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Paper Title: A Study of the Physical Fitness Changes Using a Novel Mixed Reality-based Cardiovascular Endurance Exercise System in Young Healthy Adults

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Abstract

Digital technology has become increasingly important in our lives, particularly in the context of health promotion and disease prevention. Wearable devices and smartphone applications are commonly used to monitor physical health and exercise activities. However, these devices often fall short in improving motivation and concentration during exercise. This study aimed to develop a system that could enhance a specific physical fitness skill. The integration of a mixed reality-based exercise system and cardiovascular endurance training was employed to assess the impact of the proposed exercise program. Five young and healthy participants, with an average age of 21.60 ± 0.55 years, were recruited to observe changes in heart rate under different conditions. The results demonstrated that the heart rate during cardiovascular endurance exercise sessions with the mixed reality system was significantly higher than during resting periods, as well as during 50% and 60% of the maximum heart rate. These findings suggest that the exercise program with the mixed reality system effectively improved cardiovascular endurance performance. Moreover, the average heart rate observed during the three Tabata sessions indicated a moderate-intensity level of physical activity.
