Haptic Simulation Design for Motor Rehabilitation and Fine Motor Skill Training

Task Identification Guide

This document is an outline to ensure the progression of the first CTA meeting with the Duke staff. The discussion should be adaptive; however, the following three goal areas need to be addressed. Although sample questions are provided for each area, they may vary based on the context and progression of the meeting.

For each area, the moderator will ask questions to elicit information about the domain. The domain information should migrate from general to specific. The moderator will frame the discussion to identify descriptive terms for the therapy techniques. These terms, which will be presented to the participants, will serve as requirements for identifying the final technique(s).

For each area, the presentation is the output visible to the CTA participants. Other lists may be added as necessary to drive the task selection.

I. Confirm subject population

Presentation: List of subject characteristics.

In terms of the level of disability, what is the patient pool we are dealing with? Who are we expecting to work with? To what degree does TBI affect their daily lives?

II. Identify high-level goals

Presentation: List of high-level goals for patients

What are the general motor rehabilitation goals for the TBI patients? What do you hope to achieve by working with them?

Describe the high level process that takes place when you meet a patient for the first time? How do you assess their condition (i.e., the screening process)?

III. Identify treatment performance measures

Presentation: List of performance measures

How do you identify the treatment(s) that will be used?

How do these treatment methods meet the rehabilitation goals?

What are the patient performance measures observed during treatment?

Dr. Hoenig noted several “key functions” for task completion, including precision, motor planning, and motor speed. What other measures should we consider?
Are there classifications of subjects based on the screening, treatments, or other criteria?

IV. Identify treatment method candidates

Presentation: List of candidate methods, evaluated against the subject characteristics, goals and performance measures

For our patient pool, what technique (or techniques) is most appropriate?

Ongoing issues:

Make sure what we decide is testable using our current design (fMRI and data collection).

Make sure the methods selected can be reproduced in VR using haptic aiding.

Can we use any of the existing VR software?