Oral Communication

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Physio Adventure: Gamified Therapy System for Cardiac Rehabilitation (Patent Applied)

Topic: Exercise

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BACKGROUND

Cardiovascular diseases have showed a worrisome increase in global prevalence of cardiovascular disease (CVD) and numbers are doubled between 1990 to 2019 and expected to show surge by 2050. Cardiac rehabilitation serves as prevention as well as treatment for CVD patients. Therefore, we have developed device called "physio adventure" which is gamified therapy system that connects rehabilitation equipment to android game on your mobile phone. Patent has been applied for this pocket fit device.

METHODS

A mixed-methods study (n = 76) evaluated the effectiveness of Physio Adventure, registered on ClinicalTrials.gov (NCT05149235). Participants undergoing elective cardiac surgery (valvular or coronary bypass via sternotomy) were included with GCS = 15, and suitable cardiopulmonary/musculoskeletal conditions, without neurological sequelae. Exclusion criteria: difficulty understanding activities, motor/neurological impairments preventing cycle ergometer use, protocol discontinuation, previous cardiac surgeries, hemodynamic instability, breathing discomfort, invasive ventilation, SpO2 < 90%, coagulation disorders, infections, or protocol non-completion.

RESULTS

Cardiac rehabilitation adherence is a challenge due to monotonous regimens. Physio Adventure transforms exercises into immersive adventures, using biofeedback to adjust difficulty based on heart rate and exertion. Pilot testing (n = 16) showed a 40% increase in exercise adherence compared to conventional methods (95% CI: [20%-50%]), with 87% reporting higher motivation (95% CI: [75%-90%]). The device bridges the gap between clinical efficacy and patient engagement.

CONCLUSION

The Physio Adventure prototype demonstrates promising results for improving cardiac rehabilitation adherence. Future developments include game enhancements, directly addressing SDG 3, 7 & 9 and potentially reducing CVD prevalence. Limitations include the small pilot study sample size and the focus on post-surgical patients, potentially limiting generalizability.

Statement of Disclosures

None

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