



INTERNATIONAL BLIND SPORTS FEDERATION

NINEPIN BOWLING RULEBOOK 2005-2009

1 GENERAL RULES

1.1 CONCEPTION OF THE RULES

These rules for blind and visually impaired players are a set of regulations by which IBSA's Technical Committee will determine:

1.1.1 Types of competitions and events on both synthetic and concrete runs.

1.1.2 Techniques for throwing, and the judging of events.

1.1.3 The duties and rights of participants.

1.1.4 Sizes and materials for competition runs, pins and balls.

1.2 VALIDITY OF THE RULES

1.2.1 All competitions organised by IBSA members must be run according to these rules.

1.2.2 These rules were acknowledged and validated at Kosice, Slovakia on 11.06.94 rendering all old rules invalid.

1.3 INTERPRETATION

Interpretation, changes and amendments to the rules shall be at the discretion of the IBSA Technical Department and the Ninepin Bowling Subcommittee.

The IBSA Technical Committee shall deal with all questions regarding interpretation or amendment of these rules. IBSA's member organisations may present their comments on these rules to the Technical Committee. This Committee shall consider all relevant comments during each championship. Unresolved problems will be referred to the WNBA, whose rules are based upon the rules of the FIQ.

1.4 EVENT CATEGORIES

IBSA runs championships in the following events:

Schoolboy	(under 14)	60 throws into full position Max. 1 x 60 per day
Schoolgirl	(under 14)	40 throws into full position Max. 1 x 40 per day
Male youth	(14-18)	100 throws into full position
Female youth	(14-18)	100 throws into full position
Male juniors	(19-23)	200 throws into full position Max. 2 x 200 per day
Female juniors	(19-23)	100 throws into full position Max. 2 x 100 per day
Male singles		200 throws into full position Max. 2 x 200 per day
Female singles		100 throws into full position Max. 2 x 100 per day
Mixed teams		100 throws into full position
Female teams		100 throws into full position
Male teams		200 throws into full position

1.5 HEALTH EVALUATION

All players in IBSA competitions must be registered in one of the following categories, graded by visual ability using both eyes, with best eye correction. (i.e. All athletes who use contact or corrective lenses must wear them for classification, whether they intend to compete wearing them or not.)

B1: No light perception in either eye up to light perception , but inability to recognise the shape of a hand in any distance or in any direction.

B2: From ability of recognise the shape of a hand up to visual acuity of 2/60 and/or with visual field of less than 5 degrees.

B3: from visual acuity of above 2/60 up to visual acuity 6/60 and/or a visual field of more than 5 degrees and less than 20 degrees.

1.6 QUALIFICATION OF JUDGES

Judges for all IBSA competitions must own a judge's license approved by WNBA/FIQ. If there is any doubt about the ability of a judge, this may be re-examined by the IBSA Technical Delegate at any time during the competition.

1.7 REGISTRATION OF RECORDS

Records in IBSA competitions are registered in these events and categories:

1.7.1 records of singles in B1, B2 and B3 in every age and sex category.

1.7.2 records of mixed sex teams.

1.7.3 records of female teams.

1.7.4 records of male teams.

Records must be attained under these conditions:

- a) On a run rated as "R" by the WNBA/FIQ.
- b) During an official IBSA competition.
- c) Under the supervision of an IBSA Technical Delegate.
- d) The original list of throws must be signed by the head judge, team leader, recorder and record holder and must be included with the report of the record attainment.
- e) The balls, pins and pin picking machine must be checked by the judge.

- f) The report of the record must be received by the Technical Delegate within seven days.
- g) The record announcement is made by the organiser of the event of the record and the holder's team leader.
- h) Records are registered by the Record Keeper of the IBSA Technical Committee.

1.8 CLOTHING

All the players must wear their team uniform during the competition. The uniform must consist of a shirt or sweatshirt with the team/national logo, shorts and trainers. It is allowed to have a sponsor's mark, but it must be no larger than 30cm². Women may wear skirts.

Coaches and guides must wear the team dress whilst guiding players. Judges must wear a white shirt, long dark trousers, trainers and a WNBA/FIQ judge's pin.

2 RULES OF PLAY

2.1 THE EVENT

2.1.1 Each skittle properly knocked down gains one point.

2.1.2 Ninepin bowling is played on either two, four or six tracks:

Two tracks: 40 throws each player throws 20 times on each track

60 throws each player throws 30 times on each track

100 throws each player throws 50 times on each track

Four tracks: 200 throws throws 50 times on each track and changing tracks as follows: 1-2-4-3; 2-1-3-4, 3-4-2-1, 4-3-1-2. Home

players always start in lanes 1 and 3, guests on 2 and 4.

For events with 40, 60 and 100 throws, it is always possible to use two neighbouring tracks, i.e. 1-2, 3-4.

Six tracks: 100 throws championship competition - only two neighbouring tracks can be used in a room with more tracks, i.e.. 1-2, 3-4, 5-6.

200 throws it is possible to play on tracks 1-4 or 3-6 with the same rules as for play on four tracks or it can be played on all six tracks, changing tracks as follows: 1-2-4-3, 2-1-4-3, 3-4-6-5, 5-6-2-1, 6-5-1-2.

Team competition is played all on two neighbouring tracks (1-2 or 3-4) or subject to mutual agreement on all tracks in the bowling room and according to FIQ rules. Home players may play on odd tracks.

2.2 PLAY ON THE TRACK

2.2.1 THE PLAYING TIME

Players must keep to the time limit of 25 minutes for 50 throws. Each track should be provided with a chronometer to apply the limit. Technical breakdowns are not included in the time limit.

If players do not keep to the time limit, then only the points achieved within the limit are allowed. This rule should also be applied to competitors who start late.

The time limit is counted from the instruction to start, i.e. after the practice throws have been taken, until the last ball leaves the player's hand.

2.2.2 THE BEGINNING AND END OF PLAY

Play begins with the referee's signal to start the game. It ends with the referee's signal to leave the playing area.

2.2.3 KNOCKING DOWN SKITTLES

To be properly knocked down, skittles must be:

- a) knocked down directly by the ball;
- b) knocked down by another skittle;
- c) skittles registered by the light indicator of the automatic skittle standing equipment (ASSE).

Skittles knocked down as the ball bounces off the rear reflecting wall are not counted as valid. If the ball hits the side mantle, the throw is counted, but any points earned are not - this is registered by a (-) in the records.

If the ball does not knock down any skittles, this is registered by a (-) in the records.

2.2.4 FAULTS

The following instances are considered "faults":

- a) The player throws the ball out of the throwing area.
- b) The player touches the throwing area with any part of the body.
- c) The player leaves the ball on the floor of the playing area.
- d) The player leaves the playing area without the approval of the judge.
- e) The player disturbs the other players whilst they are throwing.

The following instances are exceptions:

- f) Touching the throwing area within the minimum necessary time when it is necessary for the next shot.
- g) Throwing when the ASSE does not show a ready signal, except if this throw is considered to be a protest or misbehaviour.
- h) The player may put signs on the throwing area, but only if they may be easily removed when the player leaves the track.
- i) The player drops the ball but it is caught by the guide before it leaves the playing area.
- j) "Overstepping" or "Barefooting" is only considered as one fault, regardless of the number of times the player does it within each game.
- k) For the first and second faults, the referee shows the yellow card with a detailed voice warning - in the records he circles the throw in red. The points for these throws are still counted.
- j) For the third and final faults, the referee shows the yellow/red card and crosses out the record of the throw in red. These points are annulled.

2.2.5 REPEATING THROWS

Throws may be repeated under the following circumstances:

- a) A returning ball falls from the rails on the track during the throw.
- b) An object on the track and changes the direction of the thrown ball.
- c) The ASSE signals ready and a skittle falls down either before the ball reaches the skittles or shortly before the player throws, leaving him with no time to react.
- d) Somebody steps into the track and changes the direction of the thrown ball.

- e) The light fails in the bowling room.
- f) The ASSE fails.
- g) Other serious circumstances.

2.2.6 ENTERING AND LEAVING THE PLAYING AREA

- a) During each fifty throw section of the event, the competitor may not leave the playing area or they will be penalised in the same way as for an overstep.
- b) If the play is interrupted for a long period of time, the referee may allow the players to leave the playing area
- c) Only players, guides and the referee are allowed into the playing area. Coaches, deputy coaches and technical assistants are only allowed into the playing area with the referee's approval.

2.2.7 ANNULLED ENTRIES

The referee is obliged to enter a zero into the records if any of the following occur before the player throws the ball;

- a) The player slides, lies down or sits on the playing surface.
- b) The player sits on the ball store.
- c) Rough and unsporting behaviour.

The referee should first show the yellow/red card, give a brief explanation and then cross the respective record window with red ink.

2.2.8 DISQUALIFICATION OF THE PLAYER

The referee may disqualify a player for the following reasons:

- a) A repeated offence for which a yellow card has already been given.

- b) Rough and unsporting behaviour.

The referee shows the player the red card, removes the player's registration card and together with a written report of the fault, sends these to the competition committee. The player may be replaced, as long as there were no earlier substitutions.

2.2.9 FAILURE OF THE ASSE

In the event of an ASSE failure on any track, all other players on all other tracks finish their part of the event. Should the failure last longer than twenty minutes, the player has the right to throw three training throws (without standing skittles). The player then resumes the event from where it was interrupted and finishes the game. The referee may allow other players to leave the playing area. In this case, other players may take three practice throws, together with the last three of the last player, on the tracks where they played before.

2.2.10 BLIND COMPETITORS IN THE PLAYING AREA

Blind bowlers are allowed certain exceptions and modifications to the standard rules. These are to make blind bowling safer, and allow greater achievements within the sport.

- a) B1 and B2 bowlers are obliged to play with guides, who help them feel the playing surface, and hand them the balls, in order to prevent accidents caused by incoming balls.
- b) B1 and B2 bowlers must either play from the spot, using both hands standing with legs apart, or using one hand, with one foot on the throwing board and one foot on the ground.
- c) B3 bowlers may play from the spot with a guide's help, or from a short run, with or without the help of the guide.
- d) Blind players who throw from the spot have the right to place the ball on the throwing board before the throw, as well as touch the playing area on their hands and knees.

They can also use contrast signs and all the information given to them by their guide whilst throwing.

B3 bowlers who play without a guide are obliged to follow the General Rules regarding play and behaviour of players, and the above exceptions do not apply to them. The following exceptions to the general rules apply to B3 bowlers only.

- a) Two faults for every fifty throws
- b) Removable contrast signs to be placed in the playing area

2.2.11 RESPONSIBILITIES OF THE GUIDE

Each bowler has the right to play with a guide (assistant trainer). The guide can be nominated by the player, the team leader or by the organisers of the competition. The role of the guide can be filled by anyone who is capable of helping the bowler to overcome his handicap, and can ensure the bowler's safety during the competition. Guides have a number of rights and duties.

- a) Guides may enter the playing area.
- b) The guide prepares the player's throwing position relative to the skittles.
- c) The guide may place ribbon marks on the throwing area, and must remove these when leaving the track.
- d) The guide hands the balls to the player.
- e) The guide informs the bowler about the direction and quality of the throw, but must be careful not to disturb other bowlers. Guides may be disqualified by the referee, as long as a replacement can be arranged.
- f) The guide may not be in physical contact with the player at the moment of the throw.

2.3 THE START OF THE COMPETITION

2.3.1 THE START OF INDIVIDUALS' COMPETITIONS

The referee makes the draw at least fifteen minutes before the start of the competition. The competitors then commence using either the "chain" or the "block" method. The method used must be announced during the prepositions, before the draw.

Using the "chain" start method, all players start, beginning on Track 1, and finishing on Track 2. For 200 throw competitions, Tracks 3 and 4 are also used.

Using the "block" start method, all players start at the same time, using all the tracks according to the draw, changing clockwise. In 100 throw competitions, the players may choose to swap over the two pairs of tracks. In 200 throw competitions, refer to 2.1.

2.3.2 THE START OF DOUBLES' COMPETITIONS

- a) The coach of the doubles team the names of the players, guides and trainer to the referee at least 15 minutes before the start of the competition. The referee then makes the draw.
- b) The "block" start method is used and the doubles start together on neighbouring tracks, 1-2, 3-4, 5-6.
- c) The players change tracks after each fifty throws according to Section 2.1.
- d) In doubles competition, substitutions can be made even after the first valid throw.

2.3.3 THE START OF TEAMS' COMPETITION

- a) The team leader presents a list of the names of the players, guides and trainer to the referee fifteen minutes before the start of the competition. In the case of multiple teams, the referee should make a draw. Substitutions need not be included on the team list.

- b) The players start according to the team list, the order of which may not be changed during play.
- c) The team coach may substitute one player in the course of the game, without giving a reason, by stating the change of players to the referee. The replacement may be made at any point before or during the game. If the competition lasts more than one day, the coach may make one substitution each day.
- d) The replacement starts play from the last completed throw of the replaced player.
- e) If after the first substitution another player is injured, he may not be replaced, and in the results, only the points reached through completed throws are allowed.
- f) Play must be continued within ten minutes after the break (allowing for necessary treatment before recommencing play).
- g) If a player whose name is on the team list fails to appear before the start and is replaced by a substitute, no more substitutions may be made. However, if the player arrives later, he may take over from the substitute at the start of the next fifty throws.

In the case of substitutions, the referee should mark the following in the records.

- a) The name of the player.
- b) The reason for the change.
- c) Where no reason is offered, this should also be noted.
- d) From which throw the substitute started play.

In the case of an injury or illness, the referee should note the following points.

- a) Type of accident.

- b) Extent of the injury.
- c) The name of the illness, when discovered.

The referee should allow the substitute three training throws.

2.3.3 STARTING WITH AN INCOMPLETE TEAM

- a) Teams should always endeavour to arrive complete and on time.
- b) A team with one less player than is stipulated by the regulations for the competition is still considered a complete team (e.g. 5 bowlers in a 6 man match).
- c) The referee must close the starting lists at least five minutes before the start of the match - any unfilled positions must be crossed out.
- d) The team's result should be acknowledged as for complete teams.

3. SCORING

3.1 SCORING FOR INDIVIDUAL PLAY

- a) The total points attained through complete throws are counted.
- b) If there is a draw on points, the player who scored the most 9s wins.
- c) If there is a draw on 9s, the player with the least fault throws wins.
- d) If there is a draw on fault throws, the player who scored most 8s wins.
- e) If there is a draw on 8s, the player with the least 0s wins, and so forth.

3.1.1 BONUSES FOR BLINDNESS CATEGORIES

- a) B1 bowlers receive a 25% bonus on their total points score.
- b) B2 bowlers receive a 5% bonus on the total points score.
- c) B3 bowlers receive no bonus.
- d) If women are bowling against men, they receive a 5% bonus on their total points score, on top of the bonus for their blindness category.
- e) In comparative, promotion or exhibition matches against sighted players, all non-handicapped players receive a 10% deduction from their totals.

3.2 SCORING FOR SHORT TERM TEAM COMPETITIONS

- a) The sum of the points achieved by each player is counted.
- b) In the case of a draw, refer to the rules within Section 3.1 to decide on the winner.
- c) Objections against the validity of a throw must be submitted by the team leader to the referee immediately. The referee's decision is final.

3.3 SCORING FOR LONG TERM TEAM COMPETITIONS

- a) The results for each match should be arrived at as for the short term team rules (3.2)
- b) The winning team in each match receives two points.
- c) The losing team in each match receives no points.
- d) In the case of a match draw, the rules as set out in Section 3.1 do not apply. Instead, each team receives one point.
- e) If a match has been annulled, the team that caused the annulment receives no points and the other team receives two points, and that teams average points reached are not altered. The offending team's point total

has 30 points for 6 x 100 throws deducted at the end of the competition.

4 THE REFEREE

4.1 THE DUTIES OF THE REFEREE

- a) The referee must be acquainted with any regulations specific to the competition and match to which he has been assigned
- b) If an overnight stay is necessary, the referee must put in a request for accommodation thirty days before the competition.
- c) The referee must arrive in the bowling room thirty minutes before the start of the match in order to check the technical certificates for the tracks.
- d) Before the start of the competition, the referee must check the condition of the tracks, the ASSE and all other equipment. He must also check that the time setting for the ASSE is set to four seconds.
- e) The referee must also check the signalisation of oversteps on all tracks - should the equipment fail to work, the oversteps should be turned off on those tracks where it has failed.
- f) The temperature in the bowling room must not fall below +12C. Lower temperatures are considered a technical fault of the bowling room. If the competition or match cannot take part because of insufficient heating, then the STK, KNS or IBSA Technical Committee must decide on the results of the match as well as the penalty for the organisers of the competition.
- g) The referee must ask the organisers to correct all the defects he has discovered, and then inform the team leaders on the state of the tracks and equipment.

- h) The referee must collect from coaches or team leaders, the player lists and registration cards. He must then check the necessary dates authorising the players to take part in the competition. After the competition, he returns the registration cards and team lists to the team leaders or coaches (except the cards of those players who have been disqualified during the tournament).
- i) The match should be started by a line-up of all the teams in full team uniform (unless otherwise stated in the competition regulations).
- j) The referee must conduct the match according to these rules, the regulations of the competition and the directions of the organising committee.
- k) The referee is in charge of the record keepers and must check on their results throughout the competition.
- l) The referee may at any point postpone or call off the match due to valid technical problems.
- m) The referee must not allow any player to play without full uniform and the correct shoes, as outlined in Section 1.8.
- n) Any player who seriously violates the sport's rules and regulations must not be allowed to start or continue play by the referee.
- o) The referee must record the personal data, registration card number and member card number of the substitution on the back of the list of players. This information should be verified and confirmed by the referee's signature and personal information.
- p) The referee must verify the total point scores in the records, and the final results of the teams.
- q) The referee must fill in the records of the match or competition, noting the characteristics and defects of the event, sign the records and have them signed by the team leaders or coaches, and give the records to the

home team leader or coach, who must send it to the respective directing committee.

- r) The match should end with a line-up of all the teams in full uniform (unless otherwise stipulated by the regulations of the competition).
- s) All the referee's cards must be kept in good condition.
- t) If requested, the referee must show all his documents to the team leaders or coaches. If these are not in order, then he may not conduct the match or competition.

4.2 THE USE OF PENALTY CARDS

- a) Yellow Card - see Section 2.2.4 (k).
- b) Yellow/Red Card - see Section 2.2.4 (j) and 2.2.7.
- c) Red Card - see Section 2.2.8.

4.3 REFEREEING MATCHES AND SHORT-TERM COMPETITIONS:

- a) The referee is a delegate of the association which organises the competition.
- b) If the delegated referee is unable to administrate at the match or competition, he must inform the association in reasonable time, and provide a valid reason in writing. Should the reason for his absence become apparent only shortly before the competition, he may alert the organisation by telephone, cable or fax and provide the reason in writing after the event.
- c) If the designated referee does not arrive within fifteen minutes of the officially announced opening time of the competition, then the team leaders take over the running of the event. Subject to the agreement of the team leaders, another unbiased bowling referee may take over the running of the event, even if he does not have the full appropriate documentation or qualifications.

- d) If a team refuses to play a match led by the team leaders, the match is defaulted and the team loses.
- e) If the referee should arrive after the match has been started without him, and then finds that a player has started without the valid documentation, that player's start is declared a fault and their results are annulled.
- f) If during the course of the competition, the referee finds that he cannot continue to administrate over the competition, and he does not have a suitable assistant to take over, then the team leaders may take over the event.
- g) If the results of the competition are announced by the referee, and the team leaders do not protest, but some faults are later found in the point scoring, the original, announced results are still valid. The organising association can only change the results if some important fault is discovered.

5 BOWLING ROOM AND EQUIPMENT

All bowling rooms must conform to the official WNBA/FIQ rules on all aspects of the bowling room, the track, the ASSE and all equipment, as found in the WNBA rules.

5.1 THE BOWLING TRACK

5.1.1 TRACK SIZE

The length of the track is 28.5m. This is the distance from the rear starting line to the rear reflecting wall. The length of the actual track is 19.5m, with a 50mm tolerance, measured from the end of the throwing board to the centre of the No.1 skittle base (front corner). The width of the track is 1.5m with a 10mm tolerance. The track gets wider for a distance of 1.2m from the centre of the No.1 skittle base, towards the start of the falling zone, where it is 1.7m wide.

The track surface is made from an artificial substance of dark green colour, according to the technology available to the

builder of the bowling room. Older tracks may occasionally have an asphalt surface, but this is becoming increasingly rare. The track is surrounded by mantles, which are 100 - 200mm high. The beginning of the mantle is given by the transverse level crossing the front wall of the ball store and the end is given by the transverse level crossing the No.1 skittle base - here the mantle comes to the side reflecting wall, which is a minimum of 1m high.

The side reflecting walls are made from a hard material, usually wood covered with a textile lining. The floor of the falling zone is made from concrete and covered with rubber, linoleum or hard carpet. Behind the overfall threshold, the floor must be a minimum of 80mm below the level of the track. The falling zone is at least 9.5m long and, behind the overfall threshold, it is so formed that any ball on it will roll towards the ball feeder. A hanging wall forms the back of the falling zone, in front of which a light carpet may be hung, but within 400mm of the overfall threshold. The start of the falling zone is 250mm behind the centre rear skittle base No.9 (rear corner).

The base cross is placed at the rear of the track, and contains nine bases. These are arranged in a square with a diagonal width of 1m (2mm tolerance). One of the diagonals is aligned with the axis of the track. The cross should be made in such a way that it does not extend above the level surface of the track. The skittle base zone may be covered with artificial material or textiles, into which the skittle base cross is built.

At the front of the track, there is the playing zone where the throwing board is situated. The playing zone is designated by two lines. The rear line is 1m from the rear part of the throwing board, whilst the front line is on a level with the beginning of the throwing zone. The throwing board divides it into two parts - to the right and left towards the mantles (the front of the track). The playing zone is aligned lengthways along the throwing axis 6.5m x 1.7m (with a tolerance of 20mm). Near the ball store, the playing zone is only reduced in older bowling rooms, where it is not possible to arrange the correct measurements.

The throwing board is 350mm wide (with a tolerance of 5mm) laid in the front part of the track along the throwing axis. It

must be rise 1-3mm above the horizontal level of the track. The throwing board is 5.5m long (with a 20mm tolerance) and is covered with linoleum with a thickness of 2-4mm. The linoleum must not be a soft pad. The throwing board can be made from a variety of hard materials, but particular care must be taken during its construction in keeping to the prescribed dimensions - this part of the track is very important to the results of the game.

The throwing board can be made so that the front part with the balance screws is at least 2.4m long whilst the other part is replaced with linoleum - the linoleum cover must be in one piece, 5.5m long. Only the front section of 2.4m is being colaudated. On both sides of the throwing board marked by a 50mm white line, the floor is covered with a soft, anti-skid material (rubber, linoleum, hard carpet etc.). The sides must be a different colour to the throwing board.

5.1.2 TRACK ARRANGEMENT

At the sides of the track, there are platforms of a suitable width (minimum 200mm) at the height of the side mantles (100-200mm).

Each double track has between the tracks, one ball feeder. This is at the start of the falling zone, so arranged with the ASSE, that the balls do not fall out of its rails, but the balls have sufficient speed to return to the ball store. The ball store should be placed in the second third of the throwing board, at a height of 650mm above the level of the track. A wet sponge should be placed at the end of the ball store for use by the players. The ball feeder can be situated directly on the platforms and it can be made from any material (rubber tubes, PVC, artificial materials etc.) fitted directly on the rails. In bowling rooms with more tracks, the ball feeders are always installed for each double track.

The organising committee is responsible for arranging that the bowling room is large enough to accommodate the competition comfortably.

5.1.3 BOWLING ROOM EQUIPMENT

Tracks without classification are only suitable for training and leisure sport.

The evaluations are undertaken by technical workers from the respective region who have a special qualification. The classification is stated in the Technical Certificate which must be placed in a visible position in the bowling room. The proof records must also be at hand.

5.2 AUTOMATIC SKITTLE STANDING EQUIPMENT (ASSE)

The line ASSE must fulfil the following conditions before use.

- a) On each track there must be a light indicator which signals the skittles that have been knocked down.
- b) The line length of each skittle must be sufficient to allow it to reach the rear reflecting wall with its head.
- c) The line resistance must be 0.4 - 0.5N.
- d) The delay from knocking down the skittles to starting the ASSE should be set to four seconds.
- e) The height of the skittle hanging area must be 750mm (with a 20mm tolerance).
- f) The length of the falling zone including the ball bed is a minimum of 950mm. The depth behind the overfall threshold is a minimum of 80mm and then the floor goes down towards the ball bed to the depth of a minimum of 180mm (measured from the level of the track). The ball bed is 200mm wide and goes down to the ball feeder - to enable the balls to roll freely, it is at an angle of approximately 8%.
- g) The ball feeder is a part of the ASSE. When using the manual standing of skittle (which is now very rare) the ball feeder helps the assistants a great deal. One ball feeder is installed for every two tracks.

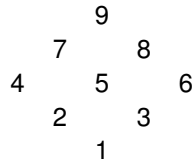
5.3 RECOMMENDED SPECIAL EQUIPMENT

- a) The overstep indicator -electronic equipment signalling, by a light or a sound, overstepping of the white starting line. The overstep indicator must be a different colour to the points indicator, and must light for at least ten seconds. The overstep indicator can be connected directly to the automatic meter, in which case, the meter automatically discounts the points from overstepped throws. On the first and second oversteps, the referee corrects the meter if there were no other transgressions.
- b) The adding machine - the automatic point meter - is installed on the front wall , just over the main opening, below the indicator showing the knocked down skittles. The number on the left shows the number of skittles knocked down by the last throw. On the right side there is always the total point score from all valid throws. This machine is controlled by the referee's assistants' table.
- c) The chronometer measures and displays the amount of time remaining, and is also controlled from the referee's assistants' table.
- d) The side indicator - this equipment signals when a ball has struck the side mantle, and may be connected to the automatic point meter so that the meter automatically disqualifies invalid throws. The side indicator is only active in one third of the track, measured from the front skittle base, towards the throwing board.

5.4 REQUISITES OF THE SPORT

5.4.1 THE SKITTLES

- a) In all IBSA competitions, plastic skittles of the prescribed standard weight and size are used.
- b) Numbering of the skittles is done according to their position on the skittle base cross:



- | | |
|-----------------------|----------------------|
| No.1 Front corner | No.6 Right corner |
| No.2 Left front lady | No.7 Left rear lady |
| No.3 Right front lady | No.8 Right rear lady |
| No.4 Left corner | No.9 Back corner |
| No.5 King | |

- c) All skittles except the king (No.5) are 400mm high (with a 1.5mm tolerance). The king (No.5) is 430mm high (with a 1.5mm tolerance). When using the ASSE, the organisers may choose to use skittle No.5 (the king) without its cap. Crossed trims, vertical on the axis of the skittle are in circles and form the prescribed profile of the skittle. According to the forms, we distinguish the base (or heel), the body, the neck and the head of the skittle.

The main requirement of the sizes is that the bottom diameter of the base is 65mm. The skittle diameter from the height of 50mm to the height of 160mm is 100mm (with a 1.2mm tolerance).

A hole (with diameter 20mm and depth 50mm) should be made through the centre of the bottom of the skittle. Into this hole, a small steel ball (diameter 19mm) is placed, which is pressed by a steel spring or a rubber roll into the opening in the steel bed of the skittle (diameter 55mm, thickness 5mm). The bed is inserted into the bottom of the skittle.

- d) The weight of the skittle is 1.75kg (with a 30g tolerance). Skittle No.5 (the king) is 1.78kg (with a 30g tolerance).
- e) The surface hardness of the skittle should be 45-50 Shore D at the temperature of 20C (as prescribed by WNBA/FIQ rules).

5.4.2 THE BALLS

The balls are made from artificial materials. The material most often used is "Leukorit". The weight of the balls is 2818 - 2871g. The diameter is 160mm (with a 0.5mm tolerance) for the men's and juniors' categories. The surface hardness of the balls should be 70-80 Shore D at 20C (according to WNBA/FIQ rules).

All skittles and balls used for all kinds of matches and competitions must adhere to the prescribed parameters.