Development of a Virtual Reality Graded Exposure Intervention for Chronic Low Back Pain
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This proposed pilot study will examine the safety and feasibility of a virtual game-based graded exposure intervention within the home environment for individuals with chronic low back pain and high pain-related fear. The project will examine participants’ satisfaction with and adherence to the intervention (treatment acceptability) and provide preliminary information regarding the impact of such intervention on participants’ pain intensity, pain-related fear, disability, and appraisals of common physical activities. The first phase of the project will comprise development of the gaming intervention based on existing prototypes. Subsequently, participants will be randomized into a Virtual Graded Exposure Treatment group or Wait List control. Treatment group participants will be asked to engage in structured performance of activity modules designed for and facilitated through the Microsoft Kinect Gaming Application. Baseline and follow-up assessments will include pain intensity, pain-related fear, disability/pain interference, mood, and appraisals of pain and harm of common physical activities. Participants’ in-game activity appraisals and behavioral performance data will be collected through the Kinect interface. Daily pain, pain-related fear, disability/interference, and mood ratings will be collected during pre-treatment monitoring, intervention, and post-treatment monitoring using a smartphone application. Following study completion, participants will participate in a Focus Group regarding their experience of the gaming protocol. We expect that individuals will demonstrate adherence to the intervention and report high satisfaction/treatment acceptability, thus demonstrating feasibility. Relative to their own baseline and individuals in the control group, we expect participants in the Treatment group to report lower maladaptive pain beliefs, perceived disability, and appraisal of pain/harm value of common physical activities. Although this brief intervention is not expected to significantly reduce ongoing pain, we will assess that no deterioration in pain is observed. Findings will inform further treatment development and Randomized Clinical Trial testing through identified NIH mechanisms. This novel approach to graded exposure will address significant limitations of current treatments as (1) video games are both fun and potent distractors capable of increasing engagement/motivation while reducing attention to pain and (2) the intervention can be completed in a variety of treatment settings under direct or distal provider supervision, allowing improved patient access and large-scale treatment dissemination. The proposed project represents the first application of virtual reality gaming to a theoretically-driven intervention targeting chronic pain, directly targets several limitations of a leading treatment, and will have an important public health impact by incorporating a therapeutic modality into a low-cost and widely accessible technology that can be integrated into the home or clinic environment.