of questioning, present changes to the wording, structure, and logic of the original OSTRC questionnaires. We believe that these changes will improve athletes’ experience when completing the questionnaires and improve the quality of collected data. [3]

2.1.3 Psychological Readiness of Athletes to Return to Play Following Injury

This research was to gather the statistics of each athlete from every field in terms of the mind state of returning to play.

Descriptive statistics (means and standard deviations) were calculated for all demographic and study variables. Student-athletes were classified into two groups, Ready or Not Ready, based on their perceived psychological readiness to return to play via IPRS scores. All student-athletes who scored highly confident with an I-PRRS score greater than or equal to 50 were classified as Ready (I-PRRS > 50).

8 All student-athletes who scored below highly confident with an I-PRRS score less than 50 were classified as Not Ready (I-PRRS < 50). [4]

* Sleep Quality

The Sleep Quality research is research that has information conducted on the use of group processes to solve sleep problems in the elder people with the objective of studying the situation of insomnia in the elder people the target group was 11 elder people with poor sleep quality. participate in group activities Processing time 8 weeks, collecting general information. Sleep Quality Assessment and a daily sleep record.

Sleep is an essential process for life maintenance, facilitating biological restoration as well as mind and body attunement. Poor sleep quality may have a negative effect on daily activities, such as impaired work and study performance, accidents, and problems with social interaction. Nevertheless, an increasing number of patients suffer from sleeping disorders and seek medical treatment, therefore. Clinical evaluation and follow-up assessments require a specific tool that cannot only evaluate several aspects of sleep problems to detect patients with sleep disorders early but also produce relatively stable results over time.

**CHAPTER 3**

**ANALYSIS AND DESIGN**

**3.1 System Architecture Overview**

**Diagram

Description automatically generated**

Figure 3.1: System architecture diagram