harmony innovation

Test Plan for the
Musical Rehabilitation Assistance System

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1. INTRODUCTION

Listed below are the functional and failure tests for the Musical Rehabilitation Assistance System proof-of-concept. All tests assume that the MRAS is powered on and that the Controller is connected to the PC, either by USB cable or Bluetooth wireless protocol.

2. FUNCTIONAL MODE TESTING

Functional Test 1

Test Name	Data Transmission Test
Steps	- Connect MSU cable to Controller - Place the MSU on a flat surface - Set the MRAS Software to capture data - Move the MSU linearly along the surface
Expected Result	Data is displayed in the Software

Functional Test 2

Test Name	Kit Up Test
Steps	- Slip vest onto arms and over shoulders - Seal Velcro closures on front of vest - Fit Controller into vest pocket with faceplate out and USB port up - Locate the MSU cables - Connect MSU cables to the appropriate Controller ports - Strap appropriate MSU to each arm and leg
Expected Result	Patient is fitted with MRAS with minimal difficulty

Functional Test 3

Test Name	Single Arm Movement Test
Steps	- Complete Functional Test 2 - Set the MRAS Software to capture data - Move one arm in a swinging motion
Expected Result	Data for arm movement is represented on in Software Audio feedback is heard for one arm

Functional Test 4

Test Name	Double Arm Movement Test
Description	- Complete Functional Test 2 - Set the MRAS Software to capture data - Move both arms in a swinging motion
Expected Result	Data for both arm movements is simultaneously displayed in Software Audio feedback is heard for both arms

Functional Test 5

Test Name	Step Test
Description	- Complete Functional Test 2 - Set the MRAS Software to capture data - Stand with feet together - Take one step forward with one leg - Bring the other leg forward to line up in a standing position
Expected Result	Data for both leg movements is simultaneously displayed in Software Audio feedback is heard for both legs

Functional Test 6

Test Name	Walk Test
Description	- Complete Functional Test 2 - Set the MRAS Software to capture data - Stand with feet together - Take multiple steps forward, with arms swinging naturally
Expected Result	Data for all limb movements is simultaneously displayed in Software Audio feedback is heard for all limbs

3. FAILURE MODE TESTING

Failure Test 1

Test Name	Synchronous Arm Swing Test
Description	- Complete Functional Test 2 - Set the MRAS Software to capture data - Swing both arms forward and backward synchronously
Expected Result	Audio feedback is heard for one arm only

Failure Test 2

Test Name	Synchronous Leg Swing Test
Description	- Complete Functional Test 2 - Set the MRAS Software to capture data - From a standing position, hop forward
Expected Result	Audio feedback is heard for one leg only

Failure Test 3

Test Name	Out of Envelope Arm Test
Description	- Complete Functional Test 2 - Set the MRAS Software to capture data - Stand with feet together - Take multiple steps forward - While walking, have one arm travel outside the envelope by holding it straight out to the side, swinging it in front or behind the torso, or similarly deviate from the preset path
Expected Result	Audio feedback is not heard for the arm that is outside the envelope

Failure Test 4

Test Name	Out of Envelope Leg Test
Description	- Complete Functional Test 2 - Set the MRAS Software to capture data - Stand with feet together - Take multiple steps forward - While walking, have one leg travel outside the envelope by stepping along an imaginary line, swinging it out wide, or similarly deviate from the preset path
Expected Result	Audio feedback is not heard for the leg that is outside the envelope