# B-Ball Tactics

The game is played with a combination of three “ballers” of each of the three primary disciplines of b-ball with primary stats (called “modifiers”).

**Guard**

*Controls the ball during offense, best passer.*

Shooting: 2

Passing: 3

Dribbling: 3

Drive: 1

Ups: 1

“D”: 2

*Get FREE pickups of adjacent LOOSE balls.*

**Center**

*Best Defense and Best Performer in the Paint*

Shooting: 1

Passing: 2

Dribbling: 1

Drive: 3

Ups: 3

“D”: 3

*Opponents can’t run picks on Centers.*

**Forward**

*Most versatile on offense. Shooter.*

Shooting: 3

Passing: 1

Dribbling: 2

Drive: 2

Ups: 2

“D”: 1

*Move 1 space and shoot with no modifier change*

A Baller is a participant in a B-Ball Tactics minigame that has been imbued with superior b-ball ability. All Ballers have these characteristics:

1. **A Baller extends the Actor type in the Object Model.**
2. **A Baller has a CLASS (either forward, guard, or center)**
3. **A Baller has a set of BASE STATS, or stats for shooting, passing, dribbling, driving, Ups, and “D”. These base stats are all set at the default value of 3. This means that each Baller has an unmodified 50% chance of performing all Actions until a class is applied.**
4. **A Baller has a set of CLASS STATS determined by the Baller’s class. These are shown in the above table.**
5. **A Baller knows their position on the court (represented by tile-x and tile-y position variables)**
6. **A Baller has a STANCE and a facing DIRECTION.**
7. **A Baller has a Zone of Control that determines their bonus and movement abilities.**
8. **A Baller can use Zaubers (see Zaubers).**

In addition, a Baller has the following behaviors:

1. **A Baller moves 0, 1 or 2 spaces on all turns when the ball is IN POSSESSION.**
2. **A Baller moves 0, 1, 2 or 3 spaces when the ball is LOOSE.**
3. **A Baller ends a turn on either OFFENSIVE or DEFENSIVE stance, aiming in a cardinal direction. Each stance carries over to the next turn, and defines that Baller’s Action list.**
4. **A Baller faces in a cardinal DIRECTION, either Up, Right, Down, or Left, after exhausting their Action and movement tokens but before changing stance.**
5. **All Ballers move together as a team, in any order. Teams take turns back and forth. Possession does not determine whose turn it is. All ballers must have their turn before the other team goes, regardless of where the ball is.**
6. **The Baller dribbling must always be in OFFENSIVE STANCE.**
7. **If the team moves into a FORMATION, they skip the opponent’s turn and move again.**

**How to Win: the game is a race to 12 baskets, but the leading team has to win by at least two.**

Zone of Control (ZoC)

The front most six squares relative to the position of the Baller constitute the “Zone of Control”. A Zone of Control determines where you can interact or use an Action. Zones of Control also determine bonus modifiers for Actions.

For spaces #1, #2, #4, and #5, all bonus Action modifiers are subtracted by 1. (See Action Rolls for more information.)

The Court

The game is played on an 8x7 tiled arena called a court. There are opposing, impassible baskets on opposite ends of the court called Hoops. These Hoops are surrounded by “the paint”.

Each tile has a predetermined shot modifier (see Shooting for more information). A “jump ball” determines who has the ball at the beginning of the game.

The Referee

The Referee is the unique B-Ball Tactics rulemaster for a game. It is an invisible, collisionless scorekeeping and rules object placed somewhere in the arena room. The Referee handles scoring and other global functions. All Referees have the following characteristics:

1. The Referee keeps SCORE of the game and it keeps track of whose TURN it is.
2. The Referee contains functions to check legal and illegal moves. This is a two-part operation:
   1. Basic Game: when monitoring the core game, there will never be an opportunity for a Baller to break a rule (for example, by moving too far or traveling, etc.). The game UI will call Referee functions as checks in order to disallow all illegal Actions and movement.
   2. Duergar Game: if a referee is a Duergar, it has a list of active Duergar rules (see Duergar Rules for more information). A Baller will not be prevented from breaking these rules, and so penalties may be imposed for doing so.
3. The Referee contains the GAME TIME and the TIME SINCE LAST SHOT. Restrictions can be imposed on both, by imposing a time limit in the former case and a shot clock restriction in the latter.

Tiles

A Tile is a grid square on a B-Ball Tactics court. All Tiles have the following characteristics.

1. A tile is an extension of Entity (or possibly Particle).
2. A tile has a SHOT MODIFIER that interacts with a Shoot Action to generate a shot probability. This can be between -5 and -1.
3. A tile has OCCUPANCY. If this is zero, then the tile is unoccupied; if it contains a GMS instance ID, then referring to occupancy in the code will return the Baller currently occupying the tile.
4. A tile has a flag denoting whether or not it is a TRIP TILE. This is used for certain Zaubers.

Hoops

A Hoop is a goal in a B-Ball Tactics minigame. All Hoops have the following characteristics:

1. A Hoop is an extension of the Entity object.
2. A Hoop has a DIRECTION (the cardinal direction the Hoop is facing)
3. A Hoop has a Zone of Control. This is the Hoop’s Interaction Space, (+1, x AND y), or the Hoop’s position tile plus the five tiles surrounding the Hoop. A Hoop’s Zone of Control is also known as the paint.

The Paint

The paint is the area around each basket. The paint can also be considered the Hoop’s Zone of Control, oriented in the direction the Hoop is facing. Possessing the ball within your opponent’s paint is an automatic point. If the interaction vector is (+1, x), then the shot is a dunk, otherwise it is a layup. (See Shooting for more information.)

A Baller may NOT possess the ball, dribble, or take a position in the opposing team’s paint while outside the paint! If a Baller wants to enter an opposing team’s paint, driving in with the ball is the only option. So if a team wants to score, a decent way to do it is by passing the ball to a teammate who is already inside the paint, as they will automatically make a successful shot if the pass itself is successful.

Once inside the paint, a Baller may move around if that Baller is not in possession of the ball. This is useful for picking up a rebound or performing an alley-oop. On completion of a basket, all opposing ballers must exit the paint if possible.

Action Rolls

When an OFFENSIVE player attempts to perform an Action, the unmodified success rate is 50%, determined by a 6D roll (1-3 fails, 4-6 succeeds). The success rate is modified in this order:

1. The stat associated with the Action is added to the Baller’s base stat. This is called the adjusted stat.
2. The defender’s opposing stat is subtracted from the Baller’s adjusted stat.
3. The modifier of the Baller’s intended tile is subtracted from the Baller’s class stat. If the Baller is shooting, the Baller’s intended tile is the tile they are standing on; otherwise, the Baller’s intended tile is their destination tile.

Once the modifiers move the threshold of success up or down, the roll is thrown and determined to succeed.

For examples of Action Roll calculations, please see the Examples section.

Loose Ball

When a ball is LOOSE, it stays on the court in that space until a baller picks it up by moving onto that tile, or using their “D” to grab the ball from an adjacent tile. For centers and forwards, grabbing the ball from an adjacent space results in an action, much like dribbling, that ends that Baller's turn. This does not apply to guards.

A loose ball does not travel during turns.

Jump Ball

A Jump Ball decides possession at the start of the game. Roll to decide, Ups modifies.

Out of Bounds

If a shot is knocked backwards OUT of the 8x7 court to an imaginary tile extended from the tiles in play, then the ball is considered LOOSE, but only can be picked up by the team that last possessed the ball.

A Brief Aside on Interaction Spaces

An Interaction Space is the space in which an Action can be executed. It is represented as a grid imposed on the court with the center origin of the grid resolving at the position of the Baller.

The positive direction for an Interaction Space is ALWAYS the direction the Baller is facing, and the negative direction is to the Baller’s back.

[pic]

This is the notation used to define Interaction Spaces. There are two components to this notation: the VALUE and the EXPRESSION. This notation is strictly for internal rules definitions; the player should never be shown this! It’s basically for me to keep track of what I’m doing and have an easy way to know at a glance what the range of an Action is.

The VALUE can be anywhere from -16 to +16 (though only a fraction of this range is ever needed at any given time), and it represents positive or negative movement in the direction a Baller is facing. So, if a Baller is facing left, then +16 is to the left, and -16 is to the right. The coordinate space changes with the direction of the Baller.

The EXPRESSION can use addition or logical AND as operators and contains some combination of the X and Y axes as operands. An expression can also be inverted with a logical NOT operator.

Here are some common space vectors:

* (0): the zero vector. This represents a circumstance where the only thing a Baller can interact with is themselves. The Interaction Space of dribbling, for example, is the zero vector.
* (±i, x) and (±i, y): these restrict movement along the X and Y axes. A Baller can only move ±i tiles along the chosen axis. Certain Zaubers or Duergar rules may use this kind of vector.
* (±i, x + y): x + y must be less than or equal to ±i. You can think about it like so: no matter what direction I travel or what path I take, I am allowed to move i spaces, and no more. The Interaction Space of most types of movement is this kind of vector.
* (±i, NOT (x + y)): the inverse of (±i, x + y). This particular vector represents diagonal movement in all four diagonal directions.
* (±i, x AND y): x must be less than or equal to ±i AND y must be less than or equal to ±i. This carves out a perfect square extending ±i tiles from the Baller in both cardinal and diagonal directions.
* (+i, x AND y): same situation as above, but i can never be less than zero. The Zone of Control is an example of this Interaction Space.
* (-i, x AND y): same situation as above, but i can never be greater than zero.

The sign of i is ignored for the first operand and applied to the second. So (+1, x AND y) includes -1, 0, and 1 on the x-axis but only 0 and 1 on the y-axis. Compare this with (+1, y AND x), which includes -1, 0, and 1 on the y-axis but only 0 and 1 on the x-axis.

Actions

An Action interacts with its Interaction Space to change the state of the game in the favor of the Action’s user. An Action has the following characteristics:

1. An Action has a TYPE. Allowed Action types are MOVE, PASS/HAND, SHOOT, DRIVE, PICK, DRIBBLE, STEAL, BLOCK, FOUL, STANCE, FACE, and PICKUP.
2. An Action has an Interaction Space.
3. An Action has a user. A user is always of type Baller.

Offensive Actions (must be in OFFENSIVE stance to use)

* Pass: toss the rock to a teammate. The ball moves in a straight-line path from the baller's chosen "pass hand" (left or right) to the recipient's chosen pass hand. This provides two discrete paths to be chosen from in cases where the passing angle is not a multiple of π/4 (45°). Interaction space: entire court.
* Hand: like passing, but the ball is handed to a teammate instead of thrown. A pass that occurs entirely within the passer's Zone of Control is treated as a Hand action automatically. Hand actions are required for the invocation of certain Duergar rules where passing that isn't a Hand action is disallowed. Interaction space: (±1, x AND y).
* Shoot: jump and shoot. The ball travels the same way a pass does. Interaction space: entire court. (See Shooting for more information.)
* Drive: attempt to "go hard in the paint" and pass a defender diagonally while in their #1 or #5 square, but ONLY to a destination in the paint. Interaction space: (+1, NOT (x + y)).
* Pick: automatically gain another movement space if a Baller is touching (±1 x AND y) a defender that borders or is inside the paint. The Baller cannot possess the ball and set a pick at the same time. Interaction space: (±1, x + y).
* Dribble: the default action that is performed if no other action has taken place. This is a defendable action: if a Baller possesses the ball in a defender's Zone of Control, the defender will automatically attempt to steal. Interaction space: (0).

Defensive Actions (must be in DEFENSIVE stance to use)

* Steal: activated when a Baller on offense dribbles the ball or passes in a defender's Zone of Control. If successful, the defender gains control of the ball and switches to an offensive stance. In stat calculation, the offense uses Dribbling or Passing, depending on the circumstance, and the defense uses “D”.
* Block: activated when a Baller on offense shoots the ball when inside the defender's #3 space. If successful, the ball is knocked LOOSE. In stat calculation, the offense uses Shooting and the defense uses Ups.
* Foul: activated when a Baller on offense attempts a drive into the paint. A Foul Action supersedes a Steal Action when the conditions for a foul are met. The ball stays in the Baller’s intended tile (it is knocked LOOSE) and the Baller is sent back to #7 (one space backward). In stat calculation, the offense uses Driving and the defense uses “D”. There is no penalty for fouling.
* Pickup: activated when the Baller picks up a LOOSE ball. If a Baller navigates onto a tile with a loose ball, the pickup is implied and no Action token is spent. If a Baller picks up a loose ball from an adjacent square, the Baller spends their Action token for that turn, unless otherwise indicated. Uses “D”.

Other Actions (can use while in either OFFENSIVE or DEFENSIVE stance)

* Move: the Baller moves to the indicated tile. (See Movement Rules for more information.)
* Stance: the Baller changes their stance. Choose between either OFFENSIVE or DEFENSIVE stance. The stance holds until the next time the Baller is asked to change their stance.
* Face: the Baller faces a cardinal direction. Choose between Up, Right, Down, or Left. The direction holds until the next time the Baller is asked to change their direction.
* Zauber: use a Zauber. Interaction space depends on the Zauber used.

Movement Rules

* The Interaction Space of any movement when the ball is in possession is (±2, x + y).
* The Interaction Space of any movement when the ball is loose is (±3, x + y).
* The Interaction Space of a pick is a (±1, x + y) space that is "tacked on" to the current movement space. So if the Interaction Space of a move is (±2, x + y), and the Baller picks, then the Interaction Space of the turn is (±2, x + y) AND (±1, x + y), with the pick’s center origin resolving at the position the Baller moved to during their movement phase. NOTE: this is NOT the same as (±3, x + y)!

Shooting

Shooting is determined the same as any Action, but with some additional math involved.

* A shot is automatically given a modifier based on the tile where the ball was shot. (See The Court for more information.)
* A shot is block-attempted by an eligible defender that is adjacent to the shooter in ANY direction (anywhere in the defender’s Zone of Control).
* The result of the shot is “stacked” like so:

[pic]

Successful shots are at the top.

Missed shots are at the top-most fail results. So if the shot modifier for the tile you are shooting from is -1, the HIGHEST failing shot is a missed. Blocked shots are at the bottom of the results. (See Examples for more examples explaining missed and blocked shots.)

Shot Classification

Proximity to the opposing team's Hoop determines the shot classification:

* (+1, x) is a DUNK. A dunk may or may not break the backboard. ☑
* (NOT(+1, x)) is a LAYUP. Or: a layup can occur anywhere within the paint except for the space immediately in front of the Hoop.
* (NOT(+1 < i < +3, x AND y)) is a NORMAL SHOT. Normal shots can be shot from anywhere outside the paint to the half-court line.
* (i > +3, x AND y) is a HALF-COURT SHOT.

Duergar rules can be imposed that disallow every type of shot.

If a shot is attempted by someone on a Baller’s team, and the shot misses, but is not blocked, one of three things can happen:

1. If the ball lands in an empty tile in the paint, the ball is considered LOOSE. Defenders can then navigate to the ball and attempt to Pickup with “D”.
2. If the ball lands in a tile occupied by the shooter’s teammate, the teammate will AUTOMATICALLY complete the shot. This is known as an “alley-oop”. On a successful alley-oop, the shot will be reclassified from DUNK or LAYUP to ALLEY-OOP and Duergar Rules will be applied if the Referee is a Duergar.
3. If the ball lands in a tile occupied by the shooter’s opponent, the opponent will AUTOMATICALLY gain possession of the ball and switch to OFFENSIVE stance. This is known as a “rebound”. Unlike the alley-oop, a rebound is never reclassified.

Making a Shot

Once the shot is made, the ball rests in the Hoop Space until a defender moves adjacent to it and attempts to pick it up with their “D” skill (this is an automatic pick up for the guard). The ball is considered LOOSE during this time and all ballers are allowed to move up to three spaces per turn. All made shots count increase the scoring team's basket count by 1.

Formations

There are 3 standard formations that you can end your turn with to get another turn, skipping the opponent. They also have mirrored versions which are valid formations as well. The direction of each baller must be the SAME and in each example’s case: UP. Formations are only valid when the ball is in YOUR POSSESSION.

[pic]

Basic: Basic movement down-court.

[pic]

Four Out: Choice to dish to center or pass out to forward.

[pic]

Hi-Lo: Designed to be a quick pass to a perimeter shot with the forward.

You cannot return to the formation you had in the previous turn (in order to avoid stalling). The quick unbroken movement advantage of a formation is checked by the disadvantage of leaving your Hoop open while attempting to move the formation to a score.

Zaubers

Zaubers are special abilities that can be used as Actions. Current ideas for Zaubers include:

* Levitate the ball: ball moves with its possessor and is understood to be under possession, but is far away from its possessor (this can make driving really complicated though)
* Trip tile: players can use a zauber to set up a “trip tile” (where if a baller collides with it, they trip and either their defending action is invalidated or when in offense, breaks a formation)
* Buffs/Debuffs: the standard enhancements/hindrances to a baller’s base stats
* Four Arms: a baller’s ZoC extends to the three tiles behind that baller
* No miss, no move: in a baller’s next turn, that baller is GUARANTEED to score, but they cannot move for that turn (and possibly x turns afterward, depending on how bad you want to make the penalty for this one). This could also be applied to stealing and blocking.
* Other weird stuff I couldn’t possibly think of!

Duergar Rules

During the course of the metagame, the player’s goal is to ascend to the top of the B-Ball Tactics League by conquering all B-Ball Tactics arenas on Necron 7 and become owner of the League. At this point, the player can choose to keep the League, or sell it to the Duergars for a buttload of money. After this sale transaction, ZaNy RuLeS known as “Duergar Rules” are allowed to take effect now that a Duergar referee is in place. The goal here is to overcomplicate the game to an absurd degree.

Current ideas for Duergar Rules include:

* The only type of scoring allowed is (dunks, layups, shots from half-court, etc). Conversely, certain types of shots may be explicitly disallowed.
* Ballers must hand the ball to each other (no passes)
* The hoops have either been made \*really tall\* or \*really short\* (this changes the court’s shot modifiers wholesale)
* The game must be played \*inside\* the paint (this is a really confining one and shouldn’t be used for an entire game, but if you have a game where the Referee switches the active Duergar rules every so often based on a fixed time or number of turns, this could work)
* All ballers are the same height (invalidates the stats of the forward)
* All ballers are very “polite” (invalidates the stats of the center)
* All ballers, all thumbs (invalidates the stats of the guard)
* We put *stairs in here* (tiles have height like in a tactical RPG and the ballers must compete for advantage on the high spots. This could probably be checked against the court modifiers). Honestly, this one could lead to hell of feature creep so I don’t know about this one.
* No pickups (if a ball is loose, that’s where the game ends)
* Other mondo stuff I didn’t think of goes here!

Resources

Baller stat comparison

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| --- | --- | --- |
| **Baller Stat Comparison** | | |
| **Action** | **Strongest** | **Weakest** |
| Shooting | Forward | Center |
| Passing | Guard | Forward |
| Dribbling | Guard | Center |
| Driving | Center | Guard |
| Ups | Center | Guard |
| D | Center | Forward |

Shooting probability tables (unopposed)



