

## **EVENT 6: ZERO IMPACT VEHICLE**

**OBJECTIVE:** To design a vehicle which, when released eight meters from a wall, will move as close as possible to a wall without touching it.

### **RULES:**

- a. The starting line will be 8 meters from the wall and parallel to it.
- b. The vehicle is to be designed and built by the team from household materials and/or materials available from hardware stores and/or from art/hobby supply stores. No commercial kit may be used.
- c. The design of the vehicle must meet the following specifications:
  - The total mass of the vehicle system may not exceed 2.0 kg.
  - No dimension of the vehicle may exceed 1.0 meter.
  - The motion of the vehicle must be supplied by mechanical means such as rubber bands, springs weights, pulleys, and mechanical launchers. NO electrical components of any kind may be used, no remote controlled devices of any kind, and no chemical or nuclear reactions.
  - No part of the vehicle or its operating system may be attached to the floor, wall, ceiling, or operator.

### **COMPETITION AND SCORING:**

- a. The vehicle will be started at or behind a starting line of masking tape attached to the floor 8.0 meters from a wall. It will proceed toward the wall and stop as close to the wall as possible, without any part of the vehicle touching the wall. It may not bounce off the wall.
- b. No practice runs will be allowed at the competition site.
- c. Each team will be allowed two trials and the better one of the two will be used for the team's score.
- d. The team will have up to five (5) minutes to modify their vehicle between trials.
- e. The distance from the wall to the nearest part of the vehicle toward the wall will be measured for the purpose of calculating the score.
- f. If both trials result in touching the wall, the vehicle will be disqualified.

$$\text{SCORE} = \left[ \frac{\text{Distance to the wall of the winning vehicle, in cm}}{\text{Distance to wall of your vehicle, in cm}} \right] \times 100 \text{ points}$$

**DISQUALIFICATION SCORE** 20 points less than the lowest score will be awarded for a qualifying vehicle designed in the spirit of the rules that moves forward at least 100 centimeters.

Updates to the rules and Forum discussion / questions with answers are available by going to the NJAAPT website: [njaapt.wildapricot.org](http://njaapt.wildapricot.org) (top menu, "Events" and "Forum"). It is the team's responsibility to periodically check in or inquire about changes and clarifications to the rules.