**Scientific Abstract**

**Patient adherence to physiotherapist-advised self-care protocols is key to the success of many rehabilitation programs. A better understanding of what underlies patient adherence and how adherence can be affected by external factors, particularly in specific contexts, can not only reshape existing models of patient adherence across medical disciplines but also provide practical information for improving patient self-care.**

With these goals in mind, we propose a multiphase study to: identify the facilitators and barriers to patient adherence as described by patients and their physiotherapists; leverage this information to develop a supportive phone application to improve adherence; and finally, in a randomized control trial, test the impact of the efficacy of the phone application in increasing patient adherence and improving rehabilitation outcomes, using the process of Vestibular Rehabilitation (VR) as a test case.

VR is a particularly important test case, as vestibular disorders affect a large number of people, including children, young adults, and older adults. Almost 20% of people aged 40–50 suffer from dizziness, increasing to 85% among those aged 80–90. Additionally, VR is a relevant test case to study, given its unique characteristics: (1) The rehabilitation period for most patients is usually relatively short (4–7 weeks), making this study practical; (2) The exercises that patients are required to perform as part of the rehabilitation scheme usually lead to great discomfort, including dizziness, nausea, or even vomiting, which may decrease adherence; (3) There is strong evidence that VR exercises are highly effective. VR thus provides a useful test case for studying patient adherence and what external factors may promote or inhibit it.

We begin in Phase 1 with a qualitative study to methodically collect and compile input on the factors that promote or inhibit home health practice from two primary stakeholder groups: VR patients and their physiotherapists. We will compare the results with existing models of factors affecting patient adherence to account for any VR-specific factors. In Phase 2 we will use the input from Phase 1 to develop a phone application designed to overcome the major barriers to home practice as well as to incorporate practice facilitators. Phase 3 will be devoted to running a pilot feasibility study to assess the newly developed phone application among vestibular physiotherapists and patients with vestibular dysfunction. This process will be performed iteratively. In Phase 4 we will develop version 2.0 of the VR phone application, based on conclusions and insights from Phase 3. Finally, in Phase 5 we will conduct a randomized controlled trial to assess the phone application’s efficacy in increasing patient adherence and improving rehabilitation outcomes. The results will be used to create a context-specific model of patient adherence that incorporates specific stakeholder input (Phase 1) together with actual adherence patterns and their effect on functional outcomes (Phase 5).