

# SportSync health: revolutionizing patient care in sports medicine through integrated follow-up technologies

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To the Editor

China's rapidly advancing economy has brought its medical sector close to international standards. However, data management and systematic patient follow-up remain significant challenges [1–3]. Despite handling a larger patient volume than their Western counterparts, Chinese physicians lack robust systems to support data-driven decisions and follow-ups, particularly in sports medicine [1]. Existing systems are poorly integrated with clinical workflows, overly complex, and often designed without clinician input, making them impractical for busy doctors [1].

With the rise of national sports, the demand for sports-related injury rehabilitation and chronic disease management has increased. This growth necessitates more efficient follow-up approaches [4]. To address these inefficiencies, we developed SportSync Health, a sports medicine follow-up management system designed from a clinician's perspective [5, 6]. SportSync Health simplifies and optimizes patient registration, evaluation, and follow-up through quick data entry, precise data retrieval, and intelligent patient-doctor interactions. This allows physicians to manage patient data effectively without significant time investment.

SportSync Health has been operational for six years, collecting over 10 000 sports medicine cases from multi-center data across the country. This innovation is more than a technological enhancement; it represents a crucial evolution in sports medicine, maintaining care continuity in China's high-volume, fast-paced medical environment. By integrating smart technology with practical functionality, SportSync Health aims to transform sports medicine by improving practice efficiency and patient care quality [4].

SportSync Health's core features are speed and accuracy, designed to save time and enhance practical sustainability.

The database system significantly improves data collection and patient management within sports medicine. It allows non-expert users to input core patient information and medical history via an intuitive web interface, incorporating electronic scoring and multimedia elements such as voice, images, and video (Figure 1). This design caters specifically to busy clinicians, enabling extensive data entry in a short period.

Anyone can access and use the SportSync Health database directly by registering on the <https://ydyx.yfkj-top.com:18089/a/login> website. With permission, users can search the main page for patient populations they are interested in analysing. It is also possible to collect further cases for online and offline follow-up to expand the size of the database. In detail, SportSync Health employs user-friendly automated tools, including predefined assessment templates with intelligent follow-up questions. These tools dynamically adapt to the patient's condition and treatment stage, ensuring the collection of robust, clinically relevant data. The system can automatically send evaluation questionnaires based on the patient's postoperative status and retrieve valuable recovery metrics, facilitating tailored feedback.

Advanced data analytics capabilities within SportSync Health enable real-time analysis of collected patient data, providing diagnostic evidence to support treatment pathway adaptations and patient management globally. The system generates comprehensive reports and graphical summaries, aiding physicians in monitoring patient progress and therapy response, thus laying the foundation for data-based research. This fully integrated and automated method of data gathering and appraisal significantly enhances the effectiveness of patient care in sports medicine.

These presentive studies (Table 1) highlight the adaptability and benefit of the SportSync Wellness database, enabling

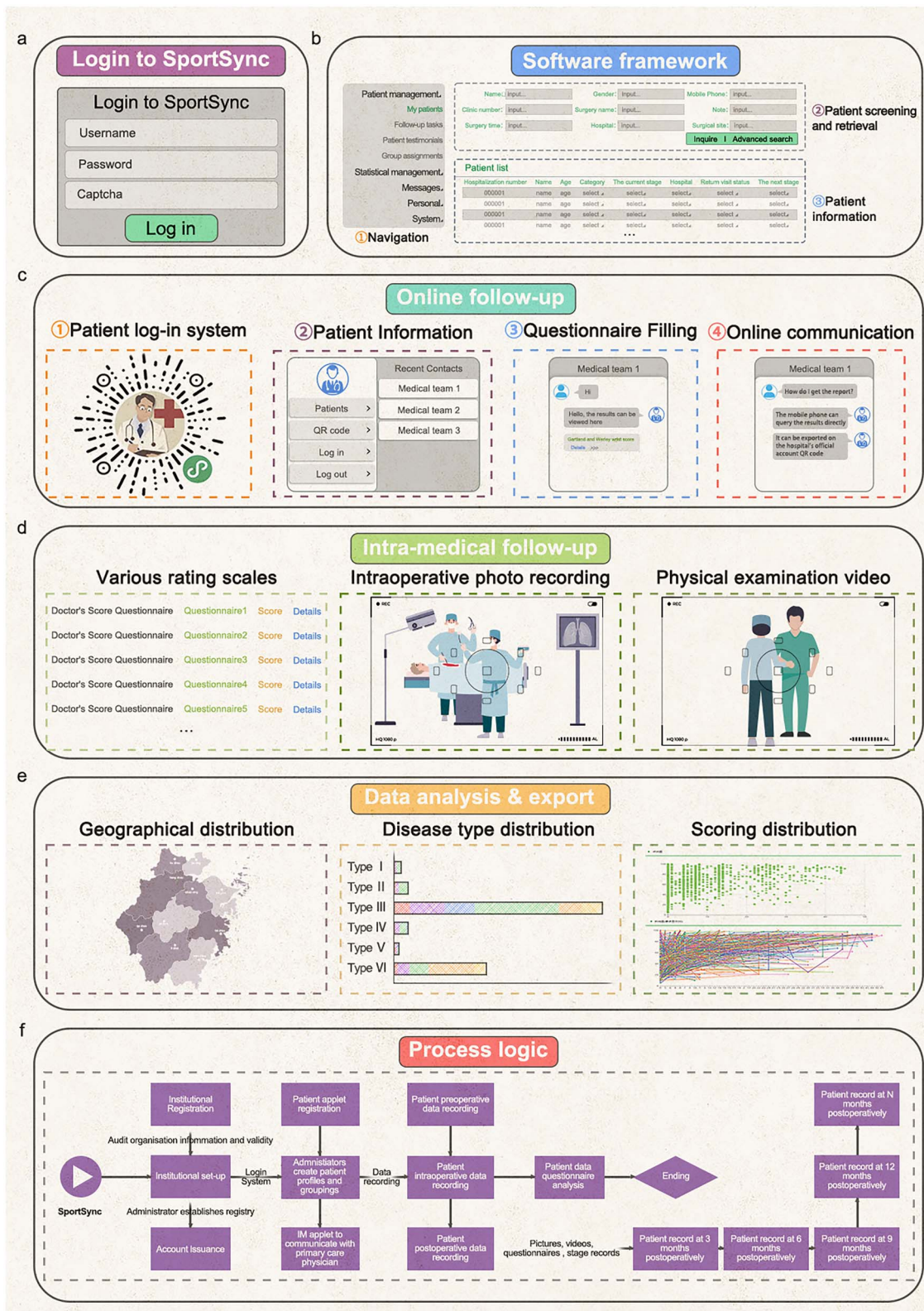


Fig. 1. Overall process design for SportSync health. **(a,b)** The system includes five sections: The basic unit of the patient (including time, functional scores, pictures, and videos, which is mainly done by the rehabilitation department). **(b)** Retrieval of information (including the main diagnosis, detailed typing, disease characteristics parameters, therapeutic interventions, which is partly done by the surgeon-in-charge). **(c)** Doctor-patient direct system (doctors can communicate with patients through the platform on a group-to-one basis including perioperative management, follow-up, electronic questionnaire issuance, automatic importation and generation of follow-up data, and even online disease counseling). **(d)** Background management system (including various scores, adjustment of various research catalogs). **(e)** Data output (including the view of the follow-up situation, various scoring perspectives, intelligent search function, graphic output function). **(f)** Overall process logic diagram.

Table 1. Papers published by the SportSync Health database in the last two years

Study	Procedure	Sample Size/year	Follow-up Duration	Key Outcomes
Arthroscopic reconstruction of the medial patellofemoral ligament in skeletally immature patients using the modified sling procedure: a novel technique for MPFL reconstruction [5]	Arthroscopic reconstruction using modified sling procedure	21/2023	24-42 months	Significant improvement in patellar stability and pain scores
Arthroscopic repair with transosseous sling-suture technique for acute and chronic bony Bankart lesions [11]	Arthroscopic repair with transosseous sling-suture technique	48/2023	41.47 ± 17.64 months (ranging from 25 to 92 months).	restore joint stability, improve clinical outcomes and range of motion postoperatively.
Effectiveness of bone grafting versus cannulated screw fixation in the treatment of posterolateral tibial plateau compression fractures with concomitant ACL injury: a comparative study [12]	Effectiveness of bone grafting versus cannulated screw fixation	53/2024	15.10 ± 2.67 months	In cases of simple PTPCF, filling and compacting the bone defect underneath the tibial plateau fracture fragment can yield satisfactory fixation
The angle of the lower portion of the posterior cruciate ligament assists in the diagnosis of partial anterior cruciate ligament tears [13]	Consecutive patients presenting with ACL tears who underwent ACL reconstruction and patients with isolated meniscus tears undergoing arthroscopic surgery	100/2024	Various stages	A small $\alpha$ angle and a large $\beta$ angle were associated with partial ACL tears.
Suture button fixation Latarjet procedure under total arthroscopy for treatment of anterior shoulder instability with severe bone defect [14]	Elastic fixation Latarjet surgery under total arthroscopy for anterior shoulder instability with severe bone defects.	15/2024	13-32 months	Improve shoulder joint function in patients with severe anterior shoulder instability.
Low skeletal muscle mass is associated with inferior preoperative and postoperative shoulder function in elderly rotator cuff tear patients [15]	Rotator cuff repair	287/2024	Various stages	The low skeletal muscle mass is associated with inferior ROM of the shoulder and pre- and post-operative shoulder function

ACL anterior cruciate ligament, MPFL medial patellofemoral ligament, PTPCF Posterolateral tibial plateau compression fractures

orthopedic and sports medicine clinical program advancement. The utilization of the SportSync Health database in clinical studies has demonstrated its significant value in enhancing the quality of medical research and patient care in orthopedics and sports medicine. By providing a mechanism for longitudinal patient follow-up, the database allowed for a more detailed analysis of surgical outcomes and new techniques, achieving a depth and quality unattainable with traditional methods.

In contrast to the literature in which the databases are the same for *Bluespier*, *SEER* [7], *UK Biobank* [8], and *The Framingham Heart Study* [9], the structured and organized patient data in SportSync Health offers a more nuanced understanding of treatment effectiveness and patient responses. This advantage facilitates easier searches for existing studies, reduces errors in manual data extraction, and enhances the reproducibility of study results.

The future integration of sophisticated databases like SportSync Health into clinical research promises a significant impact on improving treatment protocols and patient management strategies. Real-time data tracking and analysis not only refine surgical methods but also enable personalized rehabilitation, leading to faster and more

successful recoveries. The expanding use of such databases will advance the fields of sports medicine and orthopedics by providing a solid foundation for evidence-based practices and personalized care.

This progression is essential for developing future therapeutic interventions that are both innovative and grounded in empirical evidence. Ultimately, the widespread adoption of advanced databases like SportSync Health will elevate the global standard of patient care [10].

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## Authors' contributions

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## Conflict of interest

The authors declare no competing interests.

## Data availability

The database code has been applied for as a soft-authorship (No. 10500091) and added to the supplementary files. Anyone can access and use the SportSync Health database directly by registering on the <https://ydyx.yfkj-top.com:18089/a/login> website.

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