

RoboCup Humanoid Soccer League (HSL) Rule Book

RoboCup Humanoid Soccer League Technical Committee

(DRAFT 2026 Working Rules Document, as of 2026-01-16)

Questions or comments on these rules should be submitted via the following channels:

- <https://github.com/RoboCup-HumanoidSoccerLeague/HSL-Rules/Issues>;
- Discord server: TBA, channel #rule-book;
- Email to tba@tba.com.

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1 Purpose and Scope of the RoboCup Humanoid Soccer League

This document defines the purpose, scope, and rules of the RoboCup Humanoid Soccer League for the international RoboCup competition, at the forefront of research, innovation, and education in humanoid soccer across all forms.

1.1 Vision and Mission Statement

The RoboCup Humanoid Soccer League (HSL) will drive innovative research that advances the software and hardware of autonomous robots with a particular emphasis on robots deployed in real-time, dynamic, partially observable, and multi-agent environments. The HSL is well suited to advance *research, development, and education* in:

- Multi-robot systems (5+ robots) requiring decentralized coordination with limited communication over noisy channels.
- Robots that approach or approximate Human-like capabilities.
- A league that promotes research,
- Localization and state-estimation.
- Dynamic humanoid motor control.
- Real-time and on-board robot perception.
- Software engineering for autonomous robots.
- Hardware engineering for autonomous robots.
- Across topics, robot learning in all its forms.

In addition, the HSL aims to:

- Grow the community of humanoid soccer within RoboCup.
- Further education in robotics and is designed such that both teams with a primary focus in research and teams with a primary focus in education are able to participate.
- Encourage active sharing of software and hardware designs for league-wide collaboration.
- Measure the capabilities of the league against the 2050 vision of RoboCup.
- Drive the vision and direction of the rules to encourage good quality soccer between evenly matched teams.

1.2 Core Vision and Requirements for Legal Standard Robot Platforms

The HSL encourages and welcomes the use of standard humanoid robot platforms available within the market to advance the state of humanoid robot soccer and the vision of the HSL.

With the HSL vision in mind, the core requirements for standard humanoid platforms used within the HSL are platforms:

1. Capable of dynamic motions such as fast walking, kicking a ball off the ground, and getting up from the ground;
2. Capable of running state-of-the-art AI neural network models for perception, decision-making, and control;
3. Sufficiently small and affordable that teams can fund multiple robots and travel with them to competitions;
4. Able to be programmed at a low-level of control;
5. Well-Documented.

Community comment, to be discussed: They make sense as ideals, but not as strict requirements. Reward §1.2 so that it is clear that these are ideals and not to be confused for the technical requirements of platforms as in §4. Maybe replace mentions to "requirements"

1.3 Core Vision and Requirements for Constructed Robots

The HSL equally encourages and welcomes the use of fully custom built or modified humanoid robot platforms. To create a welcoming and fair environment for all robot platforms, the HSL ensures the following:

1. Both store-bought and custom-built robots can participate in a fair competition without risking damage to their robots.
2. The tournament is designed such that games are interesting for all participating teams and match-ups are fair.
3. The tournament is designed such that all currently existing teams are able to participate.
4. Details about hardware and software of the robots is made available to teams and organizers to ensure a fair competition and encourage scientific exchange.
5. League resources are distributed such that both store-bought and custom-built robots equally benefit from them.
6. Robots are designed with the goal of RoboCup in mind, thus restricting the allowed sensors where possible to humanoid sensors. Exceptions to this rule can be made if it benefits scientific progress.

3 and 5 are also hard to enforce, since terms like "sufficiently small and affordable" and "well-documented" are too subjective.

2 Environment

2.1 The Field of Play

The competition consists of three distinct divisions, categorized specifically by the maximum physical height and weight of the robotic platforms.

To ensure a fair and proportionate competitive environment, the field dimensions, number of players and ball size will vary to align with the specific requirements of each division¹.

2.1.1 Field surface

The matches are played on artificial turf with a height between approximately 20 to 30 mm, except for the small division, which has a height between 8 and 12 mm, also approximately.

The color of artificial turf must be green. No particular shade is required, but the green must contrast well with the field markings and the ball and should not be very dark.

2.1.2 Field markings

The field of play must be rectangular and marked with continuous lines. These lines belong to the areas of which they are boundaries.

The color of field markings should be white, whether applied by tape, paint, or made from white turf.

The two longer boundary lines are called touchlines (or sidelines). The two shorter lines are called goalines.

The field of play is divided into two halves by a halfway line, which joins the midpoints of the two touchlines. A Team's Half is the half of the field that is closest to a team's own goal, where they primarily defend against opposing attacks.

The center mark is at the midpoint of the halfway line. A circle is marked around it, defining the center circle, a region used for kick-offs and other specific plays.

The goal area and penalty area are defined using lines drawn at right angles to the goal line.

All lines must be of the same width, which must be between 5 and 12 centimeters.

Figure 1 shows the field markings with the lines and its names.

¹Games are played in three divisions depending on weight and height of the robots. See 3.1 for more details.

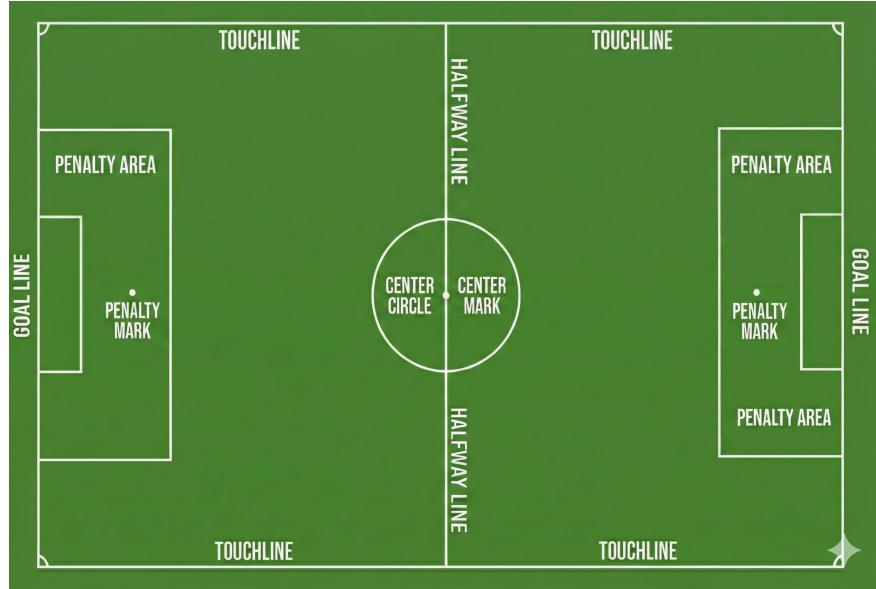


Figure 1: A labeled diagram illustrating the standard markings and key areas of a soccer field.

2.1.3 The goal area

Two lines are drawn at right angles to the goal line; the length and distance from the midpoint of the goal line depend on the division.

These lines extend into the field of play and are joined by a line drawn parallel with the goal line. The area bounded by these lines and the goal line is the goal area.

2.1.4 The penalty area

Two lines are drawn at right angles to the goal line; the length and distance from the midpoint of the goal line depend on the division.

These lines extend into the field of play and are joined by a line drawn parallel with the goal line. The area bounded by these lines and the goal line is the penalty area.

Within each penalty area, a penalty mark is made.

The distance from the midpoint between the goalposts depends on the division.

2.1.5 The corner arc

A quarter circle from each corner is drawn inside the field of play. The radius of the arc is 0.5m for the Medium Field and 1.0m for the Large Field. The Small field does not have corner arcs.

2.1.6 Dimensions

There are three field sizes that can be used for the proposed divisions, described in Table 1.

Field	Width (meters)	Lenght (meters)
Small Field (S-Field)	6	9
Medium Field (M-Field)	6 to 9	9 to 14
Large Field (L-Field)	9 to 14	14 to 22

Table 1: Approximate field sizes.

Table 2 shows the dimensions of the Small, Medium and Large soccer fields and Figures 2, 3 and 4 shows the diagram of the three soccer fields. Note that the Middle division can be played on the S-Field or the M-Field, while the Large division can be played on both the M-Field and the L-Field. More detailed technical drawings are provided in Section C.

Note that measurements are from the outside of the lines as the lines are part of the area they enclose (as it is in the FIFA Rules).

NOTE THAT WE STILL NEED TO DEFINE THE GOAL DIMENSIONS

ID	Description (all values in meters)	S-Field (former KidSize)	M-Field (former AdultSize)	L-Field (similar to MSL)
A	Field length	9.0	14.0	22.0
B	Field width	6.0	9.0	14.0
C	Goal length (depth)	0.6	0.6	0.6
D	Goal width	2.6	2.6	2.4
E	Goal Area length	1.0	1.0	1.0
F	Goal Area width	3.0	4.0	5.0
G	Penalty Area length	2.0	3.0	3.5
H	Penalty Area width	4.0	6.0	7.0
I	Penalty Mark distance	1.5	2.0	2.5
J	Center Circle diameter	1.5	3.0	4.0
K	Border strip width (min.)		1.0	
L	Corner Arc radius	none	0.5 m	1.0
	Line width		0.05	0.12
	Penalty and center mark size		0.10	0.15

Table 2: Field dimensions by field type, in meters.

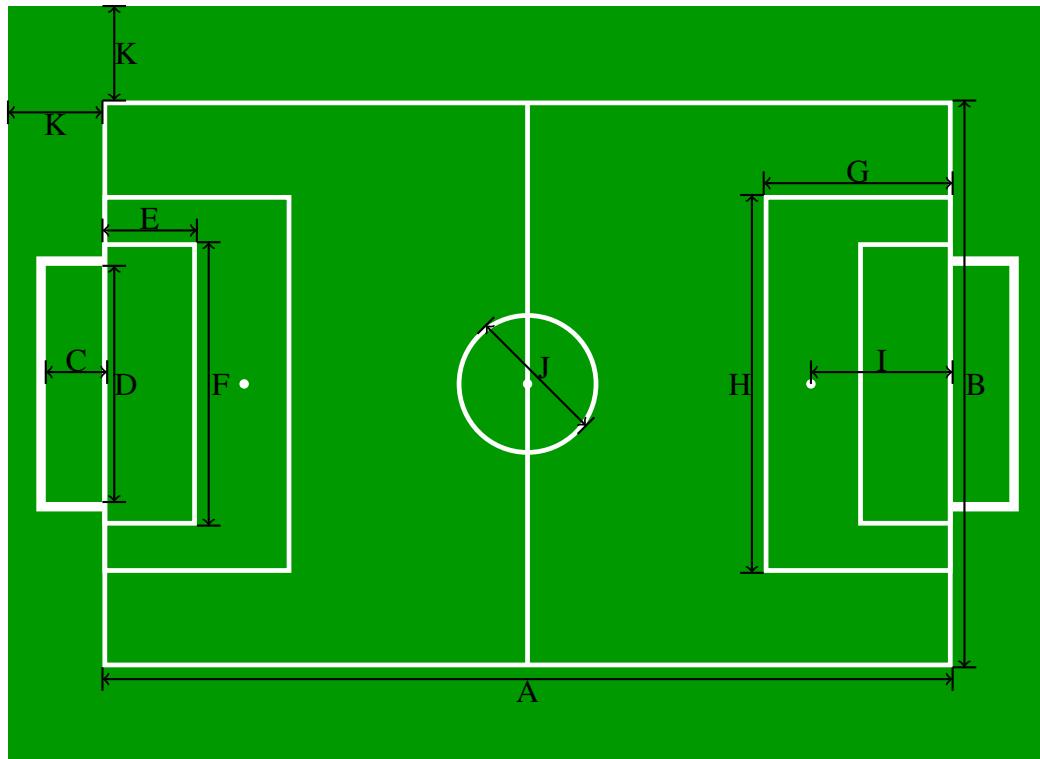


Figure 2: Schematic diagram of the small soccer field – S-Field (scale: 1/80)

2.1.7 Goals

A goal must be placed on the center of each goal line. A goal consists of two vertical posts equidistant from the corner flagposts and joined at the top by a horizontal crossbar.

The goalposts and crossbar must be made of wood, metal, or other approved material and must not be dangerous to the players.

The goalposts and crossbar of both goals must be of the same shape, which must be square, rectangular, round, elliptical, or a hybrid of these options.

The goalposts and crossbar must have the same width and depth, which is not less than 8 cm and does not exceed 12 cm.

The goalposts and the crossbar must be white. Goal nets and any net supports may be white, gray, or black.

Goals must be anchored securely to the ground. Portable goals may only be used if they satisfy this requirement.

need a figure how goalposts must be placed on the goal line

to be discussed -
HL: must not be green or white

to be discussed

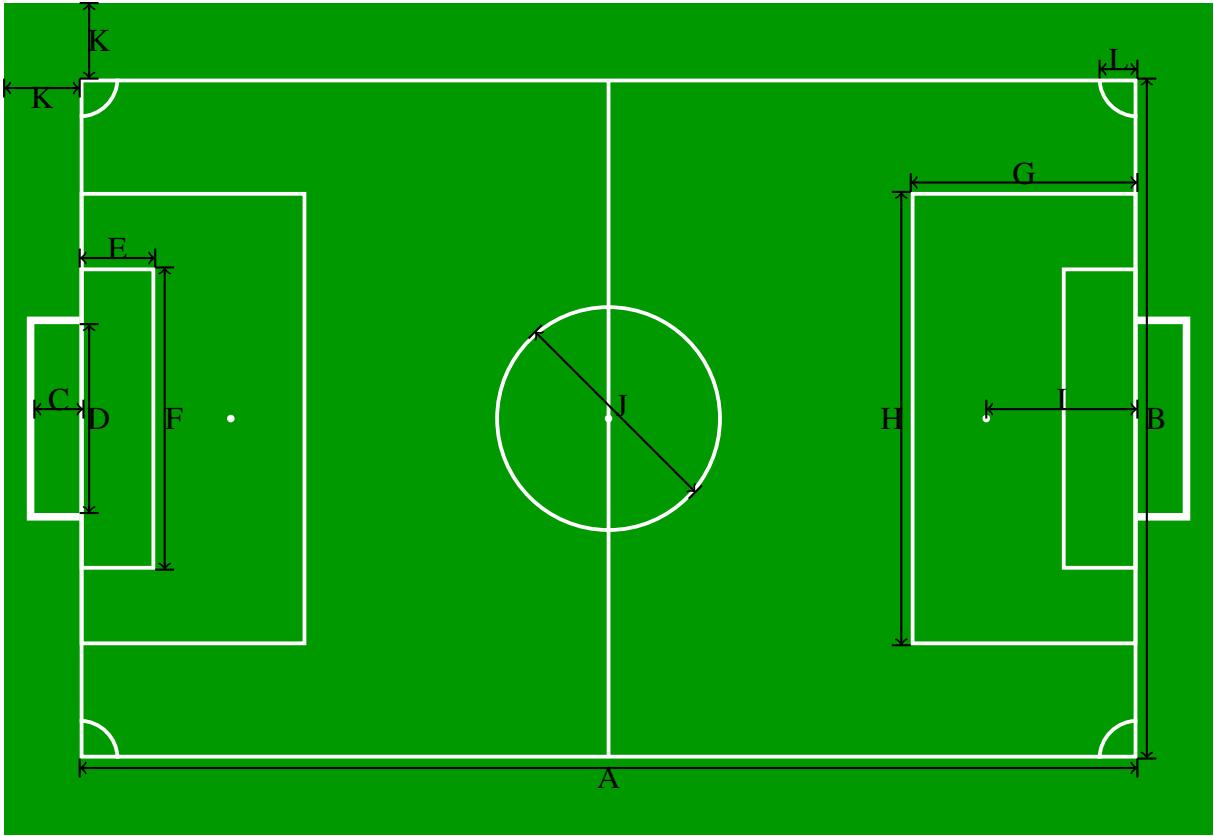


Figure 3: Schematic diagram of the medium soccer field – M-Field (scale: 1/100)

Division	Width (meters)	Height (meters)	Depth (meters)
Small	1.8	1.2	0.5 to 1.0
Middle	2.4	1.5	0.7 to 1.2
Large	3.0	2.0	1.0 to 2.0

Table 3: Approximate dimensions of the goals.

2.1.8 Definition of Inside and Outside

An object (such as a robot or the ball) is considered *inside* a region of the field if any part of it overlaps or touches the boundary lines that define that region, or if it is fully contained within the region, in the air or on the ground. It is considered *outside* the region only when no part of it, or its downwards projection, remains within or on the boundary lines of that region. This definition applies to any designated area of the field, except the goal area (See Figure ??).

Exception for the Goal: The ball is only considered *inside* the goal (and thus a goal is scored) when the entire ball has wholly crossed the goal-side edge of the goal line, i. e., when no part of the ball remains on or above the goal line and the ball is outside the field of play.

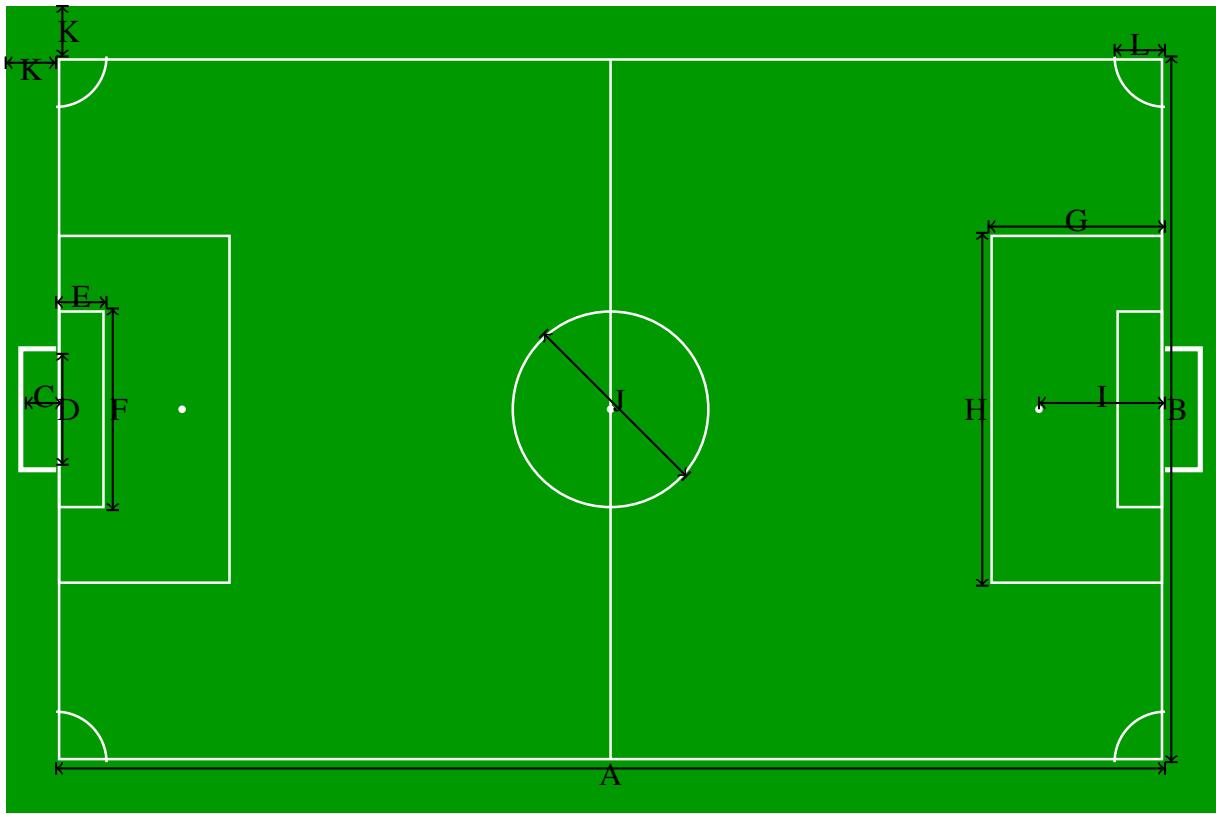


Figure 4: Schematic diagram of the large soccer field – L-Field (scale: 1/150)

2.1.9 Venue Setup

Fields may be located close to one another. Barriers will not necessarily be constructed between adjacent fields to block the robots from seeing other fields, goals, or balls. However, barriers will be constructed to block sight between any fields that are not located at least three meters apart. Hence, for each side of a field that is adjacent to another field, either barriers will separate the fields or at least 3 m will be between the carpet of adjacent fields.

To be decided: move venue setup and equipment requirement specific topics to an annex for local organizers?

2.1.10 Lighting Conditions

The HSL does not mandate specific or controlled lighting conditions for a match venue. It is expected that the venue provides reasonable lighting suitable for general visibility (e. g. indoor with artificial lighting, outdoor with natural lighting, or a combination of both).

finding from Ro-
HOW:
Barriers and Nets should be required around every field

The lighting conditions depend on the actual venue. Fields should be placed near or under windows where possible.

Whether window lighting is used or not, ceiling lights should be provided as necessary so that most of the field is at least 300 lx (preferably 400 lx). This lighting may include variations such as glare, brightness, shadows, or mixed lighting conditions that can change throughout the match.

However, the lighting must be predominantly white, and colored lighting that significantly changes the perceived color of the field or ball is not allowed.

Teams participating in the HSL are encouraged to design their robots to handle a variety of typical lighting environments that may be encountered during a match. Natural and non-natural light must be free to reach the field. The technical committee can delimit a zone near the field where humans must not stand and where any items blocking the light sources are forbidden.

2.2 The Ball

2.2.1 Qualities and measurements

All balls must be spherical, made of or resembles the weight, form, movement characteristics and appearance of leather or other suitable material.

The balls for each division are defined in table 4.

Division	Ball Type
Small	FIFA Mini Ball ²
Middle	FIFA size 3 or 4
Large	FIFA size 5

Table 4: Balls used in each division

2.2.2 Replacement of a defective ball

If the ball bursts or becomes defective during the course of a match: the match is stopped. It is restarted by dropping the replacement ball at the place where the original ball became defective.

If the ball bursts or becomes defective whilst not in play at a kick-off, goal kick, corner kick, free kick, penalty kick or throw-in: the match is restarted accordingly.

If the ball becomes defective during a penalty kick or penalties (penalty shoot-out) as it moves forward and before it touches a player, crossbar or goalposts, the penalty kick is retaken.

The ball may not be changed during the match without the referee's permission.

2.2.3 Additional balls

Additional balls which meet the requirements of 2.2 may be placed around the field of play and their use is under the referee's control.

3 Teams and Players

3.1 Divisions and Configurations

A team belongs to one division, which is one of Small, Middle and Large. Main competition matches only take place between members in the same division.

Teams in each division can choose to play in two team configurations: Foundation - with a smaller number of players; and Advanced - with a larger number of players. If in a game one of the teams chooses to play in a Foundation configuration, then both teams must play in this configuration to ensure fairness. The maximum number of players in a game for each configuration is shown in Table 3.2.

In the Middle division, starting from the quarter-finals onwards, all matches will be played in the Advanced configuration.

Both the division and the configuration of a team are defined before the competition (precise modality TBD) and cannot change during the competition itself.

Maybe move some definitions from the beginning of Comp. Structure over here?

3.2 Number of Players

A match is played by two teams, each with a **maximum** number of players determined by the division the game takes place in and the configuration level of the playing teams, as illustrated by the following table:

Division	Foundation team	Advanced teams
Small	4	7
Mid	3	5
Large	3	5

At most one player per team on the field may be designated as *goalkeeper*, the others are all *field players*.

When playing at full strength, a team must have a *goalkeeper* on the field.

Goalie distinguishing feature TBD: Number? Color?

Each of the players has a unique jersey number from the set $\{1, 2, 3, \dots, 20\}$.

Will we have flexible numbers on the game controller? Otherwise, the numbers should be limited to the game controller numbers.

3.3 Number of Substitutes

In addition, each team may prepare *substitute players* outside the field. A *substitute player* may be substituted in to become a *field player* or *goalkeeper*.

Number of allowed substitutes, needs clarity - limited, un-

3.4 Substitution procedure

3.4.1 Changing the goalkeeper

Any of the other players may change places with the goalkeeper, provided that the referee is informed before the change is made. The change is requested during a stoppage in the match.

All substitutes are subject to the authority and jurisdiction of the referee, whether called upon to play or not.

Some more sections of the Humanoid rule book, like substitution procedures for players and goalkeeper, sanctions, etc. should be moved to the chapter Game Process

4 Robot Players

4.1 The Design of the Robots

Robots participating in the HSL must have a human-like body shape with a torso, head, two arms, and two legs, as well as human-like symmetry and proportions regarding sizes of the body parts and weight distribution.

The robots must be able to stand upright on their feet, to walk on their legs and to be able to recover from a fall (get back to a standing position).

Definition of humanoid robot from Kajima et al, 2005

The only allowed modes of locomotion are bipedal walking, running, and jumping. Soccer related movements such as dribbling, kicking, or other forms of ball handling are also allowed.

The design of the robot's arms, including their length and placement, shall permit arm use and behaviors that are reasonably comparable to those of humans. Examples of permitted uses include assisting in getting up after a fall or picking up and throwing the ball (where otherwise allowed by the rules).

Arm configurations that enable behaviors significantly different from those of humans are not permitted. In particular, robots must not use their arms to provide continuous support for locomotion, such as walking on arms or using arms as additional legs.

4.1.1 Size Restrictions

All robots participating in the HSL must comply with the following restrictions:

The length of the legs H_{leg} , including the feet, satisfies $0.35 \cdot H_{top} \leq H_{leg} \leq 0.7 \cdot H_{top}$, where H_{top} is the height of the top of the robot. The length of the leg is measured from the first rotating joint where its axis lies in the plane parallel to the standing ground to the tip of the foot.

to be discussed - including height restrictions

A classic piece of human anatomy and art history, Leonardo da Vinci’s “Vitruvian Man” famously depicts a man whose arm span is equal to his height, creating a 1:1 ratio. Therefore, the arm span, A_{span} , including the hands, should satisfy $0.8 \cdot H_{top} \leq A_{span} \leq 1.2 \cdot H_{top}$.

Based on H_{top} , the following size restrictions apply for each division:

- Small: $H_{top} \leq 1.1$ meters;
- Middle: $H_{top} \leq 1.25$ meters;
- Large: $H_{top} \leq 1.9$ meters.

H_{top} is defined as the height of the robot when standing upright (with fully extended knees). H_{top} is measured with the head of the robot oriented in such a way that it is tilted to either its maximum upwards tilt angle or the horizon line, whichever is lower.

The height of the head H_{head} , including the neck, satisfies $0.1 \cdot H_{top} \leq H_{head} \leq 0.3 \cdot H_{top}$. H_{head} is defined as the vertical distance from the axis of the first arm joint at the shoulder to the top of the head.

4.1.2 Weight Restrictions

The robot’s Body-Mass Index (BMI) is defined as follows: $BMI = \frac{M}{H_{top}^2}$, where M is the mass of the robot in kg and H_{top} its height in meters.

The Body Mass Index (BMI) of the robot should be: $5 \leq BMI \leq 30$.

The following weight restrictions apply for each division:

- Small: Weight ≤ 15 kilograms;
- Middle: Weight ≤ 25 kilograms;
- Large: Weight ≤ 80 kilograms.

4.1.3 Safety

A player must not use equipment or wear anything that is dangerous to himself or another player.

Robots competing in the physical competition must be equipped with an emergency stop button that makes the robot immediately desist with all motions, or ideally go limp and/or cut power to the actuators. In addition to the emergency stop button, robots may only have up to two additional

From the
humanoid
league
rules, to
be dis-
cussed

physical or virtual buttons: One to start the robot behaviour and one to stop the behaviour. The buttons must be clearly labeled. If the robot has more buttons that cannot be detached, they must be visibly masked during the games.

In ...tbd... size, robot handlers are allowed to carry an additional remote emergency stop button. This button must be worn either around the neck or on the belt of the robot handler and must be clearly marked. Each emergency stop button can only be connected to the robot of the robot handler that holds the button. The remote emergency button cannot perform any additional functions and does not replace the regular emergency button. Robot handlers must keep their hands clearly away from the button unless the button is being pressed. Robot handlers must not use the remote emergency button to intentionally incapacitate their robots.

to be discussed:
4.7.1 allows buttons, community also re-motes

to be discussed,
will there still be robot handlers?
the game can be restricted

to be discussed,
add other safety measures from our discussion?

4.2 Approved Standard Platforms

The following commercially available robotic platforms are approved for participation in the HSL.

The following are the list of pre-approved standard platforms that require no modifications:

Manufacturer	Model	Restrictions
Aldebaran	Nao V5, and Nao V6	
Robotis	DARwIn-OP	
Booster	T1, and K1	
Fourier	GR1, GR1-Pro, and GR2	
Unitree	G1++, H1++	

Additional humanoid robot platforms can be approved upon request. Please send your request for approval to rc-spl-tc@lists.robocup.org.

Change to new mailing list when ready

4.3 Hardware

Modifications or additions to the robot hardware are allowed.

No additional hardware is permitted, including off-board sensing or processing systems. Additional sensors besides those originally installed on the robots are likewise not allowed.

to be discussed,
divisions, list of permitted robots, self-built robots, etc.

to be discussed

4.4 Sensors

Teams participating in the HSL competitions are encouraged to equip their robots with sensors that have an equivalent in human senses. These sensors must be placed at a position roughly equivalent to the location of the human's biological sensors. In particular, ...

to be discussed

The sensors and their placement shall be chosen such that they allow the robot a spatial perception similar to humans. The sensors are evaluated along the following two general guidelines:

1. *Foster and encourage research and development towards human-like perception capabilities.*
Sensors aiming to directly emulate human senses, like a camera or a microphone. Use of such sensors is explicitly *encouraged*.
2. *Enable research and development under the constraints of the current state of the art in technology and research, as long as this does not undermine current research efforts as declared in point 1.*

Sensors that compensate for current shortcomings in technology and state of research, like one-dimensional distance sensors with limited range, or two vertically arranged cameras in the robot NAO.

Generally, *passive sensors* are preferred to *active* sensors that actively emit signals.

4.4.1 Intrinsic Perception and Proprioception

Any sensing capability aiming at measuring the internal state of the robot is permitted. This includes temperature, current consumed by the motors, joint positions, etc.

4.4.2 Visual Perception

The visual sensors, e.g., cameras of the robot shall be arranged such that the combined visual field is *contiguous* and limited to dimensions similar to a human, which corresponds to limitations in the opening angle: horizontal $\leq 180^\circ$ and vertical $\leq 140^\circ$.

The visual sensors shall be located in the head of the robot.

The combined dynamic visual field that can be observed by the robot solely by moving its cameras (similar to human eye movements) and the head is limited to horizontal $\leq 220^\circ$ and vertical $\leq 180^\circ$.

The cameras are restricted to visual information in the range of the light visible to humans.

The cameras can provide dense visual information, such as a rasterized image, or sparse information, such as visual events (event cameras).

4.4.3 Visual (dense) Depth Perception

Passive integrated devices that provide dense depth information, such as stereo cameras, are permitted and encouraged.

Active integrated devices that provide depth information, such as cameras with an active infrared projector or time-of-flight cameras, are permitted but discouraged. Their use might be prohibited in the future.

4.4.4 Orientation

Sensors providing information regarding the robot's orientation in space with relation to the ground are permitted. This includes sensors such as gyrometer, accelerometer, as well as integrated inertial measurement units (IMU), as long as they provide only relative measurements and no measurements of the absolute direction, such as a compass.

An IMU with an integrated compass can be used as long as the compass is disabled.

The sensors can be placed in the head and/or in the torso of the robot.

4.4.5 Sound Perception

The sound sensors, e.g., microphones, shall be placed in the head of the robot. The number of microphones is limited to ??

4.4.6 Haptic Sensing

Any passive sensor allowing haptic measurement is permitted, such as force sensors, touch sensors, buttons/bumpers, capacitative touch sensors.

Haptic sensors can be placed at any location of the robot's body and are not limited in number.

4.4.7 Distance Sensing

Active and passive sensors for one-dimensional distance sensing with a limited range are permitted if their use is limited to compensate for shortcomings in the spatial awareness of the robot in the close proximity.

The number of such distance sensors is limited to 4.

The use of distance sensors is discouraged and might be prohibited in the future.

4.4.8 Summary

The following table briefly summarizes pre-approved sensors. The use of listed sensors that are considered human-like is encouraged. The use of listed sensors that are not considered human-like is accepted, but discouraged and might be prohibited or limited in the future.

Sensor Type	Human-Like	Comments
RGB camera	yes	opening angle limit: horizontal $\leq 180^\circ$, vertical $\leq 140^\circ$
Stereo camera	yes	
Event camera	yes	
Active RGB-D based on infrared projection	no	discouraged
Active RGB-D based on time of flight (TOF)	no	discouraged
Microphone array	yes	
Gyro	yes	
Accelerometer	yes	
Compass	no	magnetic measurement sensors are not allowed
Integrated inertial measurement units (IMU)	yes	no compass or must be disabled and not used
Force sensors	yes	
Touch sensors	yes	
Buttons / Bumpers	yes	
Capacitive touch sensors	yes	
Near range infrared sensor	no	
Sonar / ultrasound sensors	no	
1D LIDAR and laser range sensor	no	with limited range
Intrinsic sensors	yes	temperature, current, joint positions, etc.

4.5 Team Markers

Robot bodies must be colored mostly with a neutral color, such as black, gray, white, or silver, and be non-reflective.

Robots must use colored jersey shirts as team markers. A jersey is a tank top-style shirt that may start at the neck and go down to the waistline, and does not cover the arms of the robots. It must cover at least 50% of the upper body of the robot.

Reinaldo:
I think
we for-
got about
compass,
so I added
to the ta-
ble

Clarity
needed for
manufac-
turers that
do not
provide
IMU de-
tails, just
access to
data

Jerseys must have a primary color that comprises more than half of the jersey. The primary color must be recognizable from the front and back.

Jerseys should not contain distracting patterns that could be confused with other elements of the soccer field, such as field lines or the ball.

Jersey material must be non-reflecting, non-shiny, and non-glittery. Jerseys may be manufactured from fabric and fine mesh.

The two teams must wear colors that distinguish them from each other and also the referee and the assistant referees.

Each team must provide two jersey designs in distinctly different solid colors. The jersey color must clearly contrast with any uncovered parts of the robot to ensure reliable identification.

Robots must display clear identification numbers (player number): a large number on the back and a smaller number on the front.

The goal keeper robot must be marked uniquely so that it can be easily distinguished from the other robots of a team by the referees.

Sponsorship logos will be allowed on jerseys, though detailed guidelines are still being finalized.

Jersey designs must be submitted for approval prior to the competition.

to be discussed

4.6 Goalkeeper

The *goalkeeper* may use any of the allowed jersey numbers. The *goalkeeper* must wear a jersey with a primary color different from the primary colors used by the *field players* of both teams.

4.7 Communication and Control

Robots participating in the HSL competitions must act autonomously while a competition is running. No external power supply, teleoperation, remote control, or remote brain of any kind is allowed. Communication is only allowed among robots on the field, and between the robots and the GameController.

between the robots and the referees,

4.7.1 Non-wireless Communications

In general, there are no restrictions on communication between robots in play on the field using visual signaling (e. g., gestures) or the robot's built-in microphones, speakers, and infrared transceivers. However, communication that causes excessive discomfort to an audience, affects the safety of an audience, or violates normal playing rules is not permitted.

4.7.2 Wireless Communications

...

The use of remote processing/sensing is prohibited.

To be discussed.
Take this section
from the SPL
rules?

5 Judgement

The referees are the only humans permitted on the carpeted area (i. e. the field and the border area). They have the duty to enforce the rules of play and ensure the game proceeds smoothly before, during, and after the scheduled time.

Move to:
Law 5 -
The Ref-
eree

5.1 Head Referee

The head referee is the principal authority of the game and takes all decisions regarding the flow of the match and the enforcement of the rules. Any decision of the head referee is valid. The head referee's decision is final and can not be changed afterwards, even by video proof. There is no discussion about decisions during the game, neither between the assistant referees and the head referee, nor between the audience or the teams and the head referee.

Law 5.1
- The au-
thority of
the referee

Law 5.2 -
Decisions of
the referee

Calls. The head referee announces decisions by a clear loud call, and (as required) whistle sound. The whistle, or where there is no whistle the first verbal word of the referees calls, defines the point in time at which the decision is made. The referees should make efforts to use consistent and clear calls, and it is preferable for referees to use the calls as specified in these rules.³ The intention of specifying the referee calls is for clarity and consistency across games.

Whistle. Where a whistle is required, the head referee first whistles and then announces the reason for the whistle. The head referee may choose to use any normal sports whistle. Each whistle sound should be short and not too loud as to interfere with other fields and simultaneous games. The head referee must only sound the whistle in circumstances described in these rules.

The head referee should avoid handling the ball (except for placing a ball for kick-off), and avoid handling the robots. Their duty is to monitor and adjudicate the game. The head referee should only handle robots and the ball if absolutely necessary to expedite gameplay or removal of penalized robots, where the assistant referees are otherwise occupied or too far away, and only if it doesn't compromise their own safety.

Law 5.5 -
Referee's
equipment

The head referee should be equipped with a suitable referee jersey, whistle, coin, and black or dark-blue socks.

Law 5.3
- Powers
and duties
- miss-
ing larger
parts from
Fifa rules

The head referee may decide at any point before or during a game to relocate any objects around the field, or direct persons to another position around the field.

5.2 Assistant Referees

³The calls specified in these rules are detailed in English. With the agreement of the teams, the referees may use suitable calls in any language. The exception to this are technical challenges that depend on the calls as specified.

Law 6 -
The Other
Match
Officials

The following paragraph depends on future safety decisions, specifically regarding whether assistant referees will be allowed to handle the robots, and in which circumstances. Such decisions may also depend on the division.

The assistant referees handle the robots and the ball. They take the robots out when they are penalized, and they put the robots in again. If a team requests to pick up a robot, an assistant referee will pick it up and give it to one of the team members once the head referee approves. An assistant referee will also put the robot back on the field. An assistant referee will also replace the ball when it goes off the field or becomes stuck between a players feet. At the discretion of the head referee, more tasks can be delegated to the assistants (Section 5.4).

Law 6.1 -
Assistant
referees

Potentially
add: (un-
less oth-
erwise
specified
by divi-
sion rules)

Assistant referees should only enter the field to execute a decision made by the main referee. They should not prevent robots from falling during the game.

A game has at least two assistant referees. If agreed upon by the referee teams or under certain circumstances, additional assistants may be present, up to a total maximum of four. See subsection A.7.

The assistant referees should be equipped with a suitable referee jersey, and black or dark-blue socks.

5.2.1 The Stationary Assistant

This only makes sense to have if the indirect kick rule and/or the referee gestures from SPL-2025 are used.

5.3 GameController Operator

The operator of the GameController sits at a PC in the technical area. As with the head referee, the operator should make efforts to use consistent and clear calls.

They will signal any change in the game state or penalties to the robots via the wireless as they are announced by the head referee. Note that for both kick-offs and goals, the moment of whistling is determining, not the verbal announcement of the head referee. They should repeat the call of the head referee as they do so, to make sure it was heard correctly.

The operator will also inform the assistant referees when a timed penalty is over and a robot has to be placed back on the field. They should announce events that occur automatically in the GameController due to elapsed time, such as the ball coming into play after a kick-off, penalty kick or free kick, or the state changing from ready to set.

If the
penalty
procedure
would
benefit
from an
advance
warning
about 10
seconds
before the
end of the
penalty,
it can be
mentioned
here.

They are also responsible for keeping the time of each half. They should count aloud the remaining seconds in a half once the time remaining is 5 s or less.

5.4 Game Process

5.4.1 Pre-game Referee Meeting and Task Delegation

Law 5.x

Before the game starts (no later than 10 minutes before), the people scheduled to serve as referees meet up to discuss the upcoming game. At least, they must decide which team is going to provide the head referee and the GameController operator and which is going to provide the assistants, and whether the head referee is going to delegate any duties to the assistants. Other topics that ensure a smooth cooperation among the referees can also be discussed.

The head referee should talk to the assistants to determine what tasks or lesser decisions, if any, they wish to delegate to them to ensure that the game is arbitrated as smoothly as possible. This is left to the discretion of the head referee, based on their expertise in the role and their ability to focus on multiple events happening in the game at the same time and apply the corresponding rules.

The head referee must clearly communicate what tasks are delegated to which person, so that everyone understands their duties during the game.

If no agreement can be found, the default is that the responsibility for most calls and decisions falls upon the head referee, as determined by the rules.

Common examples of tasks that can be delegated are:

- Determining which team is to be given a free kick when the ball goes out of the field (Section ???) and communicating this to the head referee. The final call is still made by the latter.
- Indicating violations requiring a penalty, with the final call still being made by the head referee.
- *More examples should be added depending on how the rules are shaped up*

The above list is not prescriptive: the head referee can always choose to delegate zero, one, some, or all of these tasks. It is also not exhaustive: through discussion among the head referee, the assistants, and the GameController operator, other tasks not listed here may be identified and delegated.

Care should be taken to not overburden any one person and not to blur the roles of head and assistant referees. Conflicts in the authority of the referees should be avoided, but if any do occur, the head referee's decision is final.

5.4.2 Pre-game Team Meeting

Law 7.x

Both teams send a representative called team captain to the field 10 min before their match starts. This time should be used to welcome each other, assign team colors (see Section ???), choose side and kick-off (see Section ???), and discuss any other topics related to the match.

5.4.3 Referee–Team Communication

Law 5.x

During the match, only the team captains are allowed to communicate with the head referee. Only the team captains and two more people per team are allowed to stay next to the game controller tables. The rest of the team locates themselves around the other sides of the field if they want to watch the match. This allows the referees easier communication with the team and the game controller operator gets less disturbed.

The exact name of this area depends on how the tables are laid out

After the match the teams thank the referees for their duty.

During all phases of the match teams and referees are communicating with respect to each other.

5.4.4 Referees during the Match

Law 5.5 - Referee's equipment

The head referee and the assistant referees should wear socks of black or dark blue color and avoid reserved colors (white and green) in their leg clothing. They may enter the field in particular situations, e. g., to remove a robot when applying a penalty. They should avoid interfering with the robots as much as possible.

Pending safety for bigger divisions

5.4.5 Visual Signal

Law 5.6 - Referee signals or Law 6.6 Assistant referee signals

Pending decision

5.4.6 Additional Assistant Referee

Law 6.3 - Additional assistant referees

5.5 Referee List for Friendly Games

Law 5.x

During a competition, especially (but not only) during the setup days, several teams may want to participate in friendly games with each other if a field is available to play in. People willing to volunteer for judging these games as head referee, assistant referee or GameController operator may submit their name to a list managed by the Organizing Committee, so that the teams organizing the friendly game are aware of their availability. This is especially recommended for those who wish to gain referee experience.

Ultimately, the teams organizing the friendly game are still free to decide whether to call volunteers from the list or otherwise choose their referees.

The Organizing Committee is in charge of maintaining the referee list and should be approached at the competition site if one should want to volunteer.

6 Game Process

Law 7 and the following ones.

6.1 Law 7 – The Duration of the Match

6.2 Law 8 – The Start and Restart of Play

A kick-off starts both halves of a match, both halves of extra time and restarts play after a goal has been scored. Free kicks (direct or indirect), penalty kicks, throw-ins, a goal kicks and corner kicks are other restarts (see Laws 13–17). A dropped ball is the restart when the referee stops play and the Law does not require one of the above restarts.

If an offence occurs when the ball is not in play, this does not change how play is restarted.

6.2.1 Kick-off

Procedure

- The referee tosses a coin and the team that wins the toss decides which goal to attack in the first half or to take the kick-off.
- Depending on the above, their opponents take the kick-off or decide which goal to attack in the first half.
- The team that decided which goal to attack in the first half takes the kick-off to start the second half.
- For the second half, the teams change ends and attack the opposite goals. The kick-off at the beginning of the second half has to be taken by the team which did not take the kick-off in the beginning of the first half.
- After a team scores a goal, a kick-off has to be taken by their opponents.

For every kick-off:

- all players must be in their own half of the field of play,
- the opponents of the team taking the kick-off must be outside from the center circle until ball is in play,

- the ball must be stationary on the center mark,
- the referee gives a signal,
- the ball is in play when it is kicked and clearly moves,
- if the ball does not move 10 seconds after the referee has given the signal then the ball is in play and the opponents of the team taking the kick-off may enter into the center circle,
- a goal may not be scored directly against the opponents from the kick-off,
- if the team taking the kick-off has three or more robots on the field then two different robots need to touch the ball before scoring a goal. If a team taking the kick-off has only two or less robots on the field, the robot taking the kick-off has to touch the ball at least one time outside the center circle before scoring a goal.

From humanoid league, to be discussed

This statement needs confirmation by TC

Offences and sanctions

In the event of any kick-off procedure offence, the kick-off is retaken.

6.2.2 Dropped ball

Definition of dropped ball

A dropped ball is a method of restarting play when, while the ball is still in play, the referee is required to stop play temporarily for any reason not mentioned elsewhere in the Laws of the Game. In the virtual competition, the only reason for a dropped ball to be called is that the ball has moved less than 5 centimeters in the last 2 minutes of play.

Dropped ball definition and procedure are different in FIFA rules and in RC-HL rules. RC-HL rules are used in current edition because FIFA rules of dropped ball are hardly to be implemented by robots

Procedure

The game is continued at the center mark. A goal can be scored directly from a dropped ball. The procedure for dropped ball is the same as for kick-off, except that the players of both teams must be outside the center circle. The ball is in play immediately after the referee gives the signal

Offences and sanctions

- If a player moves too close to the ball before the referee gives the signal, a kick-off is awarded to the opponent team.
- The ball is dropped again:
 - if it is touched by a player before it makes contact with the ground,
 - if the ball leaves the field of play after it makes contact with the ground, without a player touching it.

6.3 Law 9 – The Ball In and Out of Play

6.4 Law 10 – The Method of Scoring

6.5 Law 12 – Fouls and Misconduct

6.6 Law 13 – Free Kicks

6.7 Law 14 – The Penalty Kick

6.8 Law 15 – The Throw-In (Kick-in)

6.9 Law 16 – The Goal Kick

6.10 Law 17 – The Corner Kick

BELOW THIS LINE IS THE OLD STRUCTURE

WE MIGHT USE SOME OF IT IN THE FUTURE

6.11 Structure of the Game

6.12 Game Periods and Robot States

6.12.1 Game Periods

6.12.2 Robot States

6.13 Kick-off

6.13.1 Field-Side Selection and Initial Kick-off

6.13.2 Initial Kick-off

6.13.3 Ball in play

The ball is in play and kick-off ends once:

-
- it is touched by the attacking team and has visibly moved at least one ball radius from its initial position, or
 - *KickOffBallFreeTime* seconds have elapsed in the playing state.

Move/define
time
constants

The GameController and head referee will indicate this by the call “Ball Free”.

6.13.4 Ball out of play

The ball is out of play when:

- the ball has left the field of play, by wholly crossing the touchline or goal line (see Section 2.1.8), or
- play has been stopped by the referee.

The ball remains in play at all other times.

6.14 Goals

6.14.1 Goal Scored

A goal, including an own goal, is scored when the ball is considered *inside* the goal as defined in Section 2.1.8.⁴

The head referee signals a goal by a single whistle blow, followed by the call “Goal <color>”. The head referee should point with one arm towards the center of the field. To assist robots listening for whistles, the referee should blow the whistle from on the carpet at the end of the fields where the goal was scored.

After a team scores a goal, the game proceeds with a kick-off (see Section 6.13.2) for their opponents. The GameController signal (to the robots) of a goal being scored, will be delayed by 15 s.

⁴The goal line is part of the field.

6.14.2 Invalid Goal

6.14.3 Competition Rules

6.15 Kick-in / Throw-in

6.16 Goal-Kick

6.17 Corner-Kick

6.18 Free Kick

6.18.1 Direct Free Kick

6.18.2 Indirect Free Kick

6.18.3 Visual gesture

6.18.4 Execution

6.19 Indirect Kick

6.19.1 Fallback mode

6.20 Penalty Kick

6.21 Game Stuck

6.21.1 Local Game Stuck

6.21.2 Global Game Stuck

6.22 Request for Pick-up

6.23 Timeout

6.23.1 Request for Timeout

Each team can call a **maximum of 1 timeout per game** with a total time of no more than **5 minutes**. During this time, both teams may change robots, change programs, or anything else that can be

done within the time allotted. During normal game time, a team may call a timeout at any stoppage of play (after a goal, stuck game, before a half, etc.). Alternatively, a team may call a timeout before a penalty shootout if they have not used their timeout yet (see ??).

The timeout ends when the team that called the timeout says they are finished, at which time they must be ready to play. The other team must be ready to play at the time the timeout runs out, or **2 minutes** after a prematurely called end of the timeout, whichever is earlier. If the other team is not ready to play in time, it has to call a timeout of its own.

The clock stops during timeouts, even during the preliminaries, and is reset to the time when the current stoppage of play began.

After the completion of the timeout, the game resumes with a kick-off for the team which did not call the timeout.

If a team is not ready to play at the assigned time for a game, the referee will call the timeout for that team. After the expiration of such a timeout, if the team is still not ready to play then the referee shall start the game with only one team on the field. The team that was not ready can return its robots to the field as per the rules for “Request for Pick-up”. If both teams are not ready, the referee will call timeouts for both teams. This “double timeout” expires after 10 minutes.

6.23.2 Referee Timeout

6.24 Extra Time

6.25 Mercy Rule

A game will conclude once the game score shows a goal difference of 10. Ending the game is mandatory once a goal difference of 10 is reached.

6.26 Drop Ball Rule

6.27 Ball Stop Rule

6.28 Determine the Winner of a Match

6.28.1 Winning Team

6.28.2 Winner after Drawn

6.29 Penalty Kick Shoot-Out

6.29.1 Penalty Kick

6.29.2 Sudden Death Shoot-Out

7 Forbidden Actions and Penalties

7.1 Penalty Procedure

If an infringement is detected, the head referee clearly announces the offense and the assistant referee sends the corresponding signal through the game controller. If a robot commits an offense in the vicinity of the ball (0.75 m for small size, 1.5 m for middle and large size), the game is interrupted and the offending player is removed according to the standard removal penalty. The offending player may additionally be issued a yellow or red card. After the offending robot is removed, the opposing team restarts play with a free kick. If the offense occurred away from the ball, the offending robot is penalized and removed, but play is not interrupted.

From humanoid league, to be discussed

7.2 Standard Removal Penalty

Robots that commit an offense receive a standard removal penalty. If a player receives a standard removal penalty, the head referee announces this by calling "pick-up [color] [player number]". The offending player is marked as picked up in the game controller. The robot handler of the offending team must immediately pick up the offending robot and remove it from the field. The robot handler must not interfere with the game in any way while picking up the robot.

After the robot is removed from play, the team is allowed to perform any kind of maintenance on the robot. When the robot is ready to serve its penalty, the robot handler places the robot on the side line outside of the field, on the height of the penalty mark and announces to the head referee that the robot is ready. After the head referee confirms that the robot is ready, the penalized robot must serve a time penalty of 30 seconds before it is allowed to enter the field. While the penalty is being served, the team is not allowed to interfere with the robot in any way. If the team interferes with the robot, the penalty needs to be retaken.

7.3 Forbidden Actions

7.3.1 Manual Interaction by Team Members

Team members are not allowed to interfere with the game or with any robots that are currently in play or serving time penalties in any way, unless explicitly instructed to do so by the head referee.

7.3.2 Damage to the Field

A robot that damages the field, or poses a threat to spectator safety, will be removed from the field for the remainder of the game.

7.3.3 Disciplinary Sanctions

7.3.4 Cautionable Offences

7.3.5 Sending-off Offences

7.4 Illegal Positioning

7.4.1 Before and During Kick-off

7.4.2 Own Goal Area

7.4.3 Defender Encroachment During Free Kick

7.4.4 Penalty Area During Penalty Kick

7.5 Forbidden Motion

7.5.1 Motion in Standby

7.5.2 Motion in Set

7.6 Fallen or Inactive Robot

7.7 Local Game Stuck

7.8 Ball Holding

7.9 Player Stance

7.10 Player Pushing

7.11 Playing with Arms/Hands

7.12 Leaving the Field

Robots must remain inside the field (see Section 2.1) during play, except as permitted by specific rules (e.g., during specific set-plays that allow leaving the field, or returning from a penalized state).

If a robot is outside the field but is actively and clearly attempting to return, temporary lenience may be granted. However, if there is no clear intent to return, the robot is considered to be *leaving the field* and may be penalized accordingly. Illegal positioning also occurs when a robot is not in its designated area during set plays.

Should this be stricter for larger robot divisions as they pose a greater threat if leaving the field

7.13 Jamming

7.14 Aborting a Penalty

7.15 Penalties against Teams or Humans

The referee can issue yellow and red cards against humans or teams at their discretion. Cards can be issued for offenses such as

- Offensive or abusive behaviour
- Repeatedly ignoring referee instructions
- Repeatedly entering the field without permission
- Breaking the game rules to gain an advantage

Cards that are issued against humans or teams must be reported to the TC immediately after the game. Cards against humans or teams persist between games. Receiving two yellow cards results in a red card. If a human receives a red card, they will not be allowed to enter the field or team area during games for the remainder of the competition. If a team receives a red card, they are disqualified from the competition.

Further clarify illegal positioning and consequences. Will refer to SPL/HL rules for inspiration.

A The Official RoboCup Competition Rules

This section contains rules that are not directly relevant for games and that may not apply at local opens. However, these rules will be upheld at the yearly international RoboCup competition.

A.1 Qualification Procedure and Code Usage

A.2 Announcement of code and hardware usage

A.3 Game Structure

A.4 Competition Mode

A.5 Setup and Inspection

A.6 Competitions

A.7 Referee Duty and Selection

A.8 Rules for Forfeiting

Teams who do not make a good faith effort to participate in a scheduled game are considered to forfeit the game.

If a team notifies the technical committee that they wish to forfeit less than two hours before their scheduled game time, simply fails to show up for their game, or decides during their game that they wish to forfeit, then the opposing team will play the match against an empty field. However, any own goals will not be scored. Hence, after an opponent forfeits, the team playing against an empty field cannot do worse than they were doing at the time the opponent decided to forfeit. Teams may choose to forfeit at any stoppage of play. However, once a forfeit is announced, they may not reverse this decision.

If a team notifies the technical committee that they wish to forfeit at least two hours before their scheduled game time, the following procedure will be followed.

- If a team chooses to forfeit a match in the round robin games the other team plays the match against an empty field. However, any own goals will not be scored.

-
- If a team chooses to forfeit in a knock-out game it gets replaced by the next best qualified team, i. e. the team it kicked out or left behind in the round robins.

Note that there are a few unlikely cases that are not covered by these rules. If a situation is not covered by these rules, the technical committee and the organizing committee will work together to make a decision.

Any forfeit will result in a qualification penalty being recorded (see ??) but the circumstances of the forfeit will affect the severity of the offense and the impact on future qualification.

A.9 Source Code Releases

All teams that have participated in RoboCup must subsequently release code from that year's codebase. The code must be licensed such that other RoboCup participants can use it, although the license may place conditions on its use. The preferred type of release is the full source code of the software that was running in the team's last game at RoboCup. In case this is not possible (e. g. due to legal reasons), it is required that at least the source code related to the novel contributions (as given during the qualification process) is published. Participation in technical challenges may come with additional requirements on the amount of components to be released.

The source code must be published and its availability announced on the league mailing list (PlaceholderforLeagueEmail) by 2026-10-15. Failing to publish source code by the deadline will result in a qualification penalty being recorded (see ??).

A.10 Subsequent Year Pre-qualification Procedure

A.11 Qualification Penalties

A.12 Disqualification During Competition

A team may be disqualified during the RoboCup competition for:

- A serious violation of the terms of a team's qualification
- Gaining a Qualification Penalty during the course of the competition (see ??)
- A serious breach of ethics, or serious behavior unbecoming of participants of RoboCup.

Example. A team promises to use their novel contribution in RoboCup games, but fails to do so. Alternatively, a team deliberately misleads the technical committee about the novelty of their work and/or their contribution to the league, such that they are deemed to have copied another team.

A team can *only* be disqualified by a decision of the *Board of Trustees of the RoboCup Federation*. The RoboCup Soccer League executive must petition the board in writing at their soonest possible availability. The executive must simultaneously inform the relevant team of the petition in writing.

A disqualified team automatically forfeits all games (see Appendix A.8). For practicality, the disqualification should not apply *retroactively*. However, by majority vote of the team leaders, provisions for retroactive disqualification may be made in the fairness of the affected teams.

A.13 Awards

A.13.1 Best Referee Voting

A.13.2 Best Humanoid Award

A.14 Trophies

B Venue Setup

This appendix contains relevant information for setting up and running RoboCup competitions. It is intended to serve as a guideline for local organisers on how to deal with infrastructure, playing fields and other relevant issues.

B.1 Field Construction

The standard soccer field consists of 8mm artificial turf mounted on a flat wooden base. The dimensions of the different field sizes are shown in table 2. More detailed technical drawings are provided in Appendix C to this document. Note that the penalty mark is a cross and there is a dash at the midpoint of the halfway line. White field lines can be made of the same 8mm artificial turf, but in white (e. g. made of white artificial turf), spray-painted or taped. Regardless of the solution, the field lines must be durable throughout the competition. Care should be taken to ensure the fields are as flat and level as possible. Additionally, the wooden base should be well-supported and should not give when humans stand, walk or play soccer on it.

tbd - keep the SPL cross or make it a circle?

B.2 Lighting Conditions

It is expected that the venue provides reasonable lighting suitable for general visibility (e. g. indoor with artificial lighting, outdoor with natural lighting, or a combination of both). The lighting conditions depend on the actual venue. Fields should be placed near or under windows where possible. Whether window lighting is used or not, ceiling lights should be provided as necessary so that most of the field is at least 300 lx (preferably 400 lx). This lighting may include variations such as glare, brightness, shadows, or mixed lighting conditions that can change throughout the match. However, the lighting must be predominantly white, and colored lighting that significantly changes the perceived color of the field or ball is not allowed. Natural and non-natural light must be free to reach the field. The technical committee can delimit a zone near the field where humans must not stand and where any items blocking the light sources are forbidden.

Boards and nets around the fields are required given the current developments

Secure placement of cameras on the side and/or the corners of the field

B.3 Field Placement

Fields may be located close to one another. Barriers (i. e., boards and nets) must be placed around every playing field to stop shots that could otherwise fly into neighbouring fields or into the audience.

More details incl. table placement needed

B.4 Technical Area

Next to the field, along one of its longer sides, there is the technical area. It must contain a computer with two monitors for the purpose of sending GameController messages to the robots and observing compliance with the wireless network usage rules. In addition, there can be a larger monitor facing the field showing the Game State Visualizer. The technical area can also contain cameras directed at the field and related equipment with the following use cases:

- Stream video data to the Internet to allow the public to watch games
- Record video data for later analysis and creation of statistics

The cameras must be protected in such a way that deflected balls cannot hit them.

C Field Technical Drawings