

EVENT 4: THE INERTIA BALL

(revised 8/2023)

OBJECTIVE: To push a bowling ball around a course as quickly as possible by touching it only with a broom.

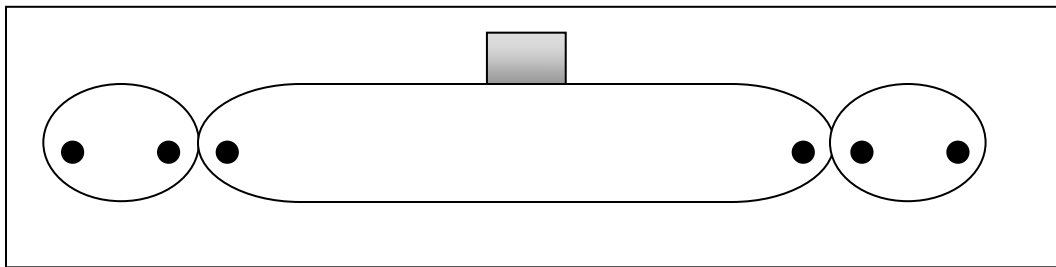
RULES:

- The course will be laid out on a flat floor surface. The boundaries will be laid out with masking tape. The ball must follow the course and weave around the pylons. The pylons will be either traffic cones or 2-liter bottles filled with water. The start / finish box will be one meter square.
 - A **sample course** is shown below. It is about 25m long by 3 m wide. The final course used may vary in size/shape. If needed, directional arrows will be marked.

Pylon ●

Start / Finish Box (shaded area below)

Boundary (outer rectangle)



- The team will be provided a bowling ball and a small corn broom. Approximate dimensions of broom: Total length ~90 cm +/- 10 cm, bristle length ~30 cm, bristle width front-back ~3- 5cm, bristle width at the bottom ~18 cm (this is not a full-size broom; measurements are approximate due to variations in similar products).
- Only the broom bristle can be used to contact the bowling ball.
- The motion of the ball is to be provided by the broom bristle only.
- The ball must stay in contact with the floor at all times (i.e., the ball may not be picked up and carried).
- Only one member of the team may make contact with the ball using the broom bristle or touch the ball at any given time; however, team members may take turns.
- The ball may be touched by a team member only to reposition it if it goes out of bounds.

COMPETITION AND SCORING:

8. Time will start as soon as the ball leaves the start / finish square and will end when the ball re-enters the square and is stopped.
 - a. Timing does not stop if a penalty is called or if the ball goes out of bounds.
9. The duration of a “touch” is defined as 3 seconds of contact between broom and ball.
10. Timing stops when the bowling ball has completed the course as indicated and is back in the Start/Finish box.

11. **Penalties:** Each violation below is penalized by adding 5 seconds for each occurrence to the team’s final time. (i.e. if violation “a” happens twice, then 5 sec X 2 = 10 sec added to the team’s final time, etc.)
 - a. Touch ball with broom for more than 3 seconds
 - b. Every time the ball is touched with anything other than the broom
 - c. Going out of bounds – The ball then will be replaced where it went out while the clock continues to run.
 - d. Hitting a pylon
 - e. Overshooting the finish square

12. The team’s total time is the sum of their stopwatch time + all penalties. The team completing the course in the least total time wins.

Scoring:

$$\text{Your Team's Final Score} = \frac{\text{Winning Team's Time}}{\text{Your Team's Time}} \times 100$$

Tiebreaker (1st place ties only) : Teams that are tied for 1st place will re-run the course to break the tie. The original times for each team will be kept, and 5% will be subtracted from the winning team’s original time. This adjusted time will become the new “winning team’s time” in the scoring formula above.

Disqualification Score: A minimum non-zero score may be applied to participating teams, according to judges’ decisions about disqualification.