



## Soccer Rules (2011)

*Note: Changes from 2010 rules are highlighted in red.*

*Translated by RoboCupJunior Hong Kong*

### RoboCupJunior Soccer Rules 2011

RoboCupJunior Soccer Technical Committee 2011:

Giacinto "Gio" Spina, Canada

Maverick Luk, China

Peter van Lith, Netherlands

Peter Wallhead, Australia

Sebastian Polly, Germany (*Chair*)

Tairo Nomura, Japan

These are the official rules for RoboCupJunior 2011. They are released by the RoboCupJunior Soccer Technical Committee. These rules have priority over any translations.

### 1. TEAM 隊伍

#### 1.1 Regulations 規則

A **team** consists of one or more members. 隊伍由一個或以上的隊員組成。

Each team must have a **captain**. The captain is the person responsible for communication with the referee. A team can replace its captain during the competition. The captain is not allowed to wear any yellow or blue clothes that can be seen by robots (to avoid interference with the goal colour).

每隊必須有一名**隊長**。隊長有責任與裁判溝通。比賽期間，隊伍中的隊員可替代隊長。隊長不容許穿著黃色或藍色的衣服，避免機械人對球門辨別造成干擾。

#### 1.2 Violations 違規

Teams that do not abide by the rules are not allowed to participate.

若隊伍不遵守規，則不允許參加比賽。

A referee can require the team captain to change clothes or to be replaced by another team member if interference with goal colour is suspected.

當球門顏色懷疑受到干擾時，裁判可要求隊長更換衣服或由另一隊員擔任。

### 2. ROBOTS 機械人

#### 2.1 Number of robots / substitution 機械人/替換數目

Each team is allowed to have at most two robots. A substitution of robots within a team or with other teams is forbidden.

每支隊伍僅容許擁有兩個機械人。嚴禁隊伍內部或隊伍之間替換機械人。

#### 2.2 Interference 干擾

Robots are not allowed to be coloured yellow or blue in order to avoid interference with the goal colours. Yellow or blue parts used in the construction of the robot must either be covered by other parts from the perception by other robots or be taped/painted with a neutral colour.

機械人不得塗成黃色或藍色，以避免干擾機械人辨認球門顏色。機械人構造上的黃色或藍色部分必須用其他部件遮蓋或塗成另一顏色。

The robot must not emit infrared light. Infrared light reflecting materials must not be used on the outside. If robots are painted, they must be painted matte.

機械人不可發射紅外線。外殼不可使用能反射紅外線的物料。如果機械人被塗上顏色，則必須為啞光。

Minor parts are irrelevant as long as opposing robots are not affected. The supposed affected team has the burden of proof that is affected.

小部分無關緊要，只要對手機械人不被影響。假設有受影響的隊伍是有責任提供證據被受影響。



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### 2.3 Control 控制

The use of remote control of any kind is not allowed. Robots must be started manually by humans and be controlled autonomously.

禁止使用任何遙控方式操控。機械人必須由人手啟動的及必須是自動控制的。

### 2.4 Communication 通訊

Robots are not allowed to use any kind of communication during game play. Communication between two robots via bluetooth class 2 or class 3 (range approximately 20 meters) is allowed. Teams are responsible for their communication. The availability of frequencies cannot be guaranteed.

比賽期間不容許機械人之間有任何通訊，除隊伍內機械人之間以藍芽Class 2 / 3 (範圍約20米) 通訊例外。隊伍有責任負責他們機械人的通訊。任何頻率的有效性是不能保證。

### 2.5 Agility 靈活

Robots must be constructed and programmed in a way that their movement is not limited to only one dimension (that means one axis). They must move in all directions, for example by turning. Robots must respond to a ball in a direct forward movement. For example, it is not enough to basically just move left and right in front of their own goal, but also to move directly towards the ball in a forward movement.

搭建及編程的機械人移動方式不限於單一轉軸，機械人必須能夠作各方向活動，如轉向。機械人必須對球反應直接向前運動。例如：基本上僅於己方球門前左右移動是不足夠，還需要直接朝著球向前運動

Robots must be constructed and programmed in a way that they do not enter a goal. Robots are allowed to use their cross-bar.

搭建及編程的機械人必須做到不會進入球門，但容許機械人利用(觸碰)球門的橫樑。

### 2.6 Handle 手把

All robots must have a stable handle to hold and to lift them. The handle must be easily accessible, for example on top of a robot. The dimensions of the handle may exceed the 22 cm height limitation. The handle must not be used to mount components on a robot.

所有機械人必須有個穩固的手把以拿住及舉起它們。手把必須容易使用，例如位於機械人的上方。手把的尺寸可超過22厘米的高度限制。重量是包括了機械人和手把。手把不可用作固定機械人的組件。

### 2.7 Additional regulations of the sub-leagues 附屬聯盟附加規則

A tournament may be organized in different sub-leagues. Each sub-league (e.g. "Open League" and "Light Weight League") may have its own additional regulations, including regulations affecting the construction of robots. Such regulations will be passed by the RoboCupJunior Soccer Technical Committee and become a part of this rule.

比賽可能由不同的附屬聯盟組成。每個附屬聯盟(例如："Open League" 及 "Light Weight League")可能有自己的附加規則，包括規則對機械人構造影響。這些規則都會先經 RoboCupJunior 足球技術委員會通過及成為該規則一部分。

### 2.8 Violations 違規

Robots that do not abide by the above specifications/regulations are not allowed to play. If violations are detected during a running game the team is disqualified for that game. If similar violations occur repeatedly, the team can be disqualified from the tournament.

機械人不遵從上述規格或規則，則不容許參與比賽。比賽進行期間如被判違規，隊伍會被取消參賽資格。如疑似違規事件重複發生，隊伍可被取消參賽資格。

## 3. FIELD 場地

### 3.1 Kinds of fields 場地類型

Two different kinds of fields, named SOCCER A and SOCCER B, may be used at a tournament.

兩個不同類型的場地為「SOCCER A」及「SOCCER B」均可能於賽事中被使用。



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### 3.2 Dimensions of field 場地尺寸

SOCCKER A: The playing-field is 122 cm by 183 cm. The corners are flattened.

SOCCKER A: 比賽場地為122 cm X 183 cm。角落均為一個三角形(避免死角)。

SOCCKER B: The playing-field is 122 cm by 183 cm. Around the field is an out-area of 30 cm width. Total dimensions of the field, including the out-area, are 182 cm by 243 cm. The field is marked by a white line between 10 mm and 20 mm width. The line is part of the field.

SOCCKER B: 比賽場地為122 cm X 183 cm。圍繞場地的為界外球區，闊30厘米。場地總尺寸包括界外球區為182 cm X 243 cm。場地劃上10 mm至20 mm的白色線，線亦屬場地一部分。

### 3.3 Walls 圍牆

Walls are placed all around the field, including behind the goals and, if applicable, the out-area. The height of the walls is 14 cm. The walls are painted matte black.

足球場地的四周，包括球門和界外球區的後面都有牆壁。牆壁的高為14cm。牆面塗有啞光黑漆。

### 3.4 Goals 球門

SOCCKER A: The width of each goal is 45 cm, centered on each of the shorter sides of the playing-field. The goal is 14 cm high. It has a cross-bar on top (to prevent robots from entering the goal). The interior of one goal including floor, walls and cross-bar are painted in yellow, and the other goal in blue. The exterior is painted in black.

SOCCKER A: 球門寬度為45cm，位於場地底線（窄邊）的中央。球門高度為14cm，上面有橫樑（防止機械人進入球門）。球門內側的地板、牆壁及橫樑都塗上顏色，一方為黃色，另一方為藍色，球門外側被塗成黑色。

SOCCKER B: The width of each goal is 60 cm, centered on each of the shorter sides of the playing-field. The goal is 10 cm high. It has a cross-bar on top (to prevent robots from entering the goal). The interior of one goal including floor, walls and cross-bar are painted in yellow, the other goal in blue. The exterior is painted in black.

SOCCKER B: 球門寬度為60cm，位於場地底線（窄邊）的中央。球門高度為10cm，上面有橫樑（防止機械人進入球門）。球門內側的地板、牆壁及橫樑都塗上顏色，一方為黃色，另一方為藍色，球門外側被塗成黑色。

### 3.5 Floor 地板

The floor consists of green carpet on top of a hard surface.

地板為堅硬的表面上鋪上綠色地毯。

### 3.6 Neutral spots 發球點

There are five neutral spots defined in a field. One is in the center of the field. The other four are adjacent to each corner, located 45 cm along the long edge of the field, aligned with each goal post towards the middle of the field (from the goal post). The spots are marked black.

兩種比賽的場地都定有五個發球點。其中一個發球點在場地中央。其餘四個發球點位於四個牆角附近，沿著賽場的長邊45cm分佈。同時，發球點與長邊保持一個球門寬的距離，發球點為靠近場地中部且與門柱並排。

### 3.7 Center circle 中央圓圈

A center circle will be drawn on a field. It is 60 cm in diameter. It is a thin black marker line. It is there for referees and captains as a guidance during kick-off.

場地上的中央將畫上一個圓圈，為直徑60cm，粗黑線。中央圓圈是輔助裁判及隊長開球之用。

### 3.8 Penalty areas 罰球區

SOCCKER A: In front of each goal there is a 30 cm wide and 75 cm long penalty area.

SOCCKER A: 球門前方闊30cm，長75cm處為罰球區。

SOCCKER B: In front of each goal there is a 30 cm wide and 90 cm long penalty area.

SOCCKER A: 球門前方闊30cm，長90cm處為罰球區。



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SOCCKER A and SOCCKER B: Penalty areas are marked by a white line between 10 mm and 20 mm width. The line is part of the area.

SOCCKER A 及 SOCCKER B: 罰球區邊線為10mm至20mm闊的白線。線屬罰球區一部分。

A robot is considered inside a penalty area when it is completely inside.

機械人於罰球區內是指整個機械人完全在罰球區內。

### 3.9 Lighting and Magnetic Conditions 照明及磁場

Fields should be placed in a way that influences from external infrared lights and any influences that interfere with the magnetic field of the earth are as minimal as possible. Perfect conditions cannot be guaranteed. Teams must come to tournaments being prepared to calibrate their robots based on the lighting and magnetic conditions at a venue.

大會放置場地時，會盡可能減少場地受到外界紅外線干擾及盡可能減少受到地球磁場的擾亂。但是，無法保證能做到盡善盡美。參賽隊伍應於比賽前先到比賽場地，準備和調校好自己的機械人，使它能適應場內的照明和磁場。

## 4. BALL 足球

### 4.1 General ball specification 一般足球規格

A well-balanced electronic ball shall be used. The ball will emit infrared (IR) light. **For SOCCKER A and SOCCKER B, a pulsed ball will be used.**

比賽採用勻稱的電子球。該球會發射紅外線光。**SOCCKER A 及 SOCCKER B 將使用脈衝式足球。**

### 4.2 Official suppliers for pulsed balls 脈衝式足球官方供應商

Currently, there is one ball that has been approved by the RoboCupJunior Soccer Technical Committee:

現在 RoboCupJunior 足球技術委員會已認可一種電子球。

- RoboSoccer RCJ-05 ball operated in MODE A (pulsed)

made by EK Japan/Elekit ([www.elekit.co.jp](http://www.elekit.co.jp))

RoboSoccer RCJ-05足球於模式A下操作

由EK Japan/Elekit製造([www.elekit.co.jp](http://www.elekit.co.jp))

Technical details are in the "Technical Specification for pulsed Soccer Ball" which is attached at the end of the document.

技術詳情附帶於本規則中的 "Technical Specification for pulsed Soccer Ball"。

### 4.3 Tournament balls 比賽足球

Balls for the tournament must be made available by organizers. Organizers are not responsible for providing balls for practice.

比賽用球必須由大會提供。大會無責任提供練習用球。

## 5. GAME PLAY 比賽

### 5.1 Game procedure and length of a game 比賽程序和賽長時間

A game will consist of two halves. The duration of each half is 10-minutes. There will be a 5-minute break in between the halves.

比賽分上下半場，各十分鐘。中場休息5分鐘。

A game clock will run for the duration of the halves without stopping (except if or when the referee wants to consult an official). The game clock will be run by a referee or an assistant.

整場比賽將持續計時（兩個10分鐘半場），中途不間斷（除非出現「損壞的機器人」情形）。比賽用的計時器由裁判員或其助手負責。



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Teams are supposed to be at an assigned table/field 5 minutes before their game starts. Teams can be penalized one goal per minute at a referee's discretion if they are late for the game start. If a team does not report within 5 minutes of the game start, it is considered a forfeit of the game and the winning team is awarded a 5-0 win.

隊伍應該於比賽開始之前5分鐘到達場區。參賽隊伍遲到的，裁判將可執行判罰：該隊每遲到一分鐘，敵隊可獲得一個入球。參賽隊伍於比賽開始後5分鐘仍未到場的，便會喪失比賽權；敵隊以5：0 的分數勝出。

### 5.2 Pre-match meeting 賽前會議

At the start of the first half of a game, a referee will toss a coin. The team mentioned first in the draw shall call the coin. The winner of the toss can choose either their side of a field, or kick off. After the first half, teams will switch sides. The team not kicking off in the first half of the game will kick off to begin the second half of the game.

上半場開始時，由裁判進行拋擲硬幣，由最先進入本輪的參賽隊伍先猜。猜贏的一方可選擇 (a) 挑邊或 (b) 開球。另一選項由猜輸的一方決定。上半場結束後，隊伍雙方對調比賽場地。上半場無開球權的隊伍將在下半場先開球。

### 5.3 Kick off 開球

Each half of a game begins with a kick off. All robots must be located on their own side of the field. All robots must be still with no parts moving. A ball is positioned by the referee in the center of a field.

以開球形式開始每個半場比賽。所有的機械人必須位於自己的半場。所有機械人必須停住不動。裁判將球放到場地中央。

The team kicking off places their robots on the field first. Robots cannot be placed nor remain behind the goal line or in the out area. Robots cannot be moved once they are placed.

獲得開球權的一方須首先把機械人放到賽場上。機械人不能擺放在球門線後，更不容許停留於此。一旦放好，不得移動機械人。

The team not kicking off will place their robots on the defensive end of the field. All robots on the team not kicking off must be at least 30 cm away from the ball (that means outside the center circle).

不獲開球權的一方稍後可將一個機械人放到自方的場地。不獲開球權一方的所有機械人應放置到與足球至少有30 cm 的距離。(即中央圓圈外)

The referee may adjust the placement of the robots.

裁判可以調整機械人的擺放位置。

On the referee's command (usually by whistle), all robots will be started immediately by each captain. Any robots that are started early will be removed by the referee from the field and treated as a damaged robot.

在裁判下令後（一般用哨子），所有的機械人立刻由每隊之隊長啟動。在裁判哨聲前搶先啟動的機械人將被裁判移離比賽場地，並當作「損壞的機械人」處理。

### 5.4 Human interference 人為干擾

Except for the kick-off, human interference (e.g. touching the robots) during the game is not allowed unless explicitly permitted by the referee. Violators can be disqualified from the game.

除開球以外，除非有裁判明確批准，否則比賽期間是不容許有人為干擾（如解碰機械人）。違規者可被取消比賽資格。

### 5.5 Ball movement 足球運動

A robot cannot hold a ball. Holding a ball means taking full control of the ball by removing all of its degrees of freedom. Examples of ball holding include fixing a ball to a robot's body, surrounding a ball using a robot's body to prevent access by others, and encircling the ball or somehow trapping the ball with any part of a robot's body. If a ball stops rolling while a robot is moving or a ball does not rebound when rolled into a robot, it is a good indication that the ball is trapped.

機械人不得「持球」。持球的意思是，通過堵死足球去路從而實現的完全控球。比如說，把球固定在機械人或設法圈住球；機械人用身體圈住球來阻止其它機械人觸球；或使用機械人身體的任何部分將球包圍或設法圈住。機械人移動時球停止滾動，或是球滾動撞到機械人身體時沒有回彈，這就說明球是被圈住的。



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The only exception to holding is the use of a rotating drum that imparts dynamic back spin on a ball to keep the ball on its surface. Such a device is called a dribbler.

持球唯一例外是轉盤的使用，它可以給球提供向後旋轉的動力，將球維持在轉盤的表面上，這稱為「盤 / 運球」。

Other players must be able to access a ball.

其它機械人必須能接觸到球。

### 5.6 Scoring 計分

A goal is scored when the entire ball is inside the goal or if it strikes the back wall of the goal.

當整個足球完全越過球門線或是球碰到球門後壁，即為進球。

### 5.7 Goalie 守門員

A robot moving first into the penalty area completely (with every part of it) on a team's defending side is designated as goalie until a part of it leaves the penalty area.

防守方隊伍最先完全(機體每個部分)進入罰球區的機械人被界定為「守門員」，直至該機械人的一部分離開罰球區。

### 5.8 Pushing 推撞

Within a penalty area, a goalie has priority. Attacking robots are not supposed to push the goalie in any way.

於罰球界內，守門員有優先權，進攻的機械人不能以任何方式推撞守門員。

If an attacker and a goalie touch each other and at least one of them has physical contact with a ball, the ball will be moved to the nearest unoccupied neutral spot immediately.

如攻方球員與守門員有接觸及最少其中一方觸碰著足球，足球將立即被放到沒被佔用而最近的發球點。

If a goal is scored as a result of this pushed-situation, a point will not be awarded.

如推撞情況下進球，將判進球無效。

### 5.9 Lack of progress 進展中斷

**Lack of progress** occurs if there is no progress in the gameplay for a reasonable period of time and the situation is not likely to change. Typical lack of progress situations are when the ball is stuck between robots or between the robot and the wall or no robot is able to detect the ball at its location. The referee will call "lack of progress" and will move the ball to the nearest unoccupied neutral spot. If this does not solve the lack of progress, the referee can move the ball to different a neutral spot.

如整個足球離開比賽區域，將被界定為**出界**。如足球出界，裁判會將足球放於開球點。機械人不是最後觸碰足球的一方，其隊伍之隊長可於足球出界之半場，兩個發球點間選一個開球。如有機械人在發球點上，隊長可選擇將足球放於場地中央。隊長必須立即選擇一發球點，如隊長未能立即作決定，裁判將代為選擇一個發球點。

### 5.10 Out (in SOCCER B only) 出界(只限SOCCER B)

The ball is considered as **out** if the entire ball is out of the playing area. If a ball is out, the referee will reposition the ball on a neutral spot. The captain of the team whose robots did not touch the ball last can choose between the two neutral spots on the side of the field where the ball went out of. If one of these neutral spots is occupied by a robot, the captain can also choose to reposition the ball to the center of the field. The decision of the captain must be made immediately by pointing to a neutral spot. If the captain does not decide immediately, the referee will choose a neutral spot.

進展中斷發生指比賽於合理的時段內沒有進展和情況沒有改變跡象。典型的進展中斷，當球被多個機械人夾住，或者卡在機械人和牆壁之間，或者沒有機械人能探測到足球位置。裁判將示意「進展中斷」並將足球放到沒被佔用而最近的發球點。如未能解決進展中斷，裁判可將足球放到不同發球點。



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### 5.11 Damaged robots 損壞的機械人

If a robot is damaged, it has to be taken off the field and must be fixed before it can play again. A damaged robot must remain off the field for at least one minute.

如果機械人損壞，機械人將從場地上移走及必須於修理後才能繼續參賽。損壞的機械人必須離場至少一分鐘。

A robot is damaged especially when: 界定機械人損壞

it does not respond to a ball 對足球沒有反應

it continually moves into a goal 持續駛向球門

it turns over on its own accord 自己翻身倒地

it is stuck to a wall or a corner and cannot free itself continually 困於牆壁或角落及自身持續無法活動

After a robot has been fixed and one minute is past, it will be placed on the unoccupied neutral spot nearest to where it has been taken off, and not directly aiming towards to a ball. A robot can only be returned to the field if the damage has been repaired.

機械人完成維修後，將被放置於其離場位置附近空置的發球點，但不應直接朝向足球方向。機械人完成維修後方可返回比賽場地。

Only a referee decides whether a robot is damaged. A robot can only be taken off or returned with the referee's permission.

只有裁判能夠界定機械人是否損壞，並且只有在裁判許可下方可移走或放回機械人。

### 5.12 Multiple defense 多人防守

Multiple defense occurs if more than one robot from the defending team enters its penalty area with some part, and substantially affects the game. The robot farther from a ball will be moved to the center neutral spot.

多人防守發生，如防守的隊伍有多於一個機械人進入它們的罰球區及明顯影響球賽。距離足球較遠的防守方機械人將被移至中央發球點。

If multiple defence happens repeatedly, one of the robots will be deemed damaged.

如多人防守重複發生，該機械人將被視為損壞。

### 5.13 Interruption of Game 比賽中斷

In principle, a game will not be stopped.

原則上比賽不會停止。

A referee can stop a game if there is a situation on or around a field, which the referee wants to discuss with an official of the tournament **or if a ball malfunctions and a replacement is not readily available.**

若裁判要求向比賽委員商討情況或場地四周，**或足球失靈及替換的足球尚未準備好**，裁判有權停止比賽。

When a referee has stopped a game, all robots must be stopped and remain on the field untouched. The referee may decide whether the game will be continued/resumed from the situation in which the game was stopped or by a kick off.

當裁判停止比賽，所有機械人需關掉及保持於賽場上不動。裁判可能按比賽停止時的情況繼續賽事或重新開球。

## 6. CODE OF CONDUCT 操行

### 6.1 Fair Play 公平比賽

It is expected that the aim of all teams is to play a fair and clean game of robot soccer. It is expected that all robots will be built with consideration to other participants.

期望所有參賽隊伍皆可公平地進行機械人足球比賽。期望所有搭建的機械人都顧及其他參加者。

Robots are not allowed to cause deliberate interference with or damage to other robots during a normal game play.

於正常比賽下，不容許機械人故意干擾或損壞其他機械人。



## Soccer Rules (2011)

*Note: Changes from 2010 rules are highlighted in red.*

*Translated by RoboCupJunior Hong Kong*

Robots are not allowed to cause damage to a field or a ball during a normal game play.  
於正常比賽下，不容許機械人對比賽場地或足球造成損壞。

Humans are not allowed to cause deliberate interference with robots or damage to a field or a ball.  
不容許人故意地干擾其他機械人或是故意損壞比賽場地或足球。

### 6.2 Behavior 行爲

All participants are expected to behave themselves. All movement and behavior is to be of a subdued nature within a tournament venue.

期望所有參加者都守規矩。所有的行爲及活動必須依照賽場的指示及服從。

### 6.3 Help 幫助

Mentors (teachers, parents, chaperones and other adult team-members) are not allowed in the student work area without the organizer's permission. Only participating students are allowed to be inside the work area.

除非得到明確批准，教練（教師、父母、陪人和其他的成人隊員）不允許駐足於學生工作區域。僅參賽學生可在工作區域內。

Mentors must not touch, build, repair or program any robots.

教練不得觸碰、搭建、維修或編程機械人

The substitution of robots during the competition within a team or with other teams is forbidden.

賽事期間，嚴禁隊伍內部或隊伍之間替換機械人。

### 6.4 Sharing 分享

An understanding that has been a part of world RoboCup and RoboCupJunior competitions is that technological and curricular developments should be shared with other participants during and after the competition.

作為世界 RoboCup 比賽的一部分，大家已達成共識，即賽後參賽者共享技術進步和課程開展情況。

### 6.5 Spirit 精神

It is expected that all participants, students, mentors and parents alike, will respect the RoboCupJunior mission.

期望所有的參與者、學生和教練能尊重 RoboCup Junior 的宗旨。

***It is not whether you win or lose, but how much you learn that counts!***

比賽意義不在輸贏，重在學習。

### 6.6 Violations / Disqualification 違規 / 取消資格

Teams who violate the code of conduct can be disqualified from the tournament. It is also possible to disqualify and exclude from further participation in the tournament only a single person or a single robot.

隊伍的操行違規（CODE OF CONDUCT）可被取消資格參賽資格，亦可能是單一人士或單一機械人被取消繼續參賽的資格。

In less severe cases of violations of the code of conduct, a team will be given a warning by showing it a yellow card. In severe or repeated cases of violations of the code of conduct a team can be disqualified immediately without a warning by showing it the red card.

對較輕的違規情況，隊伍將獲黃牌警告。對嚴重或重複的違規操行，裁判將向隊伍出示紅牌，無須警告立即取消該隊伍資格。



## Soccer Rules (2011)

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### 7. CONFLICT RESOLUTION 衝突解決

#### 7.1 Referee and referee assistant 裁判及助理裁判

All decisions during the game are made by the referee or the referee assistant, who are in charge of a table/field, and people and objects surrounding it. During game play, the referees' decisions are final.

比賽期間裁判及助理裁判有權處理場區內的表格、比賽場地、人及物品，並作出所有決定。在比賽期間，裁判享有最終裁定權。

Any argument with a referee or an assistant can result in a warning. If the argument continues or another argument occurs, this may result in immediate disqualification from the game.

對裁判決定如有爭論將給予警告；若爭論仍不停止或另一爭論發生，則立即取消其比賽資格。

At the conclusion of a game, the referee will ask the captains to sign a score sheet. By signing the score sheet the captains accept the final score on behalf of their team.

比賽終結時，裁判將要求隊長於分紙上簽名。於分紙上簽名指隊長代表整個隊伍接受該最終得分。

#### 7.2 Rule clarification 規則解釋

Rule clarification may be made by members of the RoboCupJunior Soccer Technical Committee if necessary.

比賽期間如有需要，RoboCupJunior 足球國際技術委員享有規則解釋權。

#### 7.3 Rule modification 規則修改

If special circumstances, such as unforeseen problems or capabilities of a robot, occur, rules may be modified by members of the RoboCupJunior Soccer Technical Committee if necessary.

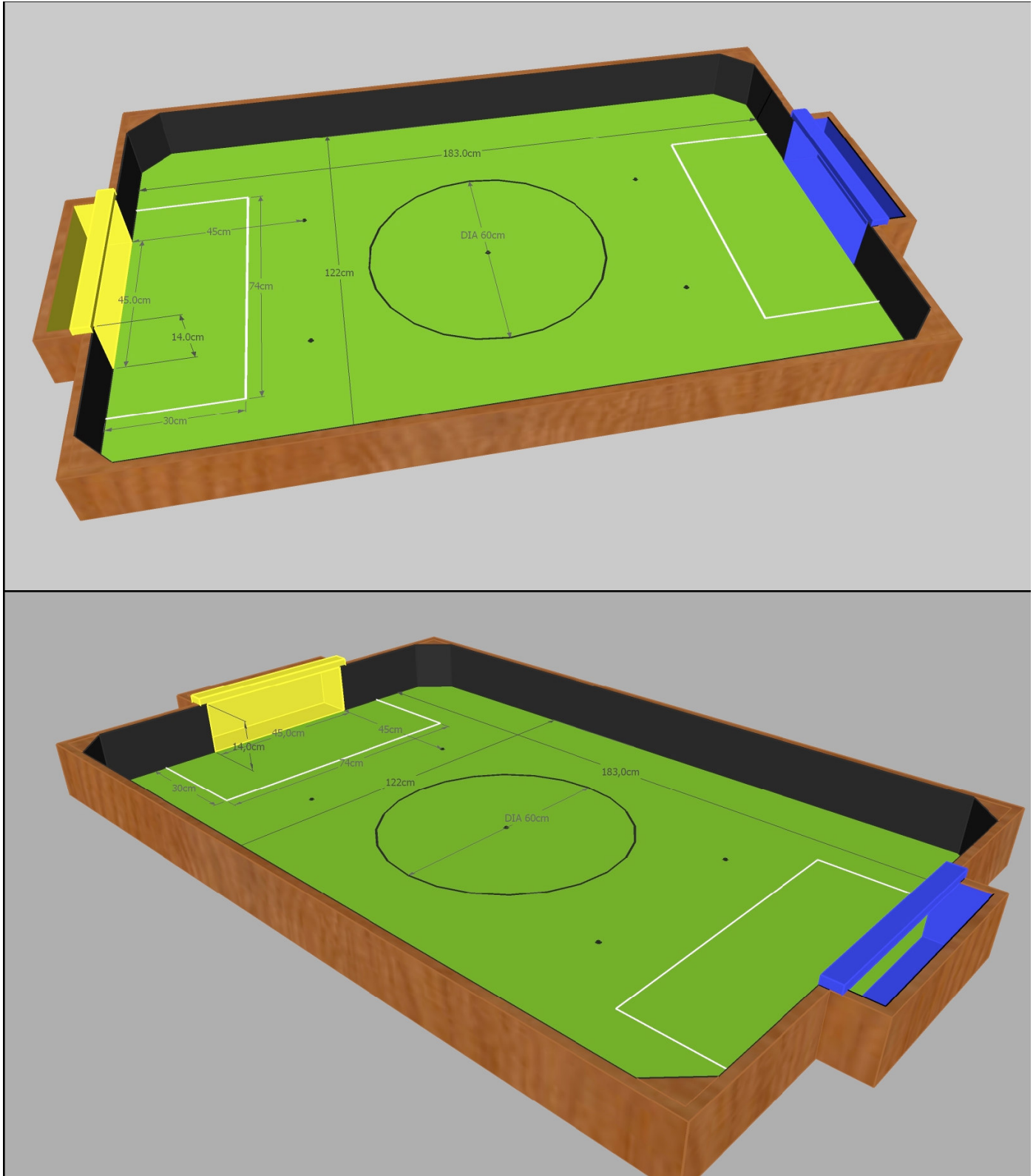
如特殊情況（例如一些無法預料的問題和／或機械人的性能問題等）發生。比賽期間如有需要，RoboCupJunior 足球國際技術委員享有規則修改權。

#### 7.4 Regulatory statutes 法規章程

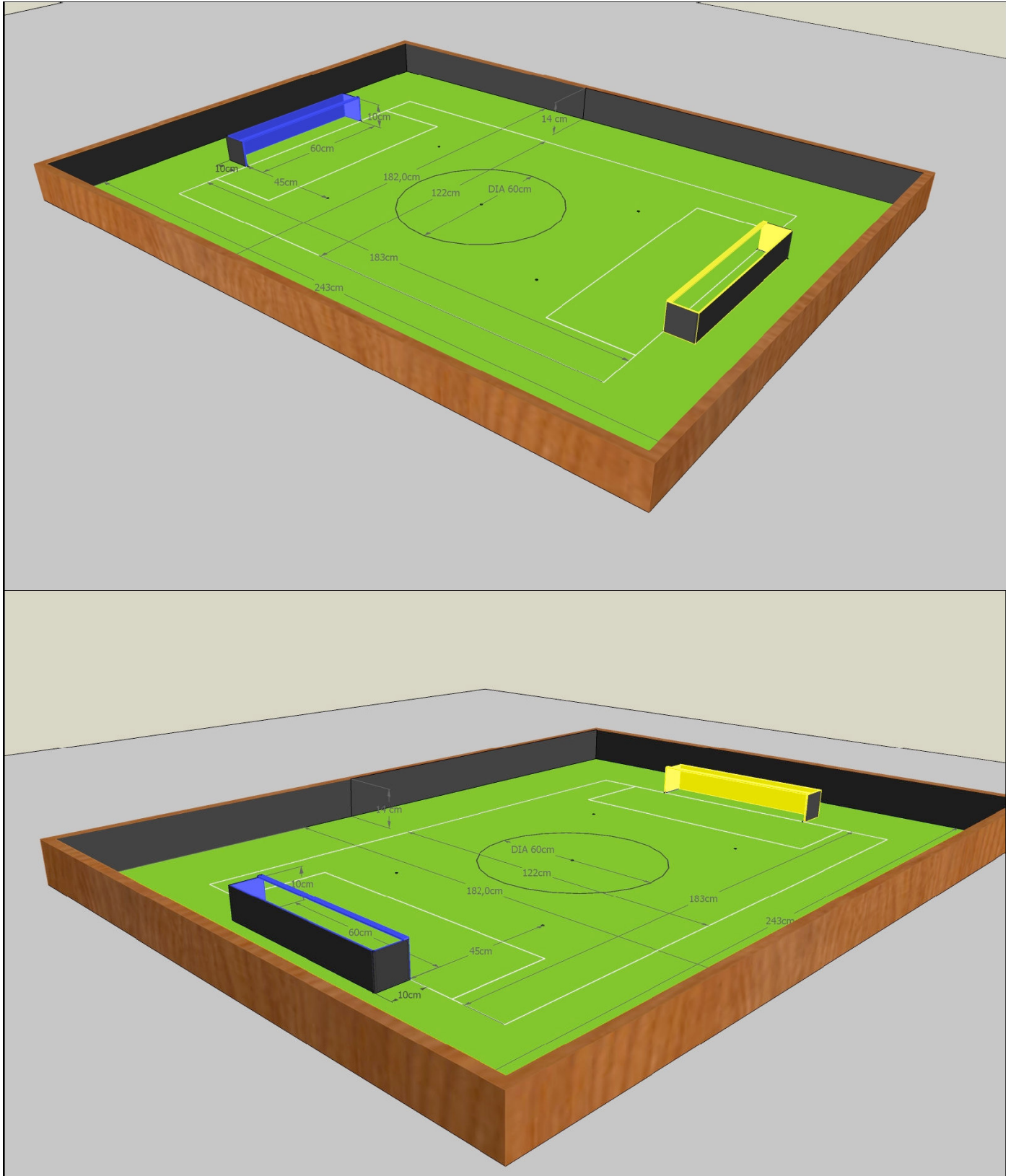
Each RoboCupJunior competition may have its own regulatory statutes to define the procedure of the tournament (for example the superteam system, game modes, the inspection of robots, interviews, schedules, etc.). Regulatory statutes become a part of this rule.

每個 RoboCupJunior 活動都可有自己的法規章程去定立比賽程序（例如機械人檢測、面試、時間表、遊戲模式等）。法規章程成了規則一部份。

## SOCCER A field



**SOCCER B field**





## Soccer Rules (2011)

*Note: Changes from 2010 rules are highlighted in red.*

*Translated by RoboCupJunior Hong Kong*

### League Regulations 2011

#### 1. Preamble 前言

According to rule 2.7 of the RoboCupJunior Soccer Rules, each league has its own additional regulations. They become a part of the rules.

根據RoboCupJunior Soccer Rules的規則2.7，每個聯盟有自己附加的規則，並可成爲規則的一部分。

Soccer will consist of two sub-leagues. These sub-leagues are called “**Open League**” and “**Light Weight League**”. They differ only in the weight of the robots. **Each sub-league can be further divided into primary and secondary.**

足球將包含兩個子聯盟，稱爲“**Open League**”及“**Light Weight League**”。兩者差別僅在於機械人的重量。**每個子聯盟可分爲小學及中學**

#### 2. Regulations 規則

##### 2.1 Dimensions 尺寸

Robots will be measured in an upright position with all parts extended. A robot's dimensions must not exceed the following limits:

測量時機械人必須處於直立狀態，並且伸展開所有的部件。機械人尺寸不得超出以下限制：

sub-league	Open League	Light Weight League
size / diameter (尺寸)	Ø 22.0 cm	Ø 22.0 cm
height (高度)	22.0 cm *	22.0 cm *
weight (重量)	2500 g **	1500 g **
ball-capturing zone (控球區)	3.0 cm	3.0 cm

\* The handle of a robot may exceed the height.

機械人的手把可超出該高度。

\*\* The weight of the robot includes that of the handle.

機械人的重量是包括其手把在內。

Ball-capturing zone is defined as any internal space created when a straight edge is placed on the protruding points of a robot. This means that the ball must not enter the concave hull of a robot by more than 3 cm. Furthermore, it must be possible for another robot to take possession of the ball.

控球區定義爲：任何突出的部位連接在機械人身上而形成的內部空間。球不得進入機械人外殼深度超過3cm。此外，控球區必須能夠讓另一機械人奪走足球。

##### 2.2 Construction 搭建

Robots must be constructed exclusively by student members of a team. Mentors, teachers, parents or companies may not be involved in the design, construction, and assembly of robots.

機械人必須僅由隊伍的學生搭建。導師、老師、家長或公司不能參與機械人的設計、搭建及組裝。

For the construction of the robots any robot kit or building block may be used as long as the design and construction are primarily and substantially the original work of the team. This means that commercial kits may be used but must be substantially modified by the team. It is neither allowed to mainly follow a construction manual, nor to make minor changes.

爲了搭建機械人任何機械人套件或積木均可被使用，只要設計和搭建主要及明顯爲隊伍所原創。意思是可使用商業套件，但必須經過隊伍的明顯修改。是不容許大致跟隨搭建說明書搭建，亦不容許修改不重要的部份。

Indications for the violation are the use of commercial kits that can be assembled in only one way or robots are taken from other teams.

使用商業套件會被視作違規，如基本上只集中於一處或實際上機械人是來先別的隊伍，搭建的機械人與商業套件基本上是一樣。



## Soccer Rules (2011)

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Robots must be constructed in a way that they can be started by the captain without the help of another person.  
搭建的機械人必須可被隊伍啓動且無須另一人幫助。

### 2.3 Programming 編程

Robots must be programmed exclusively by student members of a team. Mentors, teachers, parents or companies must not be involved in the programming and debugging of robots.

機械人必須僅由隊伍的學生編寫程式。導師、老師、家長或公司不能參與機械人的編程及調試。

For the programming of the robots any programming language, interface or integrated development environment (IDE) may be used. The use of programs that come together with a commercial kit (especially sample programs or presets) or substantial parts of such programs are not allowed.

爲了編寫機械人程式可使用任何程式語言、介面或智能開發環境(IDE)。使用的程式是來自商業套件(尤其是程式範例或預設)或程式重要的部分都是不容許。

It is not allowed to use sample programs, not even with modifications.

不容許使用範例程式，即使程式沒有被修改。

### 2.4 Burden of proof 提供證據的責任

Proof must be supplied by each team that their robots match these regulations, for example by a detailed documentation or log book. Teams may be interviewed about their robots and the development process at any time during a tournament.

每隊必須提供證據，他們的機械人符合這些規則。例如：詳細的文件或記錄冊。比賽的任何時候，隊伍可能被訪問有關他們機械人及研發過程的事宜。

### 2.5 Violations 違規

Robots that do not match the above regulations are not allowed to play. If violations are detected during a running game, the team is disqualified for that game. If similar violations occur repeatedly, the team can be disqualified from the tournament.

機械人未能符合上述規則，是不會被批准比賽。如球賽進行期間發現違規，該場球賽中隊伍會被取消資格。如類似違規再次發生，隊伍可被取消參賽資格。



## Soccer Rules (2011)

*Note: Changes from 2010 rules are highlighted in red.*

*Translated by RoboCupJunior Hong Kong*

### Technical Specification for pulsed Soccer Ball

#### 1. Preamble 前言

Answering to the request for a soccer ball for RCJ tournaments (more robust to interfering lights, less energy consuming, and mechanically more resistant), the RCJ Soccer Technical Committee defined the following technical specifications with the special collaboration from EK Japan and HiTechnic.

回應成爲RCJ比賽用足球的要求，需要較能抗干擾光線、較低電源消耗及物理上較耐用。RCJ足球技術委員會特別與EK Japan及HiTechnic合作，定義了以下技術規格。

Producers of these balls must apply for a certification process upon which they can exhibit the RCJ-compliant label and their balls used in RCJ tournaments.

足球的生產者必須申請認證過程以示他們可以展示RCJ兼容的標籤和他們的足球可在RCJ比賽中使用。

Balls with these specifications can be detected using specific sensors from HiTechnic (IRSeeker - information on distance and angle) but also common IR remote control receivers (TSOP1140, TSOP1240, GP1UX511QS, ... - on-off detection with a possible gross indication of distance).

足球具備這些規格，可使用由HiTechnic(IRSeeker – 距離及角度的資料)指定的感應器來探測，還有常見的紅外線遙控接收器(TSOP1140, TSOP1240, GP1UX511QS, ...-通斷檢測兼具可能的總距離讀數)。

#### 2. Specifications 規格

##### 2.1 IR light 紅外線

The ball emits infra-red (IR) light with wavelengths in the range 920nm - 960nm, and pulsed at a square-wave carrier frequency of 40kHz. The ball should have enough ultra bright and wide angle LEDs to minimize unevenness of the IR output.

足球發射紅外線光波長範圍由920nm-960nm，脈衝於方波載波頻率爲40kHz。足球必須有足夠特亮及廣角度的LEDs以將參差不齊的紅外線輸出減到最少。

##### 2.2 Diameter 直徑

The diameter of the ball shall be in the range 74mm - 80mm. A well-balanced ball shall be used.

足球直徑範圍由74mm-80mm。使用的是勻稱的球。

##### 2.3 Drop Test 掉落測試

The ball must be able to resist normal game play. As an indication of its durability, it should be able to survive/undamaged a free-fall from 1.5 meters onto a hardwood table or floor.

足球必須能夠承受一般球賽。作爲界定足球的耐久性，足球於1.5米處自由掉落於硬木枱或地板上也應能完整無缺和無損壞。

##### 2.4 Modulation 調整

The 40kHz carrier output of the ball shall be modulated with a trapezoidal (stepped) waveform of frequency 1.2kHz. Each 833-microsecond cycle of the modulation waveform shall comprise 8 carrier pulses at full intensity, followed (in turn) by 4 carrier pulses at 1/4 of full intensity, four pulses at 1/16 of full intensity and four pulses at 1/64 of full intensity, followed by a space (i.e. zero intensity) of about 346 microseconds. The peak current level in the LEDs shall be within the range of 45-55mA. The radiant intensity shall be more than 20mW/sr per LED.

足球的40kHz載波輸出將被調整，梯形波形頻率爲1.2kHz。調整波形以每833微秒循環的週期組成8個最大強度的載波脈衝，接著(反過來)的是4個載波脈衝(爲最大強度的1/4)，4個脈衝(爲最大強度的1/16)及4個脈衝(爲最大強度的1/64)，接著約346微秒是空白(即強度爲0)。LEDs的峰值電流水平需在45-55 mA的範圍內。每枚LED的光線強度需大於20mW/sr。

##### 2.5 Battery Life 電池壽命

If the ball has an embedded rechargeable battery, when new and fully charged it should last for more than 3 hours of continuous use before the brightness of the LEDs drops to 90% of the initial value. If the ball uses replaceable batteries, a set of new high-quality alkaline batteries should last for more than 8 hours of continuous use before the brightness of the LEDs drops to 90% of the initial value.



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如足球使用的是充電池，當剛剛完整充電後，足球在持續使用多於3個小時前，其LED亮度只跌至初始值的90%。如足球使用的是一般電池，以一套全新且高質數的鹼性電池而言，足球在持續使用多於8個小時前，其LED亮度只跌至初始值的90%。

### 2.6 Coloration 染色

The ball shall be neutral in color. In particular, it must not have any green, blue or yellow coloration (to avoid confusion with the colors of the field and goals).

足球應是中性的顏色。特別是足球不可有任何綠色、藍色或黃色染色(避免與場地及球門的顏色混淆)。

*Note: The English version of these rules shall prevail wherever there is a discrepancy between the English and the Chinese versions.*

注意：本賽規的中英文本如有歧義，概以英文本為準。