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# FOOTBALL HISTORY FOOTBALL SIMULATOR

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Operation Manual Version 1.0



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Canton, Ohio



Welcome to the Football History Football Simulator! This football simulator is intuitive tool designed to help football coaches quickly create and design plays! With full team and stadium customization, play designing, game preparation and practices are more defined using our stunning 3D graphical representation of your plays! In addition, with our “read and react AI,” system, coaches can run offensive and defensive formation sets against one another, and achieve non-predictable results, which means you can test your play designs virtually to gage how they will work on the field!

The simulator’s playing fields are scaled to “real world” specifications, allowing coaches to accurately create, design and run plays as well as accurately position players on the field in a realistic manner! Additionally, we’ve included the capability to create and design “special teams” plays such as field goals, punts and kickoffs! The simulator also includes a video Telestrator where you can import your own video and use it as a teaching tool during player coaching sessions! All in all, the Football History Football Simulator is more than just a football coaching tool it gives football coaches total control of their play designing experience! So, it goes way beyond just designing plays with just X’s and O’s!

### **American Football 101**

American football is a sport played by two teams of 11 players on a 120-yard, rectangular field with goal lines on each end. A football is an oval-like inflated ball usually made of cowhide or rubber.

The offense, or the team with control of the ball, attempts to advance the ball down the field by running or passing the ball, while the opposing team aims to stop their advance and tries to take control of the ball. The offense must advance at least 10 yards in four downs, or plays, or else they turn over the football to the opposing team; if they succeed, they are given a new set of four downs.

The object of the game is for one team to outscore the other. This is accomplished by advancing the football down the field and scoring as many points as possible. Scoring can occur in the form of a touchdown, an extra point conversion, a two-point conversion, a field goal, or a safety. The time on the clock for a football game is 60 minutes. The game is divided into two halves of 30 minutes and four quarters of 15 minutes. The average duration of a football game is three hours.

### *The Football Field*

More than other sports, the rules American football have been adjusted over the years to keep the game entertaining and safe but unfortunately, this adds to the confusion for those that are trying to gain an understanding of it.

Part of the effort in the evolution of the rules has been to maintain a certain balance between offense and defense so that scoring is neither too hard (i.e., Baseball, Hockey etc., nor too easy (i.e., Basketball). There are rules about who can receive a pass, where they must line up, how a formation can or can’t be altered before the ball is snapped, etc. Given all of this, the rules, governing how the offense and defense will set up their formations to put their personnel in the best position to execute a play may

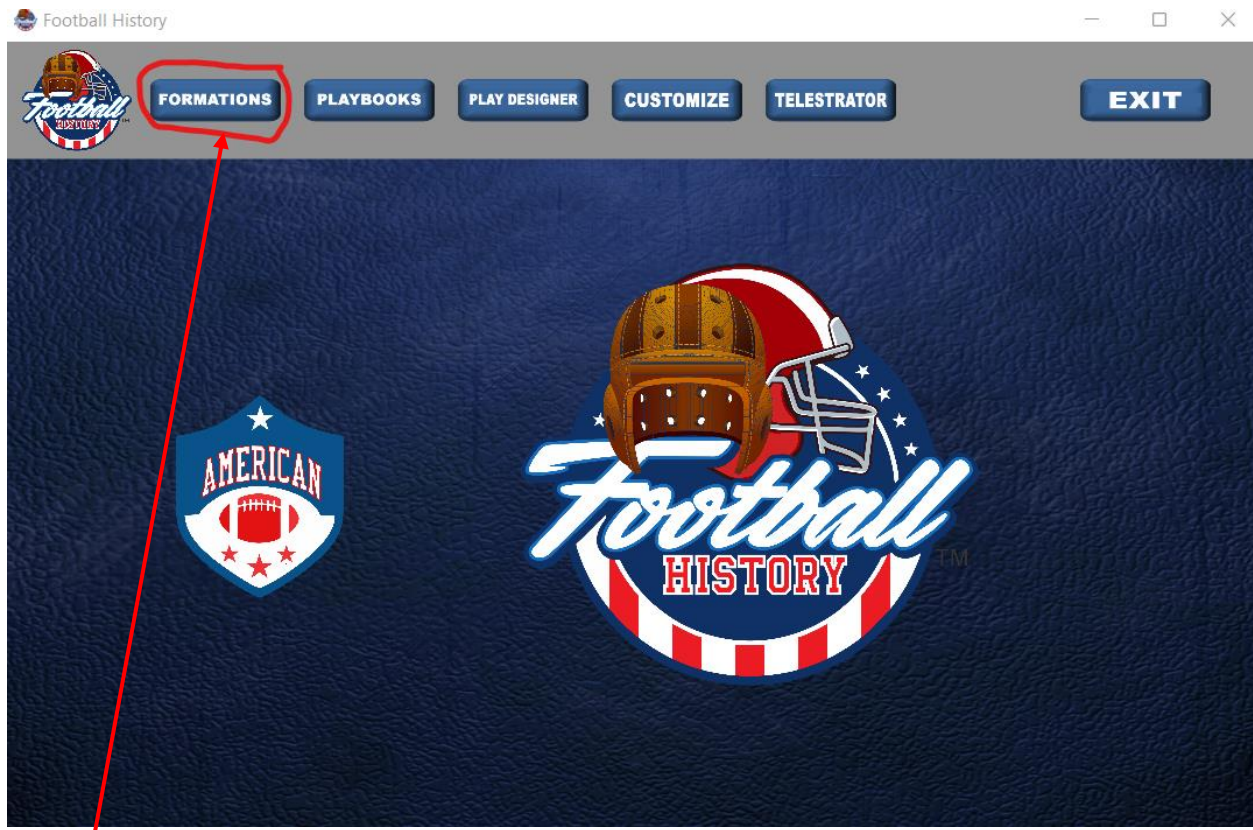


vary. While formations are an important part of the game, there is a lot less improvisation in American football than in other sports.

### Formation Overview

Formations are the foundation for creating football plays. All football plays begin with a formation and player route assignments and player instructions are added to create a play. The Football History Football Simulator comes with 72 offensive and 49 defensive prefab formations, which can be modified to fit your playing style. In addition to this, you can create formations from scratch within the formation creator. Below are instructions as to how to use the Formation Creator within the simulator to create and modify formations.

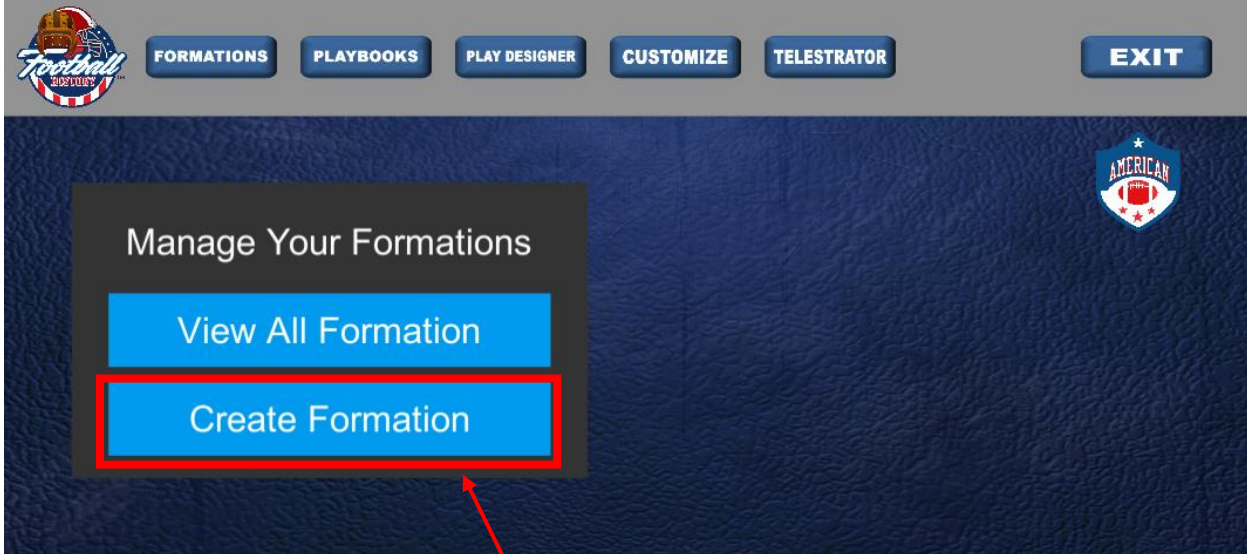
### Formation Creator



Click on the formation button to access the formation creator.



Football History



Once here, you can view created formations you have created as well as ones within the repository. Since we are creating a formation click on create formation.



From here, you will name your formation, select your formation type (Offense or Defense), and select how many players you want comprise your formation of you can select up to 2-11 players to create an American football formation.



Football History



Formation

New Created Formation

ADD FORMATION

DELETE FORMATION

FLIP

Change Player

Delete Player

Save

Save As

Reset

Undo

Import Opposite

✓ Show Opposite Team

3D

6 inch

You will then be presented with this screen. Right click on “any” player and select change player to assign a position to the player. It is suggested to start with the center first. You can also scroll your middle mouse wheel to zoom in on your formations for a better view.



**Formation** **New Created Formation**

**Select Formation Position**

Offence Positions		Special Positions
OffensiveTackle (OT)	SlotBack (SB)	Kicker (K)
LeftTackle (LT)	TailBack (TB)	Punter (P)
RightTackle (RT)	FullBack (FB)	LongSnapper (LS)
OffensiveGuard (OG)	RunningBack (RB)	Holder (H)
LeftGuard (LG)	HalfBack (HB)	PuntProtector (PP)
RightGuard (RG)	WingBack (WB)	Jammer (JM)
TightEnd (TE)	QuarterBack (QB)	Utility (U)
WideReceiver (WR)	Center (C)	Gunner (G)
SlotReceiver (SR)		
XReceiver (X)		
YReceiver (Y)		
ZReceiver (Z)		
SplitEnd (SE)		

✓ Show Opposite Team 3D 6 inch

Select the first player you want to begin your formation with from the list of player positions within this menu. Each player position may have different idle animation stances. Repeat this process for each player until they have all been selected. To make this process a bit faster it is suggested to use the prefab formations we have included within the simulator.

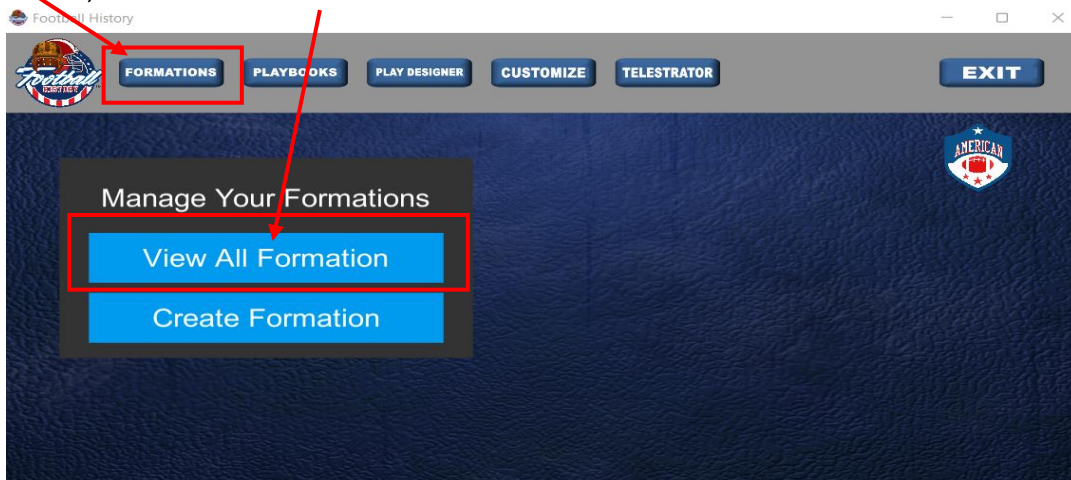


Football History



You will notice when you create skilled positions such as receivers, running backs and quarterbacks a 2 yard “yellow” box will appear around them. This is to be used to help judge distances for hand-off execution within the play designer. You may have to initially move skilled position players away from each other and other players initially because if they are stacked on top of each other, it could prevent you from right clicking on a player to assign a route or move them around. Once you have moved each player to their desired position and you are satisfied with your newly created formation, click save. Click on the formation button to exit

**Modifying Formations** - To modify and view existing and created formations, click on the formation button, and select “view all formations



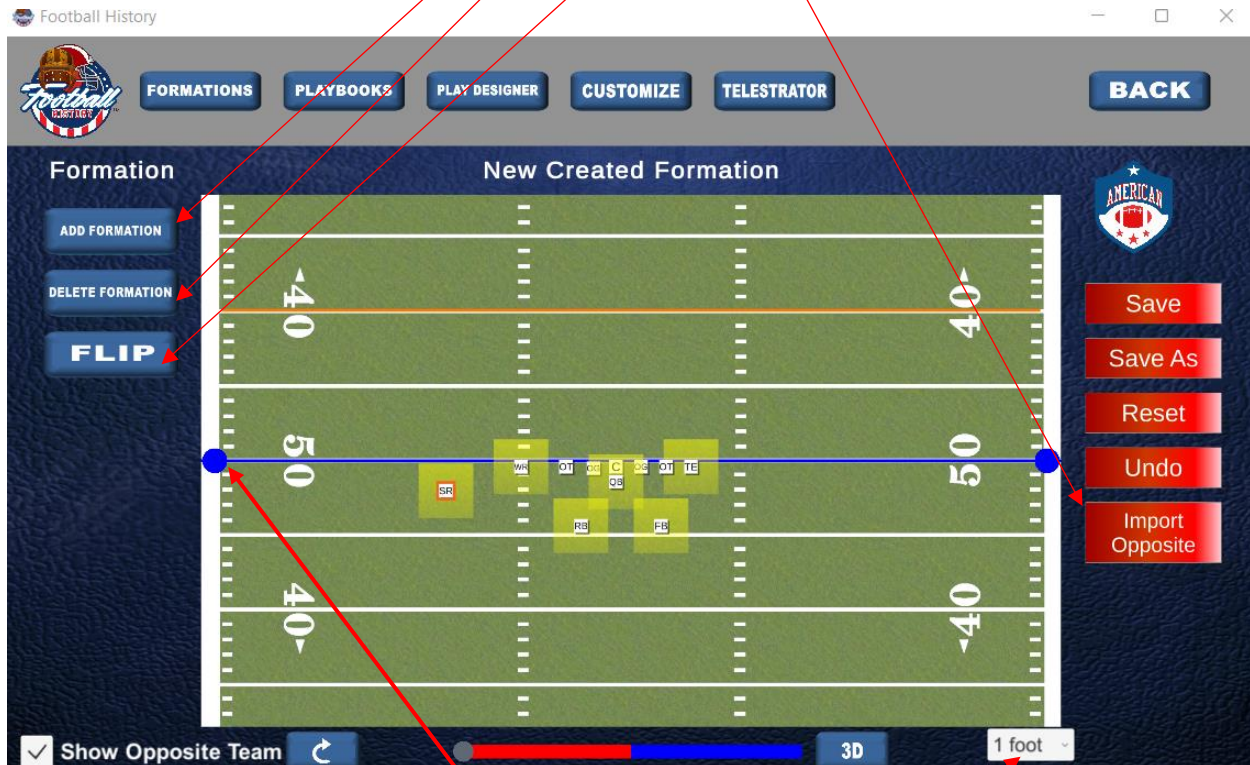


You will then be presented with the menu below. You will also notice that our play we created in the example above (New Created Play) appears at the top as well as listing of additional formations within the repository. You can also use the search field to search for any formation you want to modify. Once you have located a formation you want to modify, click on the modify formation button

The screenshot displays the 'Football History' application window. At the top, there is a navigation bar with buttons for 'FORMATIONS', 'PLAYBOOKS', 'PLAY DESIGNER', 'CUSTOMIZE', 'TELESTRATOR', and 'BACK'. Below this, there are two main category buttons: 'Offense' (green) and 'Defense' (red). On the left side, there is a 'User Created' checkbox and two buttons: 'Modify Formation' and 'Delete Formation'. The main area shows a list of formations in a grid. The first item is 'New Created Formation' (highlighted in blue), followed by 'play 1 Formation'. Other formations include 'Formation 1', 'Dual Forward Pass Z Formatic', 'Oline Standard Clos', 'Oline Standard Sprea', 'Oline On Center's Number Sprea', 'Oline On Center's Number Clos', 'Test Formation 1', 'Split Right', 'QB Dropback Z Formation', 'QB Dropback X Formation', 'HB Stretch Left Formatio', and 'HB Stretch Right Formatio'. A search field is located on the right side of the formation list.



You will then be presented with this menu. Here you can add/delete and flip formations from left to right. You can also use the import opposite button to import an opposing team (offense vs defense and vice versa). Note: If you click the 3D button in “Formation” mode, the players will be displayed in 3D, but they will NOT move because there is NO AI assigned to them in this mode. The AI for both offense and defense only works in the “Play Designer” mode when you an offensive play. So, if you want to test a defense out against an offense play, create or select an offensive play from the repository, and use the “import opposite” button to bring in the defense you want to test, then click on view play.



In both “Play Designer” mode and “Formation” mode (2D only), you can move the line of scrimmage to anywhere on the field by dragging the blue dots. Also, by clicking on the measurement editor area here you can space your players on the field by every 6 inches, by the foot and by the yard.

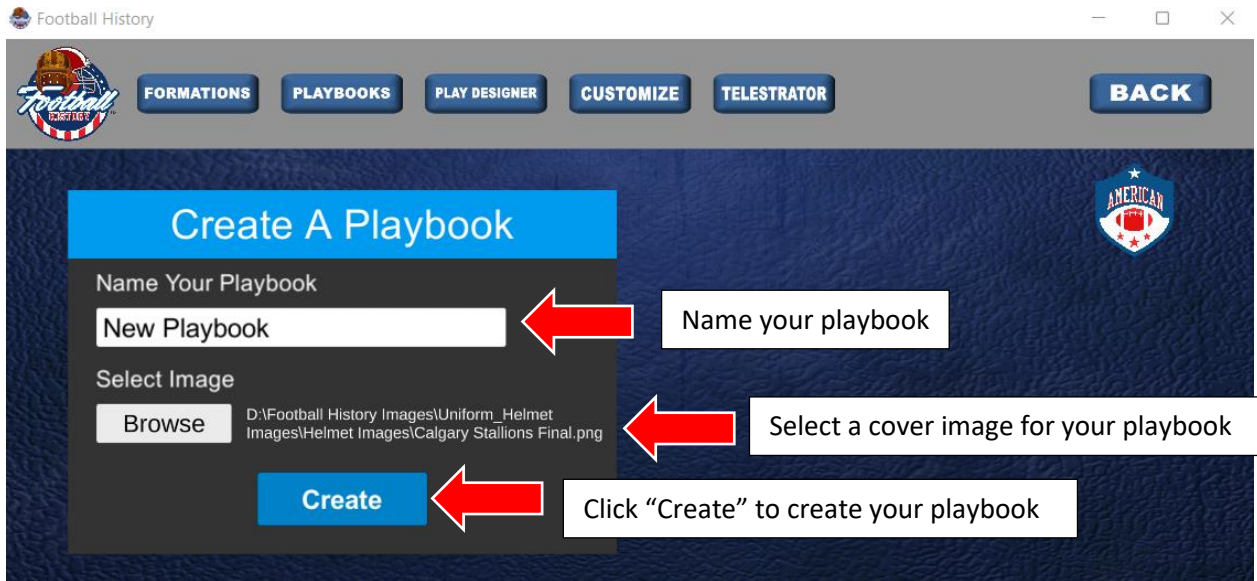
### Playbook Creator

In American football, a playbook defines what needs to be done to win the game, breaking the team's strategy down into actionable plays and defining roles and responsibilities to be successful. The simulator's playbook creator is simple, intuitive, and quite easy to use. Now, we do not have the capability to print playbooks as a full PDF file, but you can take screenshots of each play you create by using the Windows snipping tool or print screen function on your keyboard and paste plays into a word document, which you can convert into a PDF.

To use the Playbook Creator, click on the “playbooks” button in the main menu of the simulator. You can either view all playbooks you have created or create new playbooks. For this example,

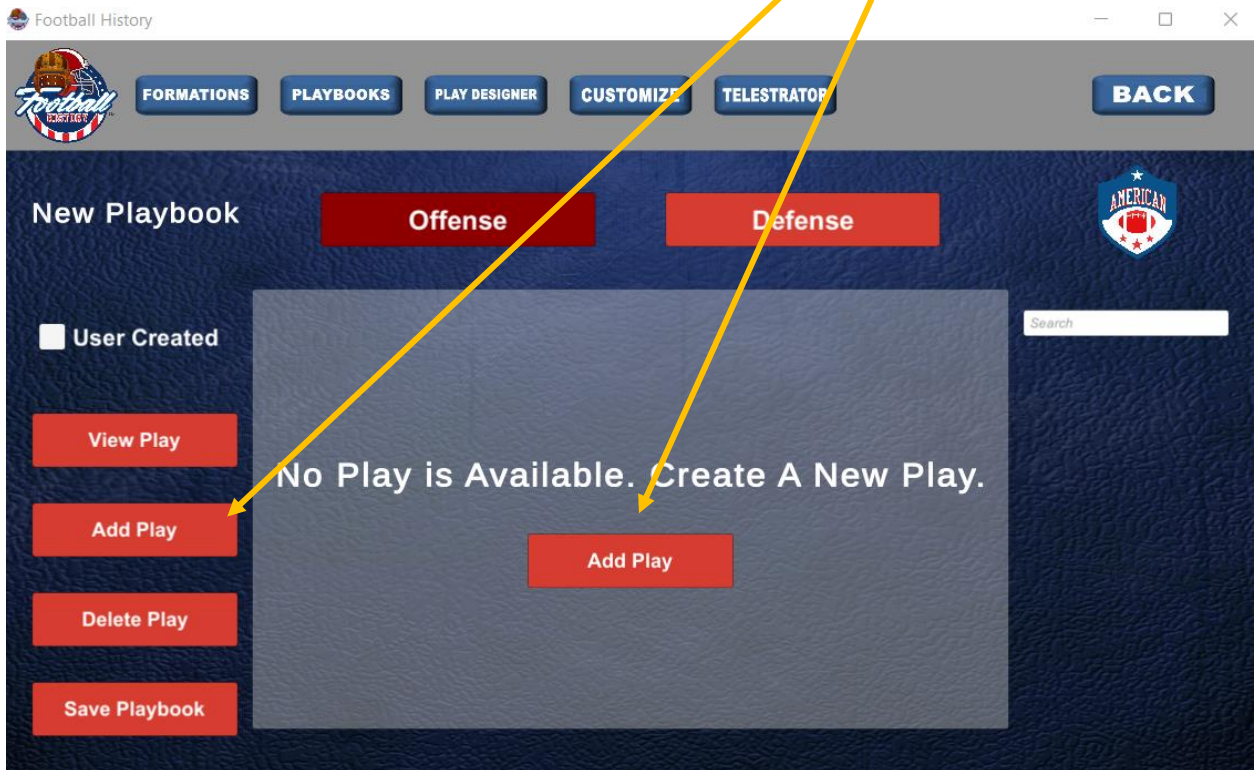


we will create a new playbook. From the “Manage your Playbooks” menu, select “Create Playbooks.” You will be presented with the screen below.



Note: make sure you know the path where your images are stored, or they will NOT show up as cover image.

Next you will be presented with the menu screen below. CLICK ON “Add Play.”





Select the play(s) you want to add then click “add.” To add multiple plays, hold down the Ctrl key on your keyboard and click on as many plays as you would like to add then click add. In this example we selected just one play (HB Stretch Right).

Football History

FORMATIONS PLAYBOOKS PLAY DESIGNER CUSTOMIZE TELESTRATOR BACK

### New Playbook

User Created

Dual Forward Pass Z	QB Dropback X
<b>HB Stretch Right</b>	Fullback Plunge Right
QB Sneak Right	Kickoff Middle
Field Goal Fake Middle	Field Goal Fake Left
Field Goal Fake Right	Field Goal Play
Punt Return Middle	Punt Right
Punt Left	Punt Middle
Tight End Motion Pass Left	Twins Right Z Middle

Search

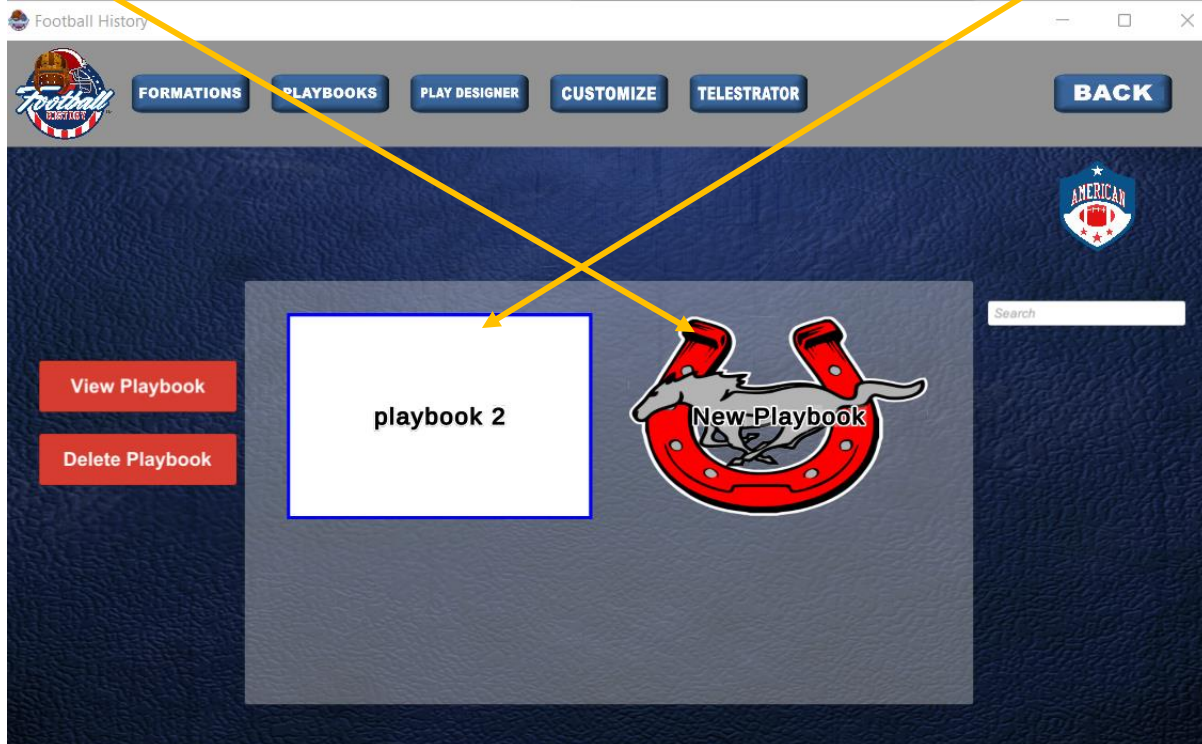
Add



From here, you can view and run your plays and save your playbooks.



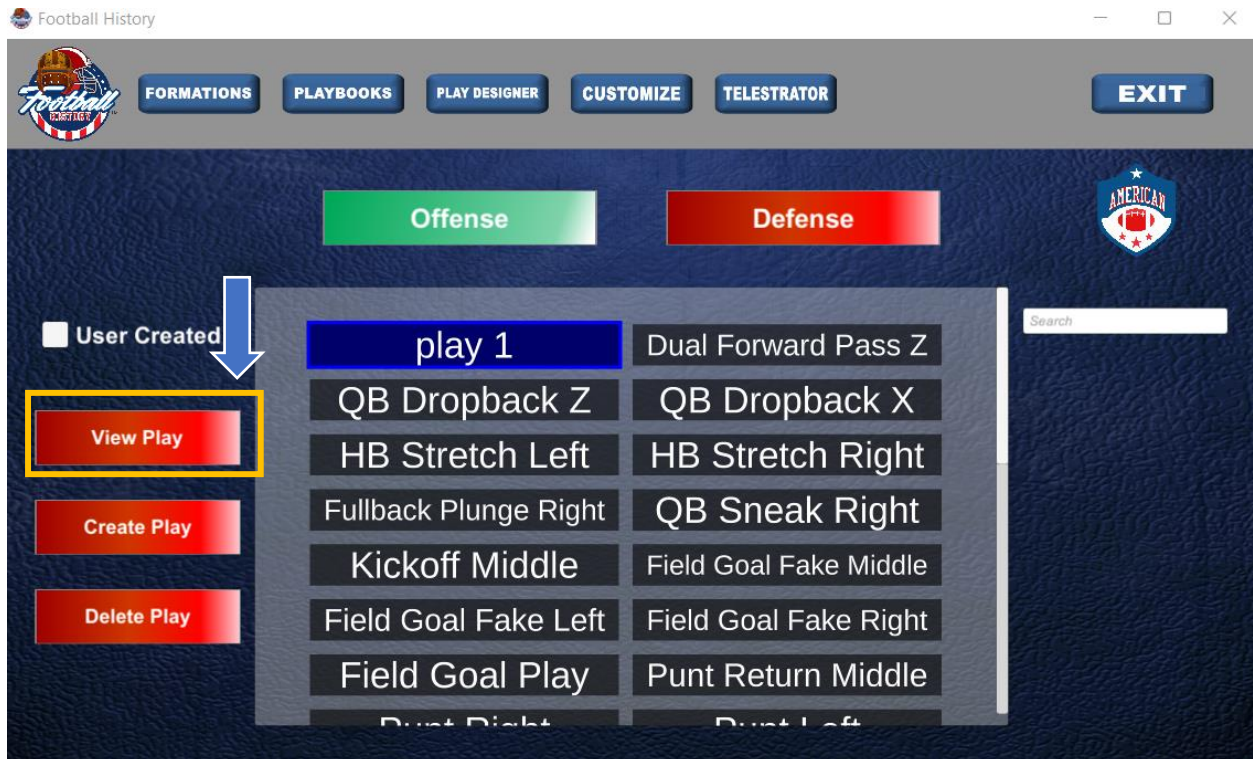
Once you have saved your playbook click on the playbook button and under Manage All Playbooks tab, Select View All Playbooks. As you can see the playbook we created in our example (New Playbook) has the image we selected for it. If you do not select an image for your playbook it will appear like this





## Play Designer

The simulator's Play Designer function is its "core" feature! With it you can design intricate plays based on prefab and newly created formations and test them in 3D virtual lab setting. The interface is like that of the "Formation" Creator with the difference being you can see plays being executed similar to that of a video game. In fact, we currently have plans in progress to create a version of this football simulator into a full-fledged strategy-based football video game!! The simulator comes with 37 offensive and 23 defensive prefab plays. Just like the "Formation" Creator, these plays can be modified or you can use formations from the formation creator to create plays from scratch. To run and/or modify a play, click on **View Play**.



You will see the play with all its routes and in some cases, you will see a defense matched up to an offensive play this was achieved by importing the defense using the "import opposite" function. From here you can run the play in 2D mode by using the "play button" or by clicking on the 3D button to run the play in 3D mode See explanation of button functions below.



FORMATIONS

PLAYBOOKS

PLAY DESIGNER

CUSTOMIZE

TELESTRATOR

BACK

Play play 1

Edit ← Edits play in 2D mode

Runs play in 2D mode

Resets play in 2D mode

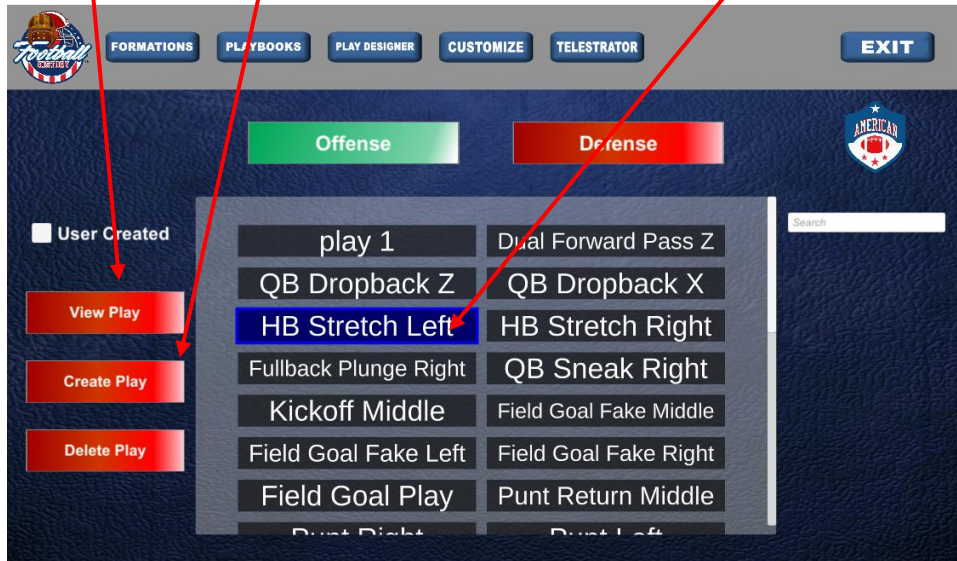
Timeline button is used to scrub plays and create ball transitions in 2D mode

Runs play in 3D mode

3D 1 foot



Modifying/ Creating a Plays – click on the Play Designer button. Select an existing play you want to modify or click on ‘create play” to create a new play. For modifying a play, click on “view play” button to open your selected play. Then click on the “edit” button within the next menu page to enter in to edit mode.



### Modifying an Existing Play

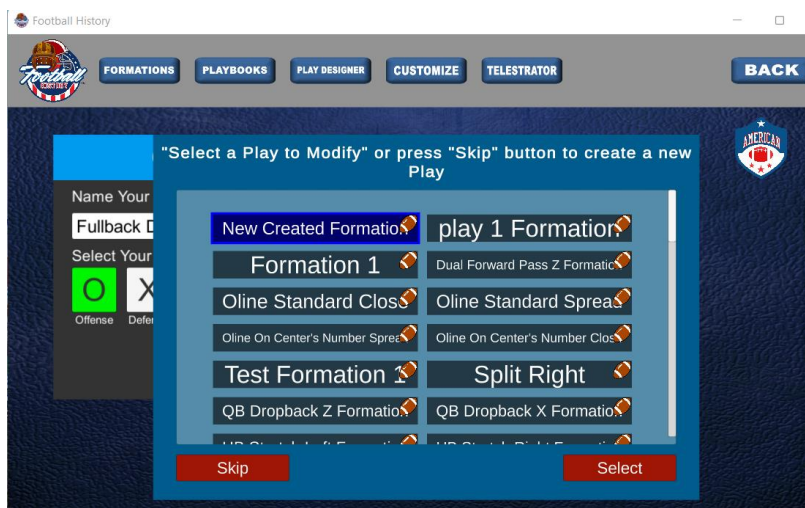


To modify and existing play, click on the “edit formation” button. You can then move and place players to your desired positions on the field. To move a player(s), just click on them and begin moving them around. Again, if you click on the measurement editor area, you can move player(s) in increments of 6 inches, 1 foot or 1 yard.



## Creating a Play

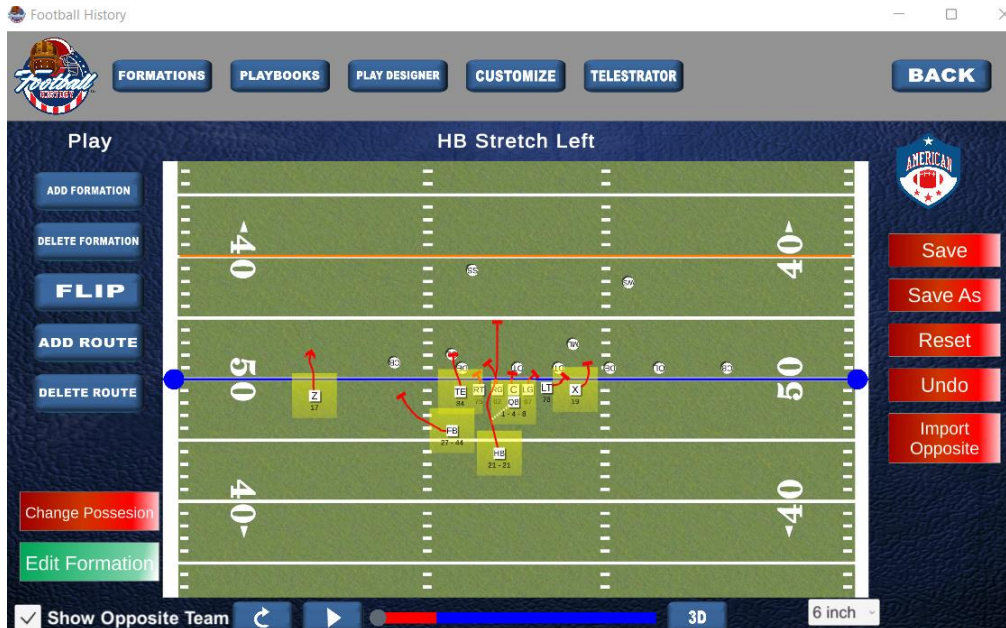
When creating a play, while in the Play Designer, click the “create play” button and you will be brought to the screen below.



Select an existing formation from the formation repository to use to create or you can select skip. If you select “skip” you will be brought to the page where you must create your play from scratch by using the techniques outlined within the formation creator. Again, it is suggested that you use “prefab” formations from the “formations” repository or modify an existing play to speed up the process of creating plays.



Click on the 'edit" button



**Play Designer Edit Mode Functions** - While in the simulators "edit" you can perform the following:

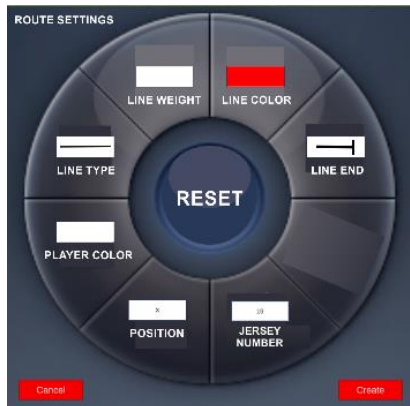
- Modify and save plays
- Move player(s) to different positions on the field in increments of 6 inches, 1 foot or 1 yard.
- Move the line of scrimmage to a desired position on the field in which you want to start your play
- Perform ball transitions such as handoffs, passes, pitchouts, punts, kickoffs, and field goals
- Import an opposing team
- Run plays without an opposing team
- Scrub plays via the timeline button
- Run plays in 2D mode
- Run plays in 3D mode
- Flip plays from right to left
- Draw routes for players
- Add/Delete Formations



## Route Settings UI

Below is a depiction of the Player Interface. This interface is used for the 2D mode of the simulator.

When you right click on a player (2D mode only) and select Add Route, you will receive the pop UI below:



Within this UI, you can perform the following functions:

- Create player motion through changing the “line type”
- Draw player Routes (offense only)
- Change line weight of player route
- Change line color of player route
- Add line end of player route
- Change player color (2D mode)
- Assign jersey number (offense only)
- Note: Player position is automatically assigned once you set it with the “change” player option so it *cannot* be changed here

**Ball Transitions Explained** - Has 3 ways to transition the ball amongst on-field players

- Handoff
- Pass
- Pitchout

All ball transitions will be executed in the same manner as displayed in the below screenshots (FIG-FIG 5). The difference is the distance between the ball “carrier” after the ball is snapped and the ball “receiver.” This will dictate what type of transition (i.e., pass, pitchout, handoff etc.,) will be executed. In the example below we are executing a Handoff. Note always make sure the “change possession” button is “green” when reviewing ball transitions and scrubbing plays with the “timeline” button.

All initial transitions of the ball will begin with the “center.” Right click on the center. You will get a ‘bold’ box around the center. Then click on the “change possession” button. It will turn green, and the center will turn blue. When the ball has transitioned to a player, that player will “always” turn blue. The below screenshot shows the center has the ball initially and is ready to transition the ball to the



quarterback. Note: you can also have the center direct snap the ball to other backs and or receivers in the backfield.

1. Click on the center and drag a line to the quarterback (FIG 1)
2. In the Fig 2 screenshot example below, select the type of snap. Since our quarterback is in the shotgun position, we will select shotgun snap.

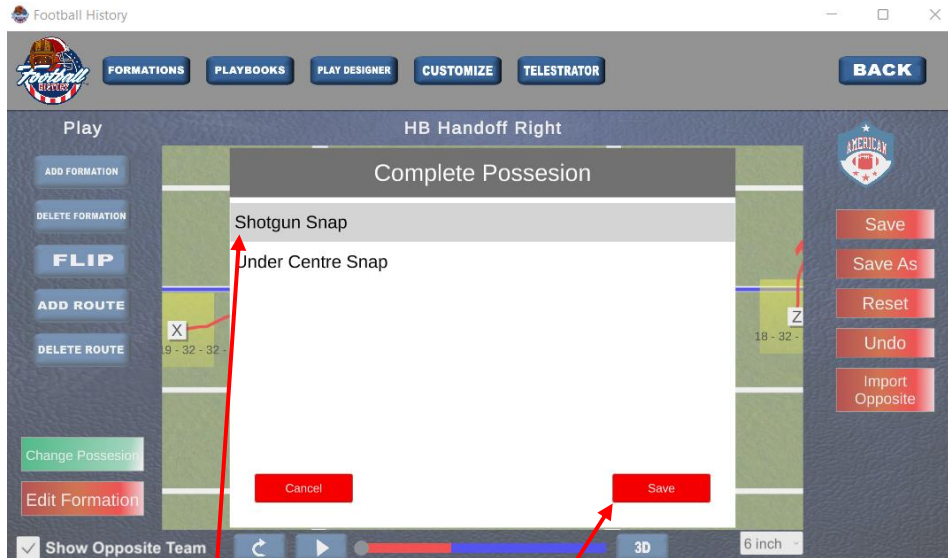
FIG 1



Drag line from center to Quarterback. You will see a white dotted line. Note: you may *not* visibly see the white dotted line when dragging the line from the quarterback to the center if the quarterback is under center but if you get the pop-up window as noted in FIG 2 that will confirm that your ball transition was successful.



FIG 2



Select the type of snap you want the quarterback to receive. This effect the type of idle animation that will be used for the quarterback. Click the save button to complete the possession. For this example, we will select the shotgun snap.

FIG 3



Drag the timeline scrub button to the right until you see the ball transition to the quarterback. The quarterback will turn “blue.” The “yellow” boxes are auto- applied to the “skill” position players on the field. They are 2 yards in diameter around skilled position players. To execute a handoff the receiving player must be at least 2 yards distance from the distributor of the handoff to receive the “complete possession pop-up window (FIG 4). If the player is more than 2 yards from the receiver of the ball, a pop-

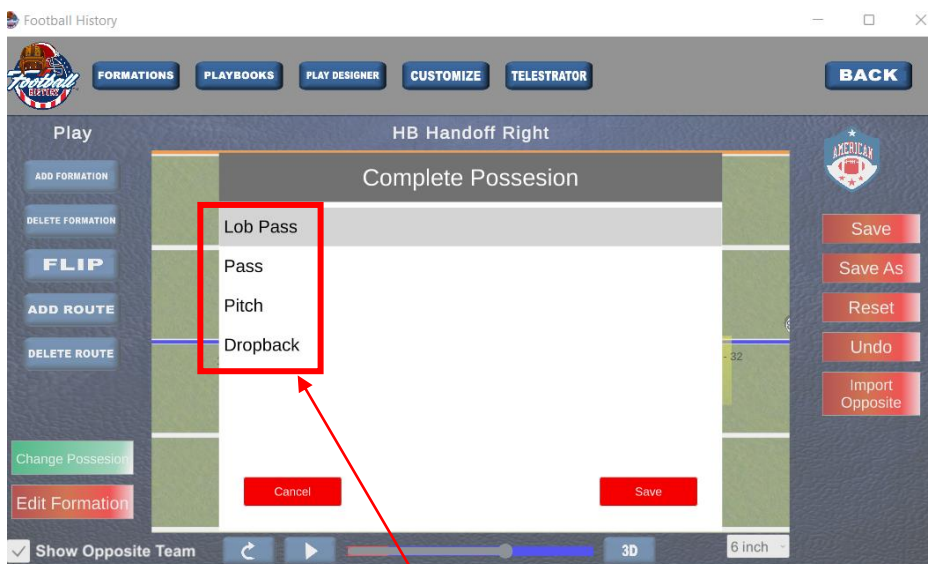


up window will be displayed as in FIG 5 where you can execute a pass, pitchouts etc., Now drag a line from the quarterback (QB) to the halfback (HB).

FIG 4



FIG 5

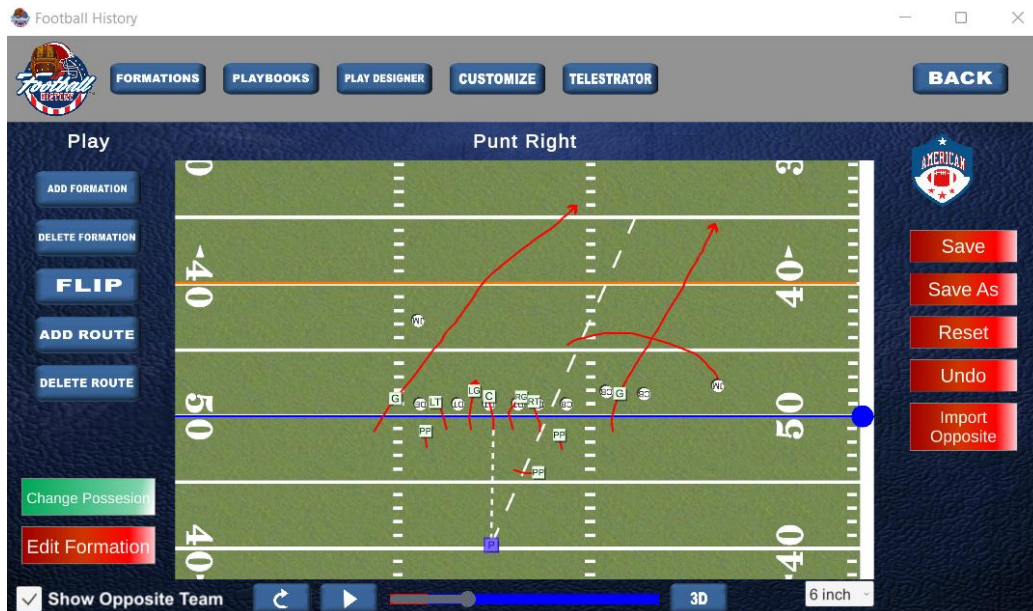


When you are more than 2 yards distance from the receiver of the ball this pop-up screen will appear giving you the capability to execute passes and pitchouts. Drag the lines from the ball carrier to the ball receiver to execute any one of these ball transitions.



**Special Teams** - The Football History Football Simulator is the only simulator of its kind that lets you design and create Special Teams plays! Often, Special Teams play design and creation is not really addressed within football coaching simulators. Not here, we feel that Special Teams play is an integral part of the game, and its strategical components should be noted! Below is a listing of Special Teams play types you can design and create within the simulator. To create Special Teams plays, it is suggested that you use the prefab plays and perform the following:

- **Punt Play Design**
  - Open a Punt Play



As with “all” ball transitions, draw a line from the center to the punter to transition the ball to the punter. Use the timeline button to scrub the play until you see the ball reach the punter (the punter should turn blue). From there, draw another line in the direction you want the punt to go (i.e., left, right or center). You only need to draw the line about 10 but no more than 15 yards. *Note: distances of “all” punts, field goal and kickoff are randomly determined by the*

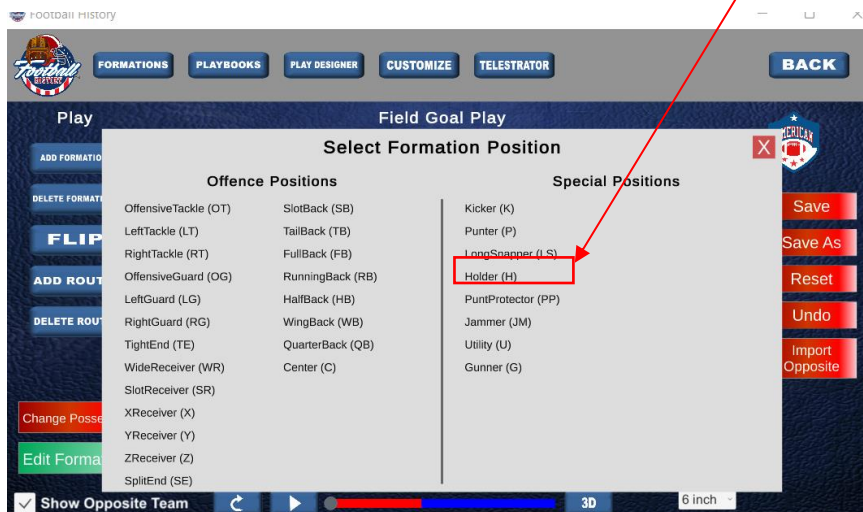


simulators AI, which means distances of “all” kicks may vary even if you run the same play more than once.

- **Field Goal Play Design**

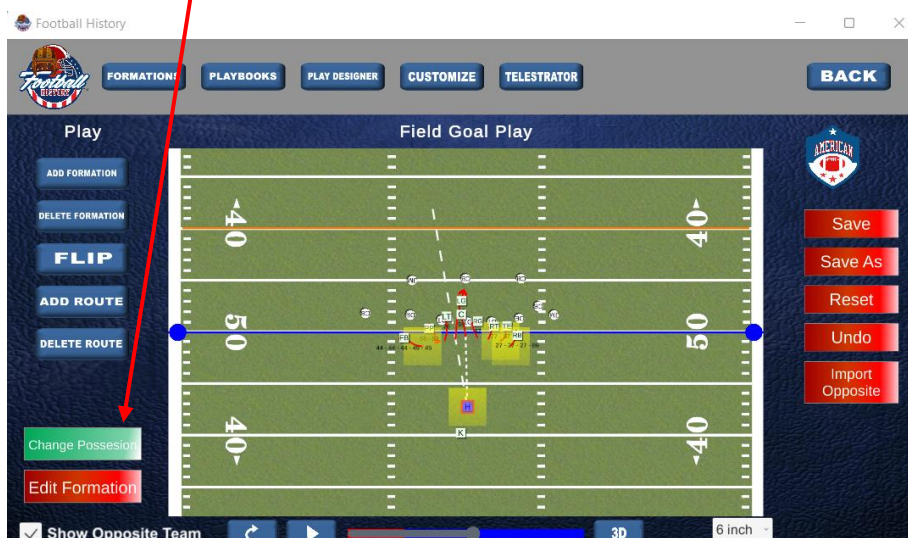
- Open a field goal play. Note if you are creating a new field goal play, right click on the 2D playing field and you will be presented with the menu screen below (FIG 1.1). From there, you want to select the ‘holder.’ When you select the holder, the kicker will be automatically attached to the holder. A tradition American football field goal begins with the holder 7 yards behind the center.

FIG 1.1



- Once you have selected the holder you will be presented with the menu screen below (FIG 1.2). Drag and place the holder 7 yards behind the center. Then click on the “change possession” button and draw a line from the center to the holder.

FIG 1.2





- From there, scroll the “timeline button to right until you see the ball transition to the holder. From there, draw another line in the direction you want the kick to go (i.e., left, right or center). Again, you only need to draw the line about 10 but no more than 15 yards. *Note: distances of “all” punts, field goal and kickoff are randomly determined by the simulators AI, which means distances of “all” kicks may vary even if you run the same play more than once.*

- **Kickoff Play Design**

- Open a prefab “kickoff” play and position your players where you want them to line up. If no kicker is included within the play, you can right click on the 2D screen and add the kicker in the same manner you add other players. Once the kicker is added or you want to change the direction of the kick, simply click on the “change possession” button and draw a line in the direction you want the kick to go (i.e., right, left or center). As seen within screenshot (FIG 1.3)

FIG 1.3



### Other Functions

- Flipping Plays – To flip plays, while in the Play Designer edit mode, click on the “flip” button. This reverses the play in the opposite direction
- Moving Players with the Measurement Editor - To move players incrementally, while in the Play Designer edit mode, click on the “white” box next to the “3D” button. A drop down will appear giving you the option to move players by every 6 inches, 1 foot or 1 yard



## Customization

The simulator has a great deal of customization features for coaches. These features add realism to your football coaching experience! Coaches have the capability to customize their full team uniforms as well as their opponents including logos!! We designed the Team and Stadium customizers to be intuitive so you can just “point” and click to customize your team(s) and stadiums! No artistic skills required!

### Stadium Customizer

To begin customizing a stadium, hover over the “customize” and select “stadium”. You will be presented with the below menu screen (FIG 1.4). Click on the “red” customize button. You will be presented with menu screen (FIG 1.5).

FIG 1.4

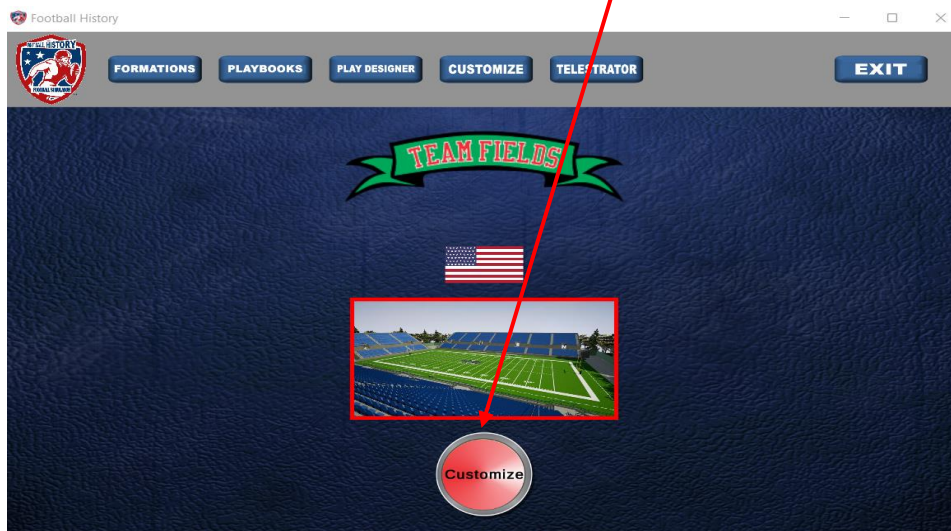


FIG 1.5 – From here, just navigate to the drive you have stored your images and import them to the designated spaces (i.e., endzone, centerfield etc.,) Images sizes are located here/





You can remove images by clicking on the “remove” buttons at the bottom of the customizing page. Note: most image sizes can be imported even if you don’t size them to the specification outlined. However, they may appear distorted.

### Character Customizer

One of the most eye-catching features of the simulator by far. Is the “character” or team customizer! As with our customization model in general, great care was taken in the design of this module to ensure customizing teams would be fast and intuitive! You can customize more than just team colors here; you can customize your team and your opponent from head to toe including striping and logos! We spent a great deal of time on this module because we wanted coaches to really immerse themselves in practice and gameday preparation!

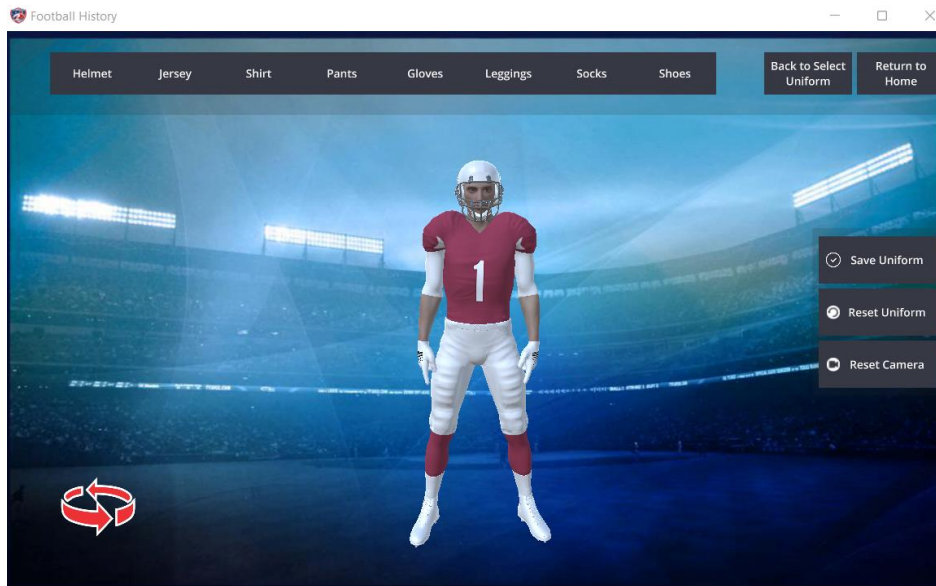
To begin customizing a character/team, hover over the “customize” and select “character”. You will be presented with the below menu screen (FIG 1.6). There will be 2 default teams in the menu, click on the team you want to edit. A “white” box will appear around the player and will take you to menu screen (FIG 1.7). From there you can begin editing various portions of your team (i.e., helmet, jersey pants etc.,). We have videos on our YouTube channel here [https://www.youtube.com/channel/UCLPZrwXjjsbX8rkxlsC\\_M3Q](https://www.youtube.com/channel/UCLPZrwXjjsbX8rkxlsC_M3Q) detailing the character customization.

FIG 1.6





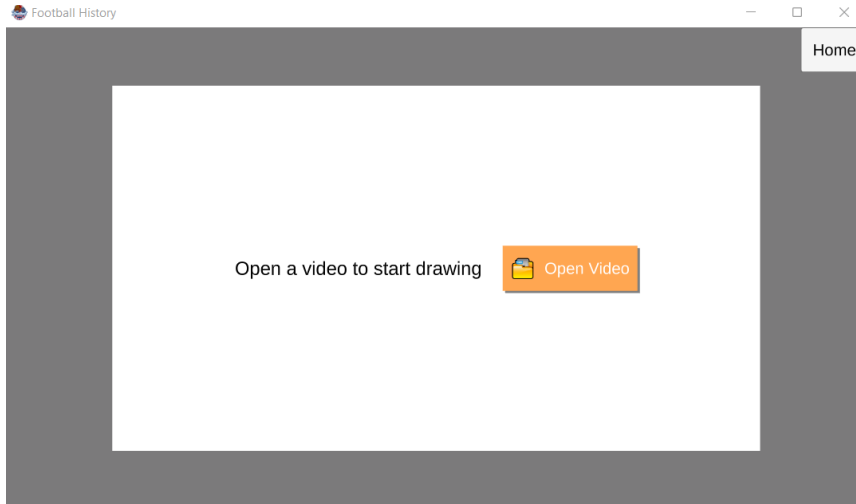
FIG 1.7



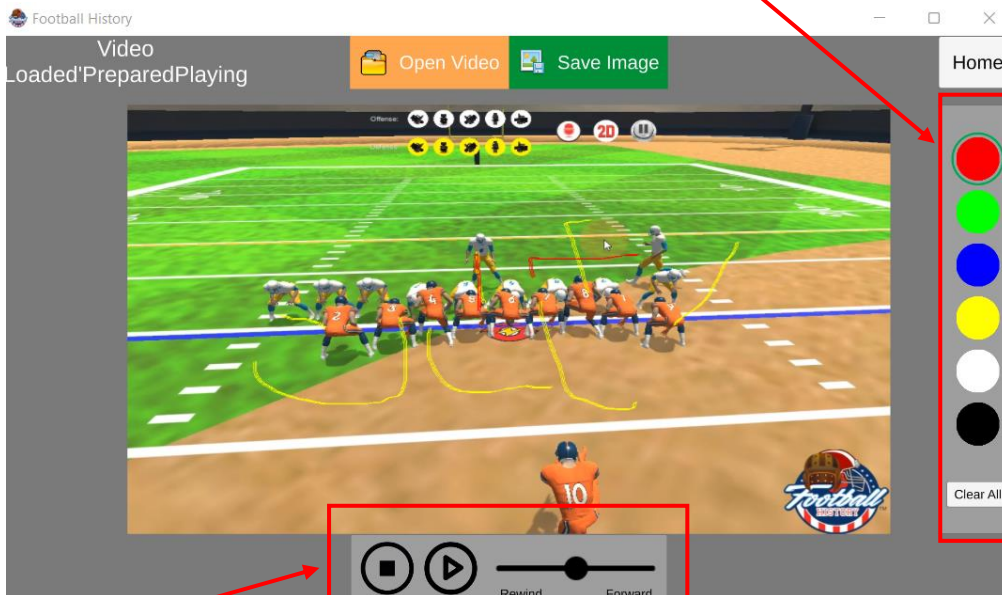


## Telestrator

The simulator's Telestrator is a useful tool coaches can use in sessions with players or other coaches. To use the Telestrator, click on the "Telestrator" button within the main menu. You will be presented with the following menu (FIG 1.4) below. Simply click on the "open video" button and navigate the video you want to import. You can import .MP4 and .MOV formats.



Once your video has been imported, you can mark it up and save the snapshot images of what you want to focus on to your hard drive. You can use different colors in your markups as well. *It should be noted that each time the video moves forward you must redraw your notations.*



Play, rewind and fast forward functions



## Cameras

The simulator has 10 fixed cameras 5 for the offense and 5 for the defense. In addition to that, you can move the camera to about anywhere on the field and view a play. You also can run a play at half speed by pressing the .05x button. Below is an overview of the camera and other functions of the 3D UI.



- Switches to 2D mode
- Mutes sound
- Runs play at half speed
- Runs play at full speed
- Runs play

**Readme:** As with most software application issues/bug fixes are inherent. The following is a listing of known issues/bugs we noted through testing of the simulator. These issues may or may not occur. However, we will be working diligently to address them in future iterations.

1. Multiple uniform numbers displayed within play designer. If you see multiple uniform numbers displayed ignore them as this is a glitch. Just right click on the player and click on add/route to access the "route settings" UI. From there view the "jersey number" field to see the actual number displayed on the player. Defensive player in this version is numbered from 1-11. This will be changed in future iterations of the simulator.
2. Cannot currently draw routes for the defensive team
3. Cannot add personnel uniform numbers for the defensive team
4. Cannot display offensive and defensive routes in 3D
5. Players sometimes morph out of view when tackled or executing a pass
6. Field goal snap is sometimes not snapped to the holder and offensive player picks the ball up and runs it for a touchdown
7. Ball transition lines from the ball distributor do not always connect to ball receiver