

GLOSSARY OF TERMS AND PARAMETERS IN INSTAT FOR BASKETBALL

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INTRODUCTION

InStat provides its users with a wide range of statistical products in various types of sports. This glossary contains definitions of the “Parameters” InStat uses for their basketball products.

Parameters, in essence, are the Actions that InStat uses to define their statistical products. Actions include, but are not limited to, any player’s actions with the ball(except passes which do not result in a shot), defensive plays against different play types and several actions off ball offensively and defensively (like screens and cuts). Actions are subdivided into certain types, which allows InStat to group them by their typology (classification).

Parameters are divided in two groups:

- 1) Parameters produced from direct actions being coded (registered) by InStat analysts;
- 2) Parameters automatically generated based on directly coded ones.

The coding (registration) process occurs with the help of in-house software InStat developed called “Registrator”. In order for the coding (registration) to occur and to provide statistical breakdown, it is necessary for InStat to receive full game footage (excluding halftime break) with visible jersey numbers and a game sheet (at least for one team). If both conditions are met, breakdown is produced through the following principles:

- 1) The match video is synchronized with the analysts breakdown. A player’s status is specified prior to the game (starting 5/bench). The first action is recorded on the 0:00 timestamp as a jump ball, thus putting the ball into play.
- 2) Every player’s action, from the directly coded ones, is registered by an analyst who pauses the video to define the parameters of action.
- 3) Every registered action comes with the characteristics of time (starting from the first registered action), type, x,y coordinates on the court, player committing the certain action and the player’s opponent’s action.

Analysis accuracy is provided by special training of each analyst and the three-step verification routine carried out by supervisors, inspectors and heads of the production department respectively. Once the breakdown process is completed, parameters are produced automatically from the ones coded directly. This is called “first recalculation”.

Parameters generated automatically and through manual coding are an integral part of InStat’s product line. These parameters are subdivided into the following groups below: Team, players, lineups, pairs and referees. From there, each group is then divided even further into various categories. All other parameters out of this list are coded manually unless stated differently in the description.

POSITIONS

Guards - normally the shortest people on the court play on that position. Their role is to organize the offense, call the offensive plays of the team, guard the perimeter in most of the cases. Usually, guards are quick, with good technique and in most cases they are the most skilled players regarding ball control, passing and shooting. There are two main guard positions according to the typical five-position distribution in basketball - those are point guard(1) and shooting guard(2). Both positions differentiate with the responsibilities they represent. The point guard (PG) is usually the floor general of the team, he organizes the offense, tries to distribute the ball between the players and guards the perimeter. While the shooting guard has more scoring responsibilities like shooting the ball, driving to the basket and overall he is heavily relied on by his team to contribute with points. On defense, SG usually needs to be above-average perimeter defender and in most cases, he also guards the best perimeter scorer of the opposing team. A typical signature move for this position is running through a lot of off-ball screens. Of course, in modern day basketball those stereotypes are not mandatory, there are also quite a lot of pre-qualified newly created positions like combo guard, scoring guard, defensive minded guard, etc. but still guards are mostly listed as PG or SG.

Forwards - the players listed as "Forwards" are usually players around 2 meters tall (6'6 - 6'10 inches), quite athletic and versatile, which makes them the best fit for the so-called two-way players (both offensive and defensive minded). Forwards usually should play equally well outside and inside the paint, in most cases they are the most complex players on the court. The two main positions for the forwards are small forward (SF, 3) and power forward (PF, 4). Like the two guard positions, those two forward positions are also a bit different. Small forwards are usually more outside oriented, playing mostly on the perimeter, they can shoot and drive to the basket, but they should be able to play on the low post as well, their length and athleticism helps the team's defensive presence and rebounding. Power forwards are usually taller and bigger than the small ones, they are usually playing on the low post and participate in the rebounding. In modern day basketball, quite a lot of teams are using the so-called "Stretch fours" which is a combination of both positions (SF and PF). Such a player is usually not so tall, his preferred position is SF, but he can play well at the low post, can guard bigger players than him and also has a good outside game. There are also forwards who can organize the offense and have the responsibilities of the guards, but they are still not so oftenly seen.

Centers - usually the center is the tallest and the biggest player from each team. He plays mainly on the low post, makes most of the screens off and on the ball, the team relies heavily on his rebounding. He is also guarding the biggest player from the opposing team, but on defense his major task is to protect his team's paint. Mostly his points are coming from the paint, with hook shots, layups and dunks. There are different types of centers in modern-day basketball. There are "Stretch fives" who are more athletic, not so big (not every time), but have an outside and mid-range shooting, in overall, they are more skilled. While on the other side, we have the so-called "Rim protectors" who have the ability to block shots, get rebounds, contest shots in the paint and in overall do a lot of "dirty work" on the court. The best centers usually are good on both offensive and defensive ends. We list the Centers with C or 5.

INSTAT SCOUT

Parameters

Box score

Instat Index (IND) - InStat's objective parameter evaluating the performance of the players during the game. The team's index is calculated as an average of all players' indexes. InStat Index is calculated in every match based on the quantitative indicators of player's actions in the game, as well as the weighted match level coefficient that takes into account the player's level, and the levels of his teammates and opponents. The InStat Index is calculated for a player who played more than 5 minutes in a game or made at least 5 actions.

Minutes (MIN) - Usually, a basketball game is played for 40 minutes (4 quarters of 10 minutes each). There are differences, of course, for example in the NBA, where there are 48 minutes played per game (4x12). Some youth competitions also can be played in a different format. However, we can calculate the minutes each player has played in a single game and that is what the column shows.

Points (PT) - In basketball, the result is tracked by scored **points**. A shot can earn 1, 2 or 3 points, depending on the location from where the shot is taken. We track the points scored from each different player and total points as a team.

Points per player's possession (PPPP) - this is a more advanced statistics which shows how many points on average the player or the team scores on every possession. The formula for this parameter is:

$$\text{PTS}/(\text{FGA}+(0.44*\text{FTA})+\text{TO}) = \text{PPP}$$

where:

PTS - total points scored

FGA - field goals attempted (both for 2-points and 3-points)

FTA - free-throws attempted

TO - turnovers

PPP - points per possession

Field goals made (FG+) - Field goal is every shot or lay-up attempted to the basket from a player. The only exceptions are when a shot is attempted but the person is fouled and free-throws also do not count to the field goals. However, if a player scores a shot and is fouled simultaneously, then the field goal does count. FG+ in our platform indicates how many field goals have been successfully scored.

Field goals attempted (FG) - shows how many field goals have been attempted overall (successful + unsuccessful).

Field goals, % (FG%) - the ratio between successful and total attempted field goals $(\text{FG+}/\text{FG}) * 100 = \text{FG\%}$.

2-pt, 3-pt field goals made, attempted, % - those parameters only count 2 point or only 3 point field goals. The logic is the same as the three parameters for Field goals.

Free throws (made, attempted, %) - free throw is a shot from the top line of the paint rewarded to a team when the opposing team has committed a shooting or unsportsmanlike foul or a foul when the team is in the bonus (after the 4th foul is committed, each committed foul earns the opposing team free throws). Depending on the type of the foul, a team can

be rewarded with 1, 2 or 3 free throws. Each free throw earns 1 point. In **FT+** we count the scored free throws, in **FT** we count all the attempts from the free throw and in **FT%** we calculate the ratio between successful and unsuccessful.

Rebounds (REB) - When the ball jumps out of the basket after an unsuccessful shot attempt, the person who catches the ball first is recording a **rebound**. We track **offensive rebounds OREB** (after unsuccessful attack), **defensive rebounds DREB** (after successful defense) and **total rebounds REB** which we receive after we combine offensive and defensive ones. We do not track **team rebounds!**

Assists (AST) - A key pass that has led to the scoring of a point. Passes leading to free throws are not tagged as assists.

Points of assists - How many total points were scored after assists. As there are 2-pt and 3-pt field goals, for example, 5 assists might lead to 10 points (5 2-pt FG), but they can lead to 15 points as well (5 3-pt FG).

Screen assists (SA) - Screen is a typical basketball move where one player sets his body with tight crossed hands down in the form of a wall to help his teammate get open from his defender. This parameter counts the times when a screen has led to scoring a field goal.

Points of screen assists (POSA) - This stat is related to the previous one. It shows how many points have been scored from screens, while the previous just shows the number of successful field goals.

Secondary assists (SA) - It is like an assist to the assist (the pre-last key pass that has led to the scoring)

Steal (STL) - When a team possesses the ball and the opposing team gets the ball back to their possession without conceding a basket or stopping the time, then the opposing team and the player who returned the possession to his team records a **steal**.

Turnover (TOV) - When a team loses possession of the ball without attempting a field goal, no matter if the game has or hasn't stopped, then a turnover for this team and player, who committed it, is recorded. Note that steals for one team will mean turnovers for the other team. **Anyway, if the ball is out of bounds and the possession needs to change, that is only a turnover, not a steal!**

Block (BLK) - Block is when a player attempts a field goal but an opposing player deflects the shot attempt during the shooting motion. Usually, this is the most attractive defensive part in basketball.

Deflections (DEF) - When a player touches the ball while the opposing team has the possession, this action is recorded as a deflection.

N.B. We track deflections only in the advanced basketball breakdown!

Foul (F) - Every physical contact which is not made according to the applied basketball rules is penalized by a foul. Fouls can be given for unsportsmanlike behavior as well. Usually, a player can commit a maximum of 5 fouls. When he reaches 5 fouls, the player is thrown out of the game. In the NBA, the limit is 6 fouls.

Fouls drawn (FD) - The amount of fouls committed against a player or a team. The previous stat shows the number of fouls committed from the respective team or a player.

EFFICIENCY

Now, we are going to review the more advanced terminology of basketball.

Plus/Minus (+/-) - This stat shows what is the difference in the score between the teams during a particular player's playing time. For example, if a player has a +/- of 10 and he has played 30 minutes, that means for those 30 minutes, his team has outscored the opponent.

Defensive rating (DRAT) - The number of points allowed per 100 possessions by a team. For a player, it is the number of points per 100 possessions that the team allows while that individual player is on the court.

Formula is : $100 * ((\text{Opp Points}) / (\text{Opp POSS})) = \text{DRAT}$

Where,

Opp Points - opponent scored points

Opp POSS - number of opponent's possessions

DRAT - defensive rating

Number of player's possessions (PP) - The number of possessions a team had when a player was on the court

Team points with player (TP) - How many points the team has scored while a particular player from this team was on the court

Offensive rating (ORAT) - The number of points scored per 100 possessions by a team. For a player, it is the number of points per 100 possessions that the team scores while that individual player is on the court.

Formula is: $100 * ((\text{Team Points}) / (\text{Team POSS})) = \text{ORAT}$

Where,

Team Points - Team's scored points

Team POSS - Team's number of opponent's possessions

ORAT - offensive rating

Net rating (NRAT) - Difference between the offensive and defensive rating. If the defensive is bigger than the offensive, then the net rating is negative.

Assists to turnovers ratio (AST/TO) - This index literally shows the ratio between the assists and the turnovers. It is a great index for the point guards, the higher the index, the better playmaking skills they have.

Steals to turnovers ratio (ST/TO) - Again steals divided to the turnovers. If a player steals the basketball a lot, but also turns it over a lot, the steals become insignificant because the player and therefore the team, cannot keep possession of the basketball. That is what this index shows.

Draw foul rate (FT/FGA) - The formula is a ratio between the fouls drawn and the field goals attempted.

True shooting percentage (TS%) - True shooting percentage is a measure of shooting efficiency that takes into account field goals, 3-point field goals, and free throws.

Formula is: $\text{Points Scored} / (2 * (\text{Field goals attempted} + 0.44 * \text{Free throws attempted})) * 100$

Effective field goal % (eFG%) - The statistic accounts for the fact that a three-point field goal is worth more than a two-point field goal, as described by basketball-reference. The formula is $(\text{FGM} + 0.5 * \text{3PM}) / \text{FGA} * 100$

Where,

FGM - Field goals made

3PM - Three-point field goals made

FGA - Field goals attempted

Usage % (USG%) - The goal of Usg% is to calculate the percentage of team plays a player was involved in, while he was on the floor. If the play ends in one of the three true results: field-goal attempts, free throws, or a turnover, it will count toward the player's Usg%.

Formula: $100 * (((\text{Field goals attempts} + 0.44 * \text{Free throws attempts} + \text{Turnovers}) * (\text{Team minutes})) / (\text{Player minutes} * (\text{Team Field goal attempts} + 0.44 * \text{Team Free throw attempts} + \text{Team Turnovers})))$

N.B Team minutes is the number of games multiplied by the minutes of a game (40 or 48, depending on the league!)

N.B. Offensive and defensive rating can be calculated for the players individually as well. In the link below, you can find how those ratings are calculated for each player <https://www.basketball-reference.com/about/ratings.html>

PRE-SHOT COMBINATIONS

We track several types of pre-shot combinations including if the shot was successful, how many attempts were made and respective percentages. Those combinations represent the action which was made to get to the shot. Additionally, we record information for successful FG from the respective combination, the total attempted FG from the combination, plus the percentage made FG out of all the attempts for the particular combination. Here are the pre-shot combinations which we track:

Pick'n'Roll - An offensive play in which a player sets a screen (pick) for a teammate handling the ball and then slips behind the defender (rolls). There are two types: Pick'n'roll handler - when a ball handler makes a shot attempt; pick'n'roll roller - when a screener makes a shot.

Pick'n'Pop - An offensive play in which a player sets a screen (pick) for a teammate handling the ball and then instead of getting inside the paint, jumps out at the 3-point line or at the mid-range, or just stays where the screen was set. We record only when the popper gets a shot attempt, if the handler makes the attempt, then it's recorded to the Pick'n'Roll handler field goals.

Transition (offense) - It refers to the process of changing from defense to offense. Transitions can be easily mistaken with fast breaks, but transition offense occurs between the fast break and the set half-court offense.

Isolation - An offensive play when a team gives the ball handler room to play one-on-one against his opponent.

Catch and shoot - Play which is finished by a jumping shot at least 3 meters from the rim by a player who controlled the ball less than 2 seconds or didn't dribble.

Catch and drive - Play occurs when a player receives the ball, makes a dribble or dribbles and then attempts a field goal.

Screen off - A play when a player gets free for a shot out of a set screen from around the rim towards the three point line. It includes running around, deflecting and getting free off a screen.

Post up Play - when an offensive player receives the ball within 4,5 meters with his back to the basket and makes a shot attempt.

Hand off - A play when a ball handler is squeezed between his opponent and teammate and passes the ball to his teammate for a shot attempt.

Cut - A play when a player attempting to shoot receives the ball while running towards the rim. It also includes screens, fast breaks and situations when a player gets open at the rim.

Putback - A play when a player rebounds the ball and shoots immediately without passing or dribbling.

DEFENSE AGAINST PRE-SHOT COMBINATIONS

For all these pre-shot combinations, we track how each player defends them. For the purpose, a player's personal match-up needs to perform a particular pre-shot combination in order for our system to include it in the breakdown. Pick'n'roll shots defense includes both roll and handler field goals. Those defensive parameters have "Opp" or "Opponent" in front of the combination's name and we also track successful shots, total attempts and percentages.

☐ Defense against shooting combinations

- | | | |
|---|---|--|
| ☐ Opp Transition shots made | ☐ Opp Post up shots made | ☒ Opp Pick-n-roll shots made |
| ☐ Opp Transition shots | ☐ Opp Post up shots | ☒ Opp Pick-n-roll shots |
| ☐ Opponent Transition shots made, % | ☐ Opponent Post up shots made, % | ☒ Opponent Pick-n-roll shots made, % |
| ☐ Opp catch and shoot shots made | ☐ Opp Isolations shots made | ☐ Opp Pick-n-Pop shots made |
| ☐ Opp catch and shoot shots | ☐ Opp Isolations shots | ☐ Opp Pick-n-Pop shots |
| ☐ Opp Catch and shoot shots made, % | ☐ Opponent Isolation shots made, % | ☐ Opponent Pick-n-Pop shots made, % |
| ☐ Opp catch and drive shots made | ☐ Opp Hand off shots made | |
| ☐ Opp Catch and drive shots | ☐ Opp Hand off shots | |
| ☐ Opp Catch and drive shots made, % | ☐ Opponent Hand off shots made, % | |
| ☐ Opp Screens off shots made | ☐ Opp Cuts shots made | |
| ☐ Opp Screens off shots | ☐ Opp Cuts shots | |
| ☐ Opponent Screens off shots made, % | ☐ Opponent Cuts shots made, % | |

ADDITIONAL DATA

Contested field goals (CFG, CFG+, CFG%) - If there is an opponent between the rim and a shooter - it's a contested shot. We once again track all 3 parameters - successful, total attempts and percentage.

Uncontested field goals (UCF, UCF+, UCF%) - When there's no opponent between the rim and the shooter. We once again track all 3 parameters.

Opponents field goals (OFG, OFG+, OFG%) - Field goals attempted by a player who at the moment of the play is guarded by the player who we are currently reviewing. This tool helps us to find how a player performs defensively on match-ups. We track all 3 parameters.

Points off turnovers (POT) - How many points a team has scored after the opposite team commits a turnover.

Turnovers ratio (TR) - The percentage of a team's or player's possessions that end in a turnover (for 100 possessions)

Formula is: **Turnover Ratio Formula**=(Turnovers)*100)/ [(Field Goal Attempts)+(Free Throw Attempts*0.44)+(Assists)+(Turnovers)]

Defensive rebounds % (DR,%) - This statistic shows how often the player or team can rebound the ball and limit the number of scoring chances for the offense. It is calculated by dividing the total number of defensive rebounds generated by the player or team by the total number of rebounds available. Multiply the result by 100 to get a percentage.

DRB% = Defensive rebounds/(Defensive rebounds + Opponents offensive rebounds)*100

Offensive rebounds % (OR,%) - Offensive rebound percentage is an estimate of the percentage of available offensive rebounds a team grabbed out of all possible rebounds on the offensive end.

Formula is:

ORB% = Offensive rebounds/(Offensive rebounds + Opponents defensive rebounds)*100

DRIVES

In this section, we track the drives towards the basket from both sides (left or right). Once again, we track all three parameters - successful, attempts and percentage. A drive occurs when a player goes towards the basket with face ahead while dribbling. The idea is to attack the basket. A drive can end in a shot, pass and turnover, but sometimes a player who drives to the rim can decide to keep dribbling without making any of those three actions. Those are types of drives which we do not track. In the parameters tab, we track only drives which finish with a field goal attempt of the player who made the drive.

Drives in this section are not a new pre-shot combination type. Usually, drives might occur after an isolation, catch and drive, screens on and off the ball, even a cut. The idea of the section is to analyze only the drives, whether they are more dangerous on the left, or from the right and how successful they are overall.

We analyze how a player defends the drives of his personal match-ups - from both sides and overall (successful,

☑ **Drives**

- ☑ Drives made
- ☑ Drives with shot
- ☑ Drives, %

- ☑ Right drives made
- ☑ Right drives
- ☑ Right drives made, %

- ☑ Left drives made
- ☑ Left drives
- ☑ Left drives made, %

attempts, percentage).

☑ **Drives defense**

- ☑ Opp Drives shots made
- ☑ Opp Drives shots
- ☑ Opponent Drives shots made, %

FIELD GOALS ANALYSIS

Made field goal - A scored basket for 2 or 3 points.

Missed field goal - An unsuccessful shot attempt for 2 or 3 points.

Fouled shots - Shot attempts in which the shooter has been fouled by an opposing player. Fouled shots are not counted as field goals. Also, those shots must not be scored ones. The shooter earns two free-throws.

And one shots - Successful field goals in which the shooter has been fouled by an opposing player. The shot is counted as a successful field goal. Except the two or three points awarded from the shot, the shooter earns one free-throw additionally.

Blocked shots - Shots that were blocked by an opposing player.

Assisted shots - Successful field goals that were made after an assist from a teammate.

ATO (After time out) - Field goals that were attempted on the first attack after a time out.

Seconds to violation - Usually, one basketball attack must not continue longer than 24 seconds (30 for US college basketball). In this feature, we can sort the field goals attempted to seconds left to the shot clock violation.

Shot types - A basketball shot can be done in a variety of ways. In Scout we analyze the types of all the shots attempted. Here are the types:

Pull up - Jump shot attempt at least 3 meters from the rim after dribbling or in a static position.

Lay up - Two-point shot attempt made by leaping from below, laying the ball up near the basket, and using one hand to bounce it off the backboard. Most often is made after two steps.

Hook - Throwing the ball with a sweeping motion of the arm in an upward arc.

Dunk - Shot that is performed when a player scores by putting the ball directly through the basket with one or both hands.

Alley oop - An offensive play in which one player throws the ball towards the basket while his teammate jumps, catches the ball in mid air and puts it in the hoop without touching the ground.

Tip in - An immediate shot after securing an offensive rebound, most often made by fingertips. It counts as a rebound and a shot at the same time.

Floater - A “parachute” shot when a player starts shooting attempts a good distance away from the basket.

Reverse - Shot attempted by a player near the basket in which a player starts at one side of the rim, then shoots the ball underhand at the other side of the rim.

Jumper - Shot attempted from at least 2 meters from the rim executed with a jump from two feet.

Miscellaneous - Our analysts use this option when the video is not so clear and the shot can not be analyzed (most often it happens when a replay is on and the shot in the video is missed)

Mismatch - This action occurs when a bigger player physically is guarded by a smaller one, or the opposite, a quicker and smaller player is guarded by slower and heavier one. In such situations, teams try to take advantage of the mismatch and attack the weak link in the defense.

Clutch - Clutch situations occur when there are less than 5 seconds until the shot-clock violation and in the last minutes of a still undecided match. In InStat we track clutch field-goal attempts which are made in the last 5 seconds of the allowed 24 (or 30) seconds for one attack.

Dribble moves - A shot can be executed after a dribble. There are different types of dribbles that can be performed in order to make space for a field goal attempt. This is something we also track so now we will review the different types of dribbles to get a field goal:

Changing speed - This move is performed when first the player moves slowly and then quickly starts moving faster or the opposite - starts faster and then slows his movement. Typical basketball moves which are in this category are the **hesitation dribble** <https://www.youtube.com/watch?v=a1RytIB1NdE> or “**putting a player in jail**” move https://www.youtube.com/watch?v=O4t_NSOK41M.

Step back - This move occurs when the offensive player makes 1 or 2 steps away from the basket in order to create more space for himself to shoot the ball. Here is an example: <https://www.youtube.com/watch?v=sBnifoDlZHo>.

Quick first step - The offensive player makes a quick and big first step in order to pass his defender and eventually shoot the ball: https://new.instatscout.com/external_playlists/23533333?locale=en&token=f606cdca032c2d1e3b6aa4880d33b7f9

Fadeaway - This shot happens when the shooter pulls his body away from the basket and the defender in order to create more space for him to shoot: <https://www.youtube.com/watch?v=YMjSCBluGY8>

Fake shot - When an offensive player first makes a fake shot attempt and then shoots the ball. This is usually seen from players who want to make their defender jump in attempt to block their fake shot attempt and then they can be easily crossed: <https://www.youtube.com/watch?v=cWvQdtges8o>

Spin move - When a player rotates his body direction in order to release himself from the defender: <https://www.youtube.com/watch?v=A32AnrAa45s>

In and out - A dribble move performed by one hand where initially the player fakes going to one direction, but then quickly changes the dribble to the other direction: <https://www.youtube.com/watch?v=9fGjlkHuqWk>

Change direction - A move where the player performs any kind of dribble to switch his current direction or when he starts making step, but the first one is on one side, but the second is on the opposite one (this is called **euro step**: <https://www.youtube.com/watch?v=1bLVJ1szP14>)

Jab step - When a player is holding the ball still without dribbling, he might make a step to the rim still without dribbling in order for him to make space or fake any kind of movement. This move is called a **jab step**: <https://www.youtube.com/watch?v=aZIWBahy5Uk>

TYPES OF TEAM DEFENSE

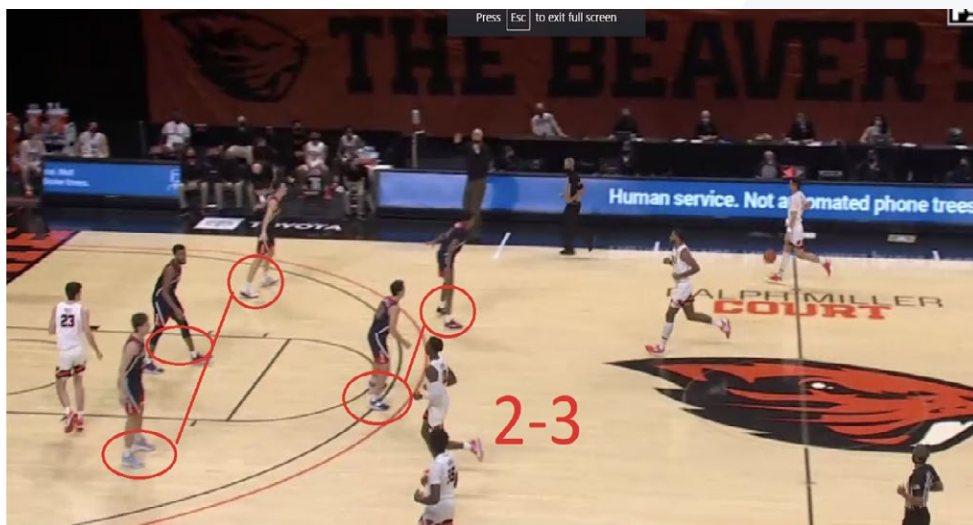
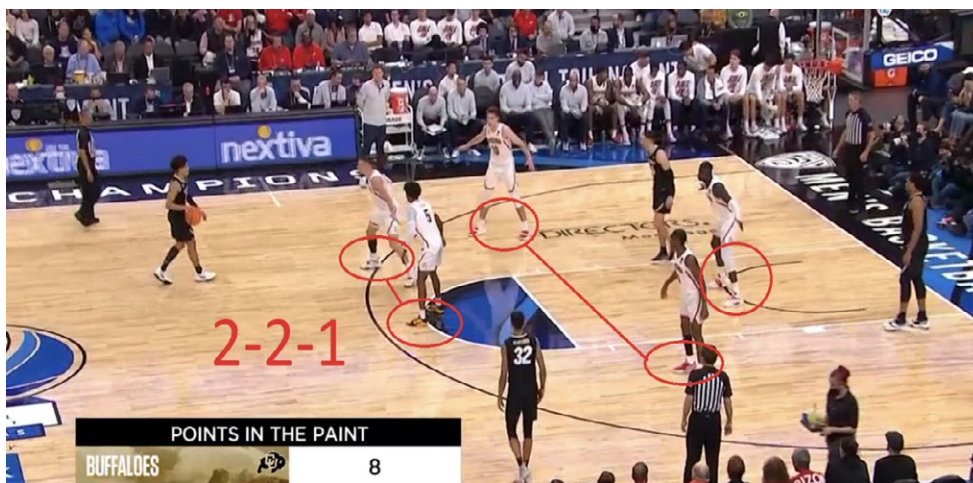
There are three types of team defensive schemes: Personal defense (man-to-man), Zone defense and Mixed.

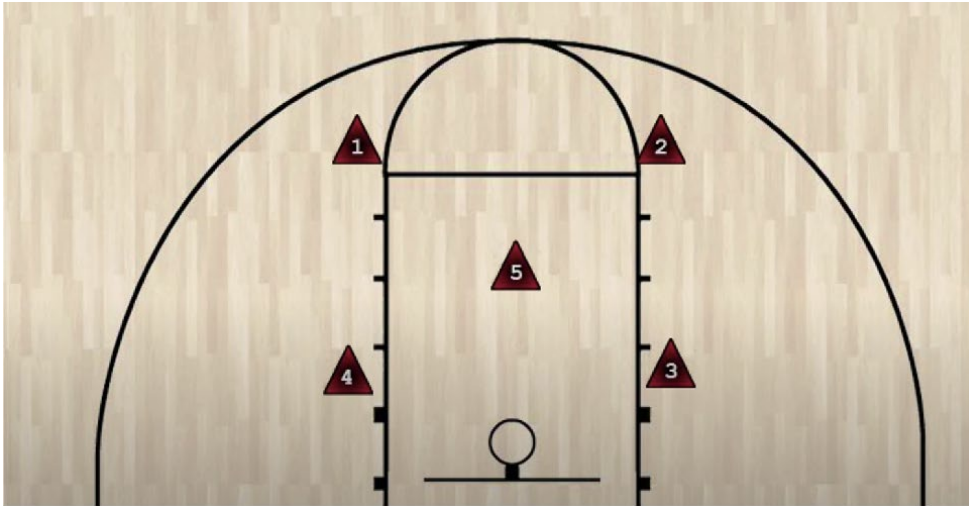
Personal defense is when each player guards another player from the opposing team and each player is personally responsible for the guarding of their personal match up.



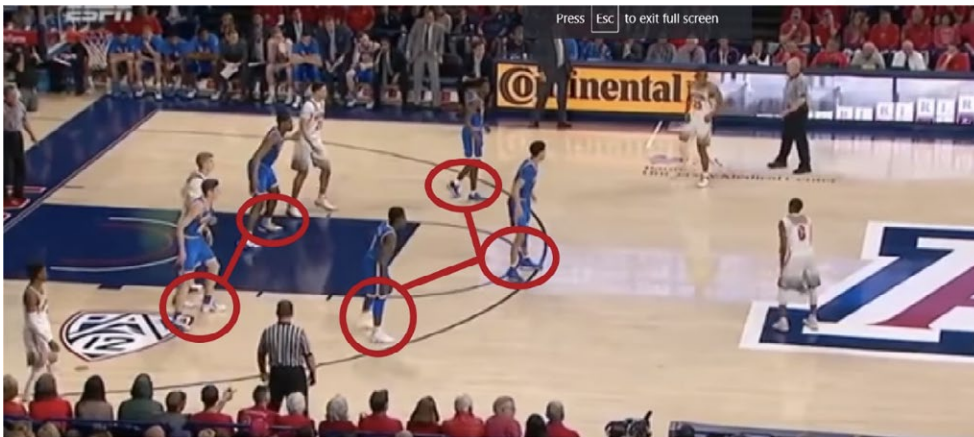
Zone defense - Each player from the defending team is guarding a specific zone in front of their own basket. It is very similar to the way players are defending their goal in soccer. There are several types of zone defense, depending on the formation of the defenders:

2-3 zone - This is the most used zone defense in which 2 players guard the perimeter at the top, while three players have divided the area between the three point line and the rim into three separate zones. As for the three back players, they can be structured in one line which is a typical 2-3 zone, they can be structured with the middle men higher than the other two (**2-1-2**) or lower than them (**2-2-1**)





3-2 zone - Three defenders guard the perimeter and 2 are near the basket. The front three can be playing on one line (**3-2**) or the middle man can be higher than the wing perimeter defenders (**1-2-2**)



Mixed defense - This is a combination of man-to-man and zone defense, some are calling it match-up. Usually, some of the players are guarding a specific zone, while the others are guarding a player personally. This is used for high-scoring players where they are guarded personally, while the rest of his teammates are guarded in zone. There might be a mixed defense **4+1**, where 4 players are guarding in zone (in most cases 2-2, but 3-1 and 1-3 also can be executed) or even **3+2**, where 3 players are in zone, while 2 players are guarding personally. In Youth games, even some coaches practice **1+4**, which means 1 player (usually a big man playing below the rim) plays zone and the rest are playing man-to-man. Also, a mixed defense is when during a defensive set the team changes from zone to personal, or the opposite, or from one zone defense to another. Coaches have a wide variety of defenses to implement to their defensive schemes and all different and extraordinary types of team defense are recorded and analyzed by InStat.

LINEUPS

In Scout we have a tab named “Lineups” where we analyze each set of 5 players which has recorded a playing time. We track the typical box score data for those lineups so that our users can compare which is more successful and which not. The most useful parameter for the lineups in most cases is the +/-, which you can see explained here - it shows the difference between the scored and allowed points of a particular lineup. And usually the bigger the difference, the better the lineup.

PICK'N'ROLL TAB

We already explained what the Pick'n'Roll play is here. However, we have a separate tab that analyzes all the pick'n'rolls that have been set. We will now review the terminology that still hasn't been mentioned:

Handler - The player who is dribbling the ball when the screen is being set.

Roller - The rollman is the player who sets the screen. He has two options: whether he will roll towards the basket (Pick'n'roll) or he will go outside for a jumper (Pick'n'pop).

3rd man - When the ball has been kicked out to a 3rd man who is neither a handler, nor a roller.

Defense type - The Pick'n'Roll (Pop) can be guarded in different ways which we also analyze. Here are they:

Over - This is when the defender of the handler goes above the set screen.

Under - When the defender of the handler goes below the set screen.

Switch - This is when the defender of the roll man starts guarding the handler, while the other defender starts guarding the roller after the handler goes through the screen.

Double - When both defenders go towards the handler with the idea to set up a trap (double team) or just pressure him more. This way the roller is left alone.

Hedge - When the defender of the roll man is going higher than the position of the set screen in order to try to push the handler back and prevent him from driving to the basket.

Ice - The defender of the handler has positioned himself in a way that the handler can not drive through the middle or just locks any of the two directions in which the attacker can go, but leaves the other direction open, which must be guarded from the roll man defender.

REFEREES' TAB

In InStat we can analyze the performance of a referee as well. The analysis includes the type of calls a referee has whistled (fouls and violations) and their positioning, no-calls, replays and box score information for the teams the referee has officiated.

Games as a lead - In a basketball game, usually there are three referees (2 are also possible, most often for youth games). The head referee is called "Lead". We count the number of times a referee has been a Lead.

Games as an assistant - The number of games a referee has been one of two or the only assistant.

Calls - Each time when the whistle blows from a referee (except the times when a referee stops the play due to force majeure circumstances) is listed as a call.

Fouls are divided into 3 types - Personal, Technical, Unsportsmanlike and Disqualifying.

Personal fouls - A breach of the rules that concerns illegal personal contact with an opponent. It is the most common type of foul in basketball.

Technical - Any infraction of the rules penalized as a foul which does not involve physical contact during the course of play between opposing players on the court, or is a foul by a non-player.

Unsportsmanlike - Harder than the usual foul after a physical contact.

Disqualifying - A foul that directly throws the player out of the game. When a player commits 2 technical or unsportsmanlike fouls in one game, the player automatically receives a disqualification. If there is a fight, pretty heated argument or extremely dangerous foul, those situations can lead to direct disqualifications as well.

SOME FOULS ALSO CAN BE:

Double foul - Two players from different teams receive one foul each due to a non-allowed contact where both players have breached the rules.

No-call - Situations where a foul could have been whistled but the referee has decided not to. In most cases, those are missed calls by the referees.

Defensive foul - A foul committed by a player while his team is in defense.

Offensive foul - A foul committed by a player while his team is in offense.

Defensive rebound foul - A foul committed by a player who is attempting to catch a defensive rebound but uses non-allowed moves to do it.

Offensive rebound foul - A foul committed by a player who is attempting to catch an offensive rebound but uses non-allowed moves to do it.

FOULS BY INITIATION TYPE

All the above types of fouls are included in this category, but the idea of “Foul calls” is to track the total number of fouls called during the referee’s games. While this category tracks only the fouls personally called by the selected referee.

TYPE OF FOULS

When a referee calls a foul, he shows the type of the foul that has been committed. Here are the different types of fouls:

Use of hands - The hands of the defender were used illegally while guarding.

Holding - The player holds the opponent more than the allowed by the rules.

Pushing - The player pushes the opponent more than the allowed by the rules.

Blocking - A defensive foul called when the defender does not use his body legally to stop the opponent.

Illegal screening - When an offensive player makes a screen not according to the rules

Charging - When an offensive player makes significant contact with a defensive player who has established their position with both feet on the ground and their torso square facing the opponent

Hooking - It can be both offensive and defensive foul and it happens when a player uses his hand like a hook to hold the opponent’s hand or easily get pass his body



Clamping - When an opponent is hooked by you with his arm between your arm and your side so he can't move and get open to receive the ball <https://www.youtube.com/watch?v=z7OzofLMg68>.

Fake/Flop - When a player fakes that he has been fouled and the referees see this. Such a foul is penalized with a technical foul.

VIOLATIONS

Traveling - when a player holding the ball moves one or both their feet illegally. Traveling is also called, predominantly in a streetball game, “walking” or “steps”.

Illegal dribble (double dribble) - When a player ends their dribble by catching or causing the ball to come to rest in one or both hands and then dribbles it again with one hand or when a player touches it before the ball hits the ground.

3 seconds violation - An offensive player can not stay in the paint for longer than 3 seconds. In the NBA, there are also defensive 3 seconds which indicate that a defender can not stay longer than 3 seconds in his own paint unless his personal defender is on the edge of the paint or in it.

5 seconds violation - May be called against an offensive player with the ball when that player is guarded closely for five seconds or more, and does not pass, shoot, or dribble within that time.

8 seconds violation - When the attacking team can not move the ball pass the half line in less than 8 seconds.

24 seconds violation - An attacking team has 24 seconds to attempt a field goal (the rim needs to be touched) otherwise the violation occurs and possession is changed.

Foot violation - Players can not touch the ball with their feet.

Out of bounds - When the ball goes outside of the allowed area.

Goaltending - It consists of certain forms of player interference with the ball while it is on its way to the basket. For example, the defenders can not touch the ball when it has passed its highest point during the shooting motion or touch the ball while it is going through the net.

Interference - Similar to the goaltending but it applies for offensive players when the ball is shot by their teammates. It happens when a player tries to tip in (putback) the ball in the basket after a field goal but he does it not according to the rules.

Jump ball violation - After two players from different teams grab the ball simultaneously and in the matter of a few seconds neither of both players wins the possession, a jump ball is called. In the US, the jump ball is when two opposing players attempt to gain control of the ball after an official tosses it into the air between them. If any of those two players jumps illegally while the jump ball is performed, this is a violation.

Backcourt violation - The attacking team can not return the ball back after the half line when the ball has already passed the half line.

Other violations - Our analysts use “Other violations” for any different violations from the above listed.

Coach’s challenge - When the team does not agree with a referee’s call, they can challenge that call via a “coach’s challenge”. Each team has a limit for challenges. If the call is overturned after a challenge has been reviewed by the referee, then the challenge is **successful**.

Coach’s challenge successful - This ratio shows how many of the total fouls could have been overturned by a coach’s challenge. The formula is **No-calls/Total fouls*100**