Anatomy of Fencing | Master • Champion

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ABSTRACT & HYPOTHESIS

Disability in the United States directly affects 1 in 5 citizens (CDC, 2015). The Centers for Disease Control and Prevention (CDC) reports that of the 1 in 5 citizens who are disabled, the most common disability type is mobility limitation (CDC, 2015). Our research has shown that, through rehabilitation, stroke victims can be retrained to improve their limited motion. In designing a fencing video game, we intend to train the users to focus on their mobility limitations with the use of Virtual Reality (VR) (Merians, Alma S et al, 2002). Small clinical studies have shown that victims can be rehabilitated to improve their mobility limitations. In our game, players who are unable to physically focus on their mobility limitations can use Virtual Reality (VR) to train their cognitive abilities. It is important to use a user-centered approach in designing the game to ensure that the players who are unable to physically focus on their mobility limitations can use Virtual Reality (VR) to train their cognitive abilities.

INTRODUCTION

Project Purpose:

To create a Virtual Reality (VR) fencing video game.

To learn and develop new skills in using and understanding Unreal Engine 4.

To bring the art, sport, and love of fencing in the form of a PC-platform video game to Fencers and non-Fencers alike, including those who suffer from physical/movement disabilities.

To immerse said players into either a traditional PC-gaming experience, or a Virtual-Reality-based experience using the Oculus [Development Kit 2].

MATERIALS

Unreal Engine 4

Unreal Engine is a game engine (or development tool) used by indie and AAA developers alike to produce games. In addition to being a tool used by the pros, Unreal Engine is a gaming tool we wanted to learn and familiarize ourselves with in preparation for the post-grad industry. Using Unreal Engine as our development tool of choice also allowed us to take advantage of the engine's Artificial Intelligence component, albeit we ended up hard-coding the logic ourselves. This hard-coding was made easier via Unreal's intuitive "Blueprints" visual coding system, which allows for the player to control the action of the game without having to write code. This hard-coding was made easier via Unreal's intuitive "Blueprints" visual coding system.

Music & Sound Effects

We chose to add an instrumental version of a popular song (Heathens, Twenty One Pilots) to the splash screen in order to set the mood before "competing." Although professional fencing matches are usually silent, we felt that adding a popular song would generate positive, yet passive feedback to the player—since the music was instrumental.

METHODS

User Testing

User testing is very important in the development of any product that is intended for a specific audience/consumer base. Since this was a game intended for the players, we had volunteers test the game continuously throughout the development period. Early testing allowed us to tailor the game to be more user-friendly, and expose bugs in our game that we had either not seen or not taken into account. Later testing allowed us to finalize the game and get overall feedback on the game itself.

RESULTS

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REFERENCES


