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Paper Title:	Design and Development of an Interactive Proportional Myoelectric-controlled Biofeedback Video Game for Knee Osteoarthritis Rehabilitation
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Abstract

This study presents the design and development of an interactive biofeedback video game system aimed at facilitating knee osteoarthritis (KOA) rehabilitation. A low-cost, portable multichannel surface electromyography (sEMG) device is integrating with customizable biofeedback software to achieve more engaging rehabilitation experience. A video game called SpaceGame has been designed and developed. The game is controlled by proportional myoelectric signals from the vastus medialis muscle, allowing users to guide in-game movements in response to muscle contraction levels. The controller's performance was evaluated using correlation coefficients at various muscle contraction levels, revealing strong correlations of 0.87 approximately. Feedback from participants indicated that while the system was generally well-received, improvements in control simplicity and proper session duration could enhance its effectiveness.
