

# GAME MECHANICS

Although it can be played through the keyboard, our Air Hockey interactive game is mainly designed to be played in the Full Body Interactive Lab of the Pompeu Fabra University. For that reason, each player (our game allows only two players maximum, the blue and the red players) needs an HTC Vive 3.0 tracker (only one tracker per player), through which they can control the actions of the game. With those trackers, the players can control the hockey stick, also called hockey mallet (one stick per player: in total, two sticks).

The idea of the game is to win an air hockey match, where the players need to score up to five goals to satisfy that purpose. We do not consider the time in that, only the goals scored during the match. To score a goal, the players have to control the disk (also called puck) through their respective sticks, competing with each other, in order to put that disk in the respective goals. Each player has its own goal: the blue goal is where the red player has to score, and the red goal is where the blue player has to score.

Now, we will enumerate some of the most important basic dynamics of our game, in order to make more easy the experience of the players:

- **Starting the game:** the game always starts with the disk in the center of the pitch, and with the two players in their respective field zone. These are their respective initial positions. When playing the game with the trackers in the Full Body Interactive Lab, players do not have an initial position, the virtual stick will always correspond to the position of the tracker.
- **Controlling the stick:** if the player is moving around the Full Body Interactive while holding the tracker, it can also move the stick (projected on the floor) at the same time.
- **Hitting the disk:** if the player applies force with the tracker while hitting the disk, that disk moves around the pitch. Regardless of the magnitude of the force that players apply to the stick, the disk always will go with the same velocity around the pitch.
- **Scoring a goal:** if the disk passes through the goals, the player scores a goal. If the disk passes through the red goal, it counts as a blue player goal, and if the disk passes through the blue goal, it counts as a red player goal. Every time the player scores a goal, the sticks and the disk return to their initial position, and the scoreboard is updated.
- **Special ability:** During the match, some gray squares appear randomly situated around the center of the pitch. If one of the two players gets on top of that type of squares, it activates a special ability for him. That ability lasts 15 seconds until it is deactivated automatically, and there are three types of them: double goal, obstacles in the pitch and goal reduction. When the ability is activated, it sounds a message saying what player has activated it and what type of ability it is. The player that has activated the ability, may take advantage of that. If there is one ability square in the pitch, it will not appear until some player activates that ability. Once the ability time has finished, until 15 seconds won't appear another ability square.
- **Finishing the game:** once one player has reached the fifth goal, it sounds some victory music and, after some seconds, the game is restarted completely.