

SHOT PUT (Σφαιροβολία)

Participating Categories

Primary 4th – 6th, Gymnasium, Lyceum, University, Special

(Based on the Categories of the other Robotex Cyprus Challenges)

A. GOAL

The goal of the Robot Athlete is to throw the ball as far as possible.

The Game requires shot putter movements, precision, mechanics and correct calculations.

The regulations are based on the corresponding regulations of the Minoan Robotics Competition and have been adapted at various points for the competition in Robotex Cyprus.

B. TEAM - COACH

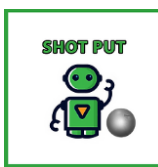
1. Teams and not individuals participate in the Games.
2. Each group can consist of two (2) – five (5) persons. The regulation applies as in the other Robotex Cyprus challenges for the participation of up to one person of age category X in a team of the next age category X+1.
3. Each team should nominate one (1) Robot Operator (from this point forward referred to as Operator).
4. Only the Operator is allowed in the waiting area or play area. The rest of the team will remain in the team area or watch the game from the audience. If a team does not adhere to the above rule and its members roam the field then the team will be disqualified.
5. The team is allowed to change Operator in every round it makes on the track in order for all the members of the team to engage in the sport, but this is not mandatory.
6. Each team is allowed to have only one robot. It is forbidden to change the robot during the competition.
7. Teams are not allowed to share the same robot.
8. If a team has a serious problem with its robot is only allowed to change the microprocessor of the robot after permission from the Head Judges.

C. ROBOT ATHLETE - ATHLETE CATEGORY

The competition is open to Robot Athletes constructed with LEGO and ARDUINO compatible kits.

All Robot Athletes compete together in their age category.

1. The Robot Athlete must be autonomous.
2. The Robot Athlete maximum dimensions must be 25 cm Width x 25 cm Length and weight up to 1 kg.
3. In order to confirm the specifications of the Robot Athlete, the Robot Athlete will be weighted and must easily fit within the measuring/control box.
4. The size of the Robot Athlete measuring/control box is 25 x 25 cm with 2 mm tolerance. This practically means that only robots with maximum length and width of 25cm accepted to compete. It is emphatically noted that the 2 mm tolerance refers to the measuring/control box and not to the robot.
5. The Robot Athlete should be placed in the control box without applying pressure.
6. The Robot Athlete must not damage the track or pose a threat to spectators in any way.
7. The Robot Athlete must have a start and stop button.
8. The Robot Athlete must have an "arm", which will use to throw the ball.



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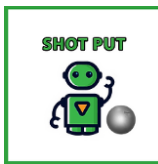
9. Throwing the ball with a shaft/axle/robotic arm or any other equipment that produces torsion is not allowed.
10. The robotic arm must under no circumstances launch/throw the ball with a bow-like mechanism (flexible shafts, wood, plastic, etc.).
11. The Robot Athlete must not throw the ball like a tennis ball launcher machine.
12. The Robot Athlete must not use rubber bands or any kind of rubber anywhere on any part of its arm structure.
13. The use of pneumatic devices / hardware is prohibited in any category of robots.
14. Regardless of robot class, only 1 processor, 4 motors and 4 sensors are allowed

D. TECHNICAL CONTROL

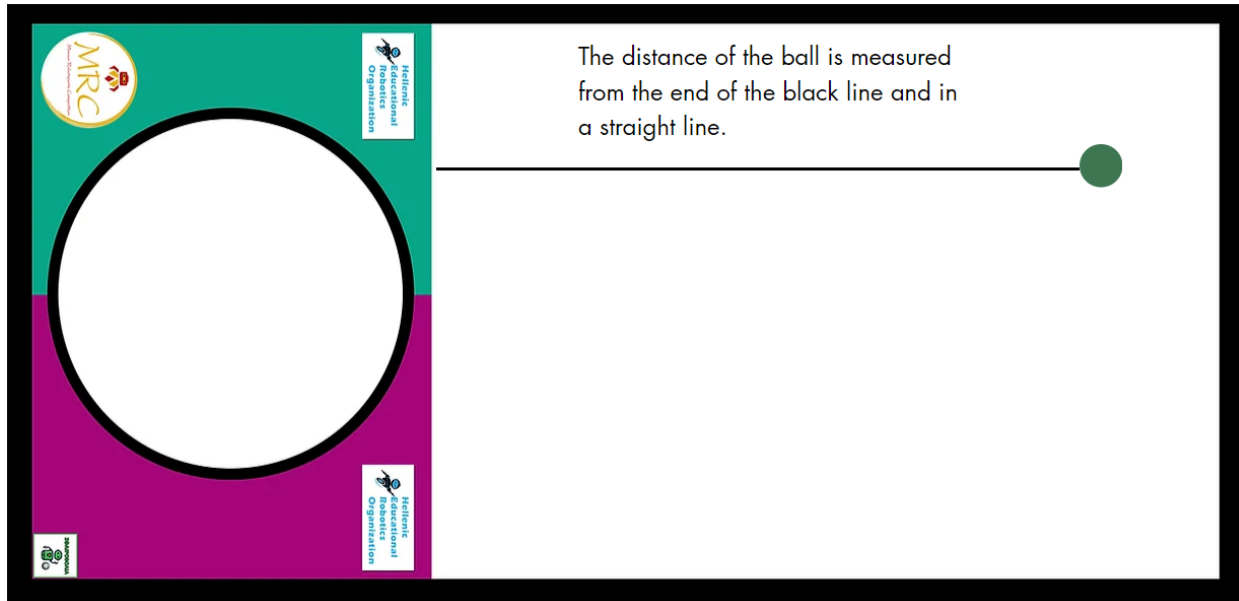
1. The initial technical inspection will take place on the day of the Games at a place and time to be determined by the organizers.
2. Technical inspection includes inspection of the Robot Athlete according to the conditions described above. If the Robot Athlete does not meet the specifications, will not be allowed to compete and will be automatically disqualified from the event.
3. If a team is not in place during the initial scrutineering, the team is automatically disqualified from the match.
4. A secondary technical check is also carried out before each attempt in the match.
5. It is mandatory for the Operator to wear safety glasses. Protective equipment is mandatory on the playing field before and during matches. The protective equipment will be checked during the technical inspection.
6. The lack of protective equipment in whole or in part will be reason for the team to be disqualified from the Game.

E. TRACK

1. The game track has dimensions of 236cm Length x 114cm Width x 5cm Perimeter Barrier Height.
2. Its color is white and the texture of the tarpaulin is printable.
3. It has a 5cm thick black frame around the perimeter.
4. On one of its sides it has a green-purple rectangular frame measuring 105cm Length x 90cm Width.
5. In the center of the rectangle there is a circle with a diameter of 85cm (approximately 65cm white surface - 2cm black ring).
6. The track is mounted on a frame measuring 236cm Length x 114cm Width x 5cm Height Perimeter Barrier.
7. The white part of the track contains sand. Sand fills the white surface of the carpet.
8. The ball that the Robot Athlete must throw is a tennis ball with diameter from 6.54 cm to 6.86 cm and mass of 56.0 gr to 59.4 gr. The ball that the Robot Athlete must throw will be provided by the Organizers of the game.



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9. The measurement is the distance from the end of the black line, vertically and in a straight line until the ball, with the ball placed at its initial point of impact with the sand surface.

[Download the full mat for printing and practice](#)

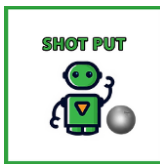
F. THE COMPETITION

PREPARATION

1. The Robot Athlete is placed in the circle on the track with the front of the robot facing away from the sand. The part from which the ball is thrown is considered the front part of the robot.
2. The Operator takes a position behind the Robot athlete, and having previously put on the protective equipment.

START - PROCESS OF THE RACE

1. The Robot Athlete must start autonomously, five seconds after its Operator presses the Start-Stop button (five seconds time delay). During these five seconds, the Operator must move back few steps for safety reasons.
2. A restart is given to the Robot Athlete only on the first attempt. In all other attempts/throws beyond the first, in case the Robot Athlete does not start, the Operator is not entitled to restart it and the attempt is considered invalid and scored with 0 (zero).
3. The Robot Athlete must move in a circular motion towards the opposite end of the circle and throw the ball as far as possible up to a distance of 155 cm.
4. If a Robot Athlete takes the ball out of bounds by more than 155 cm then his attempt is considered void and scored with 0 (zero). The Robot Athlete may only have one restart on the first attempt. An attempt in which the ball, before hitting on the sand, hits at any point on the perimeter frame/barrier (front, right or left barrier), whether it stays inside the track or drops outside the track, is also considered void and scored with 0 (zero).
5. If a Robot Athlete takes the ball out of bounds (front, right, left) then his attempt is considered void and scored with 0 (zero). This is only valid in case the ball does not strike a spot in the sand before being out of bounds and does not apply in case the ball, before going out of bounds, had initially struck a spot in the sand.
6. If a Robot Athlete does not move in circular motion, but in a straight line, its throw is invalid and scored with 0 (zero). The goal of the Game is to simulate the movement of a normal Shot Putter.
7. If one of the Robot Athlete's wheels or any other part of the Robot Athlete goes over the black line around the circle, the attempt is considered invalid and scored with 0 (zero).



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8. If, during the throwing, the Referee determines that the Robot Athlete's arm does not meet the specifications set forth in the Game, he/she is entitled to disqualify the Robot Athlete from the Game.

ROUNDS - ATTEMPTS

1. Each team will have six (6) attempts. The six (6) attempts will not be consecutive. The best three (3) attempts will be recorded in the information system for purposes of results processing.
2. The order in which the Robot Athlete will compete will be announced by the Organizers.
3. If an Operator is not in line for its Robot Athlete attempt, he loses his attempt and the next Operator takes his turn. The Operator who lost the attempt must wait until all attempts are completed and it is his turn again.
4. The referee records the points for each attempt.

END OF AN ATTEMPT

1. When the Robot Athlete throws the ball out of *bounds* (see exceptions mentioned above).
2. If the Robot Athlete experiences a technical problem.
3. If the Robot Athlete during an attempt proves to be unable to throw the ball in a straight path and this poses a danger to him, the referee or the participants on the playing field.
4. Cases described in the "START - PROCESS OF THE RACE" section.

BAN A TEAM

In the following cases the team is excluded from the Game and will have to withdraw.

Team results are not taken into account and are not included in the list of competition results.

1. If a team's Robot Athlete does not comply with the requirements set forth in the rules of the Game and the team refuses to accommodate him.
2. If the Operator behaves in an inappropriate or indecent manner, swears or provokes or verbally or otherwise attacks teammates or the referees.
3. If it is detected that the Robot Athlete does not work autonomously but with the use of remote control, bluetooth, wifi etc.

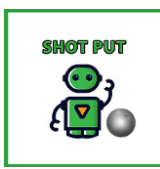
WHAT IS ALLOWED AND WHAT IS PROHIBITED

Allowed

- The extension of the Robot Athlete's arm.

Not allowed

- Robot Athletes to use parts that can harm spectators.
- The use of adhesives to improve adhesion.
- Breaking the Robot Athlete into pieces during the Game.
- Remote control.
- The use of elastic materials (rubbers, belts, etc.). The method of throwing must be exclusively mechanical.
- The wireless connection (bluetooth) with a computer or any other electronic device during the match. Teams found to have connected their robot wirelessly (team members or coaches) during the match will be disqualified from the sport.
- The restrictions listed in the Robot Athlete technical control section.



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G. WINNING TEAM

For each age group separately:

1. A ranking is made based on the distances achieved by the teams in the category.
2. The team with the highest distance in any of the three attempts takes the first place, the team with the next highest distance takes second place, etc.
3. In case of a tie, the second-best distance is considered. If a tie still occurs, the third-best distance is taken into consideration. In case of a tie still exists, the teams compete in an additional game to decide the winning team in the category. In this process, ten (10) minutes are given to the team to improve their Robot Athlete.

Applying the practice followed at Robotex Cyprus, a final attempt (best-of-the-best) will be held between the teams with the highest score in each category. For this final round, the teams make only one attempt and a ranking is made to highlight the winning team with the highest distance.

NOTES

The maximum number of players in MINOAN ROBOTSPORTS GLOBAL OLYMPIAD that takes place annually in Heraklion, Crete is only three (3) and the competition is executed based on [the rules outlined here](#).