Wholistic Exercise Program with GAMES

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Introduction/Background

St. Luke's Hospital enhanced its rehabilitation program by integrating gamification, targeting comprehensive balance and gait speed improvements alongside traditional strengthening exercises. Initiated in 2017 with the Lien Foundation's support, the program initially centred on pneumatic air pressure exercises. It later incorporated aerobic and balance training to overcome the limitations of a strength-only focus, utilising tools such as upright bicycles and exercise sheets. A pivotal advancement occurred in 2023 with the introduction of the JINTRONIX system at GYM-UP, facilitating interactive game-based training for aerobic and balance activities. Original intent on the use of JINTRONIX system was primarily for inpatient use back in April 2021. The system was intended to be a self-exercise tool for patients outside their scheduled therapy sessions. Two years post-implementation, it was observed that the utilisation was lower than expected, primarily due to patients requiring additional guidance. Hence, in April 2023, the JINTRONIX system was transferred to the outpatient setting, where it saw increased usage. This gamification strategy is designed to increase patient engagement and adherence, making rehabilitation more enjoyable and aiming for a holistic recovery that addresses physical and psychological aspects. The program's evolution highlights the critical role of a comprehensive approach that stimulates the body and mind for optimal rehabilitation results.

Goal/Objective

The project aims to revolutionize the patient rehabilitation experience by making it more engaging, interactive, and tailored to individual needs through the immersive nature of games. Through games, it may alters participants' perception of time, making exercises feel quicker and less tedious, effectively diverting attention from physical exertion.

Problem Analysis

The implementation journey revealed several hurdles impacting the system's effectiveness:

Technical Barriers: Issues like WiFi connectivity and the complexities of login credentials (ID & Password) initially hindered patient engagement.
Privacy Concerns: PDPA-related apprehensions regarding data storage on cloud servers presented another layer of complexity.
Engagement Issues: The initial game offerings faced criticisms of repetitiveness and a lack of suitability for specific patient groups, particularly affecting those with hemiplegic impairments.

We adopted a multifaceted approach to enhance system accessibility, ensure data security, and tailor the gaming experience to meet diverse patient needs effectively.

Implementation Plan

The following was done to overcome the hurdles:

Enhanced WiFi Connectivity: Partner with the IT department to assess and improve WiFi signal strength, ensuring stable access where the JINTRONIX system is being used.

Vendor Collaboration for Updates: Regularly communicate with the JINTRONIX vendor for system updates and game diversification, aiming for enhanced user experience.

Simplified Access: Provide unique login IDs and passwords for easy access, focusing on secure and user-friendly credential management.

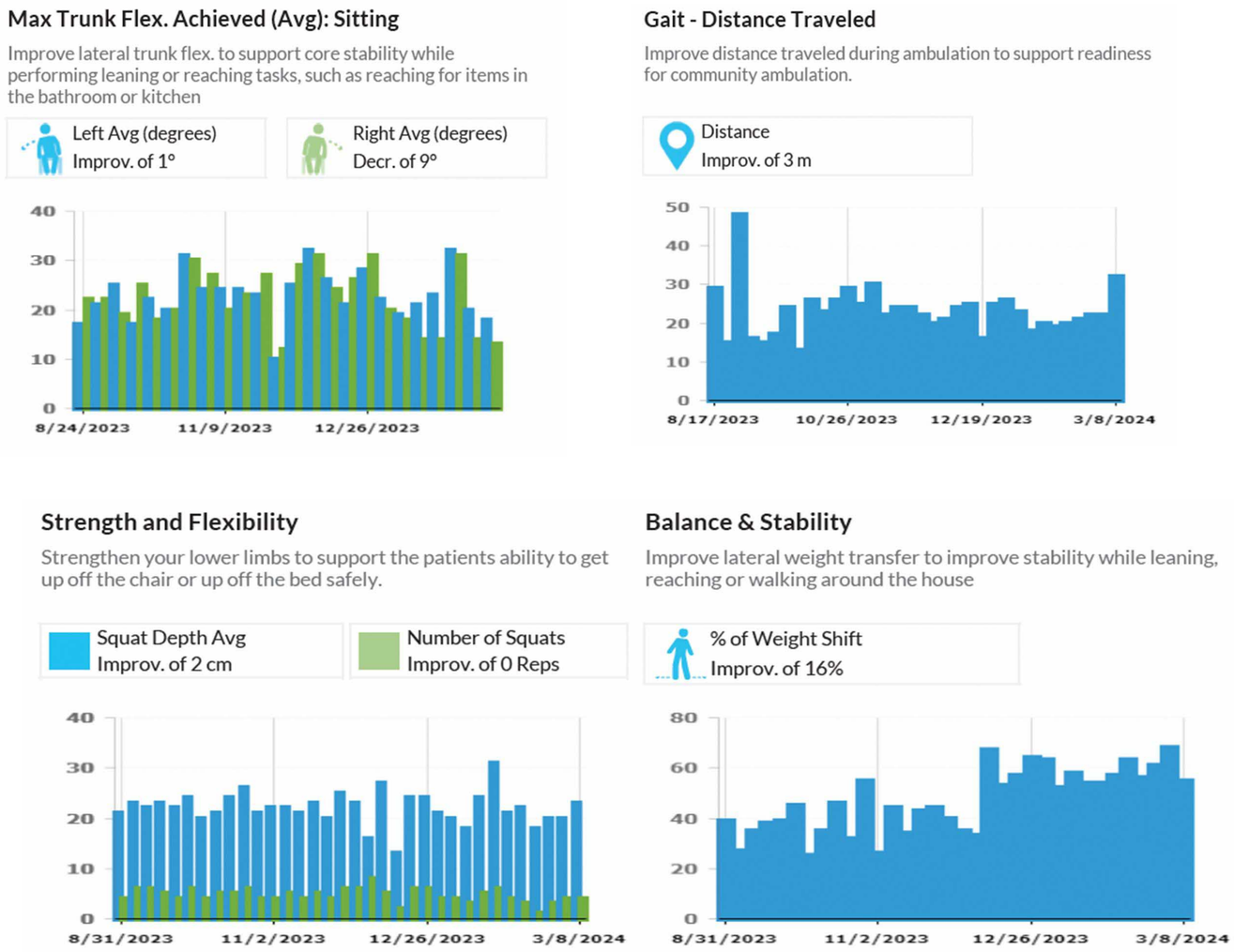
Patient Orientation: Conduct orientation sessions for patients, focusing on system navigation and game selection tailored to individual rehabilitation needs.

Fostering Patient Independence: Initially assist patients in using the system, aiming to reduce support gradually as they become more comfortable and independent.

This plan aims to significantly boost patient engagement with the JINTRONIX system, offering a practical and enjoyable rehabilitation experience. The strategy supports an adaptive, engaging rehabilitation environment centred on patient needs and capabilities by addressing technical challenges and the need for personalised care.

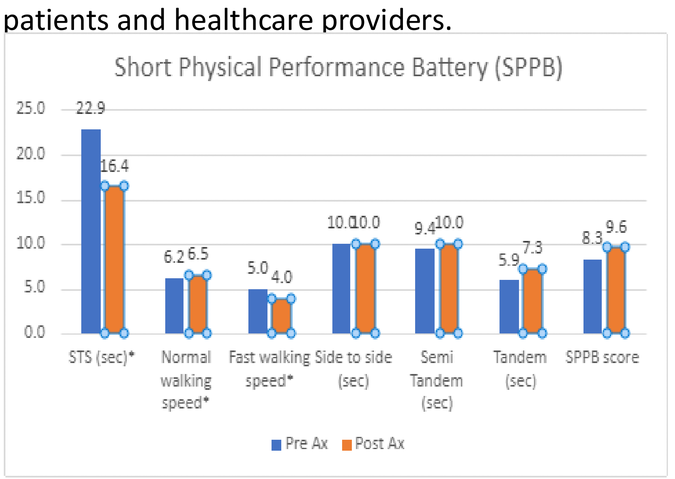
Benefits/Results

The integration of the JINTRONIX system has significantly enhanced patient engagement and motivation, as evidenced by patient feedback and progress tracking. Improvements in functional ability and strength, visualized through graphs, demonstrate the program's success in achieving its goals.

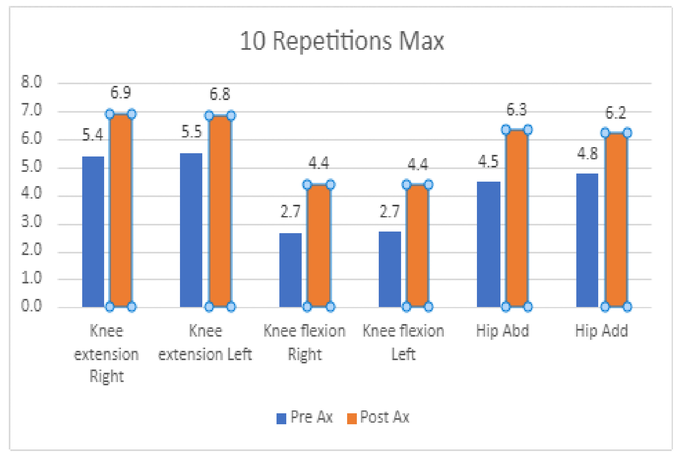


Measurement of Improvement

The Short Physical Performance Battery (SPPB) and strength assessments are conducted every three months to track patient progress in the Gym-Up program. These assessments, complemented by JINTRONIX system data, provide a comprehensive view of each participant's rehabilitation journey. Regular analysis of this data informs personalised feedback and treatment adjustments, ensuring targeted and effective rehabilitation outcomes, visualised through easily understandable graphs for patients and healthcare providers.



Graph 1: Depict improvements in functional ability through SPPB scores, covering balance, gait speed, and lower body strength.



Graph 2: Show strength advancements measured by specific metrics indicated above.

Sustainability & Reflections

The project emphasizes the importance of continuous adjustment and exploration of new avenues for gamification in rehabilitation. Reflecting on the lessons learned, the initiative highlights the transformative potential of integrating technology into healthcare, specifically in rehabilitation services.

In conclusion, the "Wholistic Exercise Program with GAMES" by St. Luke's Hospital represents a pioneering effort in the domain of rehabilitation, leveraging gamification to enhance patient outcomes and satisfaction significantly. This approach not only addresses the physical rehabilitation needs but also incorporates a vital psychological element by making the process more engaging and enjoyable for patients.