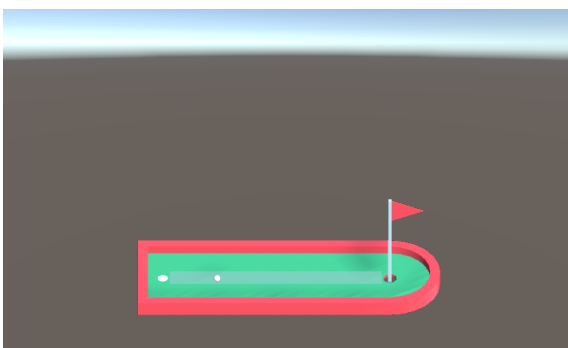
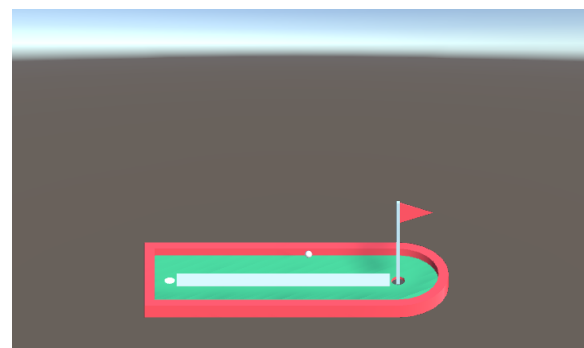


The Motor Control and Language Skill Recovery Application will serve to aid post-stroke rehabilitation of aphasia patients. Patients use a computer mouse to facilitate the transfer of an object across the computer interface. In doing so, patients exercise fine motor skills and cross the midline of their field of vision, addressing two common symptoms of aphasia patients (NIDCD; [Smith et al. 2018](#)). The application employs bandwidth feedback to visually alert the patient if the object strays from the intended path. Points are undesirable in this application, hence the mini-golf aesthetic, as they are accrued when the ball has strayed from the intended path and bandwidth feedback is engaged. By employing such biofeedback, the application is able to overcome the challenge of engaging in patient communication without language. Between rounds, patients will complete a language rehabilitation exercise designed to improve word association ability, vocabulary recall, and language-based memory.

This application could serve to build off of research conducted by [Primaßin et al. \(2015\)](#), which discovered “...indicators of a facilitating interaction between motor and language recovery.” Their study found that patients in the trial who demonstrated “positive improvement of motor skills after therapy also improved in language skills, while the patients with no motor improvements were not able to gain any language recovery.” [Wortmann-Jutt et al. \(2019\)](#) corroborate Primaßin’s findings, expressing that a “combinatorial hand-arm-language paradigm that capitalizes on shared neural networks may therefore prove beneficial for aphasia recovery in stroke patients and requires further exploration.” However, as reported by [Anderlini et al. \(2019\)](#) in a meta-analysis of aphasia rehabilitation studies, research is scarce on the promising correlation between language and motor recovery. If expanded to a clinical study, this application could assist in furthering this area of research.



*Ball on path, bandwidth feedback unengaged*



*Ball off path, bandwidth feedback engaged*