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Moving Multi-Directional Harnessed Balance Training from the Clinic to the Community

College of Sciences and Health Professions

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Abstract

Individuals such as the elderly and disabled frequently have trouble balancing, and therefore have a higher fall risk. A fear of falling can significantly impact mobility, thereby limiting participation in life activities. Balance training programs are often ineffective, because they are not intense enough or related to real life. Our lab has developed a clinic-based intense, engaging multi-directional harnessed balance training program that addresses these concerns. This work describes the process of transitioning the clinic-based training program into a community setting, specifically community gardening. We developed a harness system for a community garden high tunnel with raised beds. We incorporated inexpensive active assist mechanisms to assist standing up. We also equipped the harness system with a wearable sensor system including pressure sensors, a heart rate monitor, and a position motion tracking system. We developed analysis software for the system allowing us to quantify changes in balance. As compared to a non-harnessed environment where falls are possible, we hypothesize that the harness will provide the confidence to practice and thereby develop skill with more challenging balance activities in a real-life environment. We also hypothesize that the active assist mechanism will provide leg strengthening opportunities, further improving balance.