Galactic Games: Fun in a Microgravity Environment!

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Cubic darts©

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**The Beginning**

The Galactic Games challenge immediately sparked our interest. After reading through the task description, we began brainstorming ways to bring more physical activity into astronauts’ lives while ensuring they have fun and build team spirit. Our first thought was to develop a software solution, but since there are already countless interesting applications available, we felt this wouldn’t solve the problem. We started considering a physical/hardware solution instead.

**The Idea**

Most people, even if they don’t play it frequently, enjoy darts. This was our starting point, and we decided to rethink the original game. For safety reasons, we replaced the darts to a ball and envisioned a multiplayer game to encourage team building. We altered the shape of the board to a square (hence the name) for greater layout flexibility and rethought the original gameplay. Unlike in the original game, where the board is mounted on a wall, in this case, an astronaut stands on each side of the board.

**The Game**

The board is secured at all four corners (with fixing rope) to various points in the room. The starting player’s objective is to pass the ball through the grid to the other side of the board. Like darts, each grid cell has a designated point value, which can be rearranged thanks to modular elements. The two players push the ball back and forth through the grid, scoring points. Beyond that, there are no strict rules! The building blocks allow for many different configurations, and due to the programmable switches, any square of the grid can light up, making the game more challenging and expanding the range of possible game modes.

**Example Game**

The astronauts assemble a 5x5 grid, with all squares lit up for both players. When a player successfully pushes the ball through a square, that square will no longer light up. The player who manages to pass the ball through all the squares first wins the game.

**Benefits**

* Builds relationships between astronauts.
* Encourages physical movement in a fun way.
* Improves visual coordination.
* The game can be an excellent tool for research or studies to determine how an astronaut's spatial awareness changes or develops over time.

**Package Contents (for squares with a minimum size of 3x3 cm)**

* Rubber ball
* Main frame (39x39cm) - size may vary.
* LED frame elements (360) - quantity may vary.

(The number of frames determines the possible configurations)

* 4-way connectors (162) - quantity may vary.
* 3-way connectors (40) - quantity may vary.
* 2-way connectors (40) - quantity may vary.

**Further Development Opportunities**

If the laser can see through the columns, the number of connectors could be halved.

The sides of the board can be expanded with a new game element (a wall), where the player can bounce the ball off the wall and pass it through the grid.

If the player attaches an elastic band to their arm, it can also serve as resistance training.