Exercise & Sports Biomechanics
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Lecture 13
Dartfish

[Hello, everyone! Welcome back to this course. In this video, we will cover the Library module and Edit module for qualitative analysis using Dartfish software].

From the previous video, you have learned that you can import the video in three different methods from the folders: The first one is double-click from the item list. The second one is you can drag the video to the tray. All these videos are within your laptop or computer hard drive.

Dartfish has another advantage: we can import the video from the cloud. Let us explore it. At the left top corner, there is an import button. Once I click that, you can see two different options. One is my Dartfish Smart Cloud, and the second one is Dartfish TV Channel. Dartfish is giving 50 GB for individual users. For example, if you are accessing one license, you will be provided with 50 GB of space.

The Dartfish TV channel is entirely different, where the entire organization can use the Dartfish TV channel. You will have unlimited space. So, go to dartfish.com at the top right corner, there is an option called My Account. Click on that. So, it will ask for the username and password. Use your registered email ID and password, and then log in.

[This is my account page. You can notice that I have been allotted 50 GB of space to store the video, and I can share it with the coaches and athletes. On the left-hand side, you can go to the subscription. I have already explained that there is an option called Download Application, where you can download all these software].

This is for the desktop version. And this is for the mobile applications. From here, go to the login details, which is in the top right corner, and click on the Dartfish TV channel. Once you open that, you will have multiple options. First, go to My Collections and Create a new collection under your name or whatever name you wish for. I am creating it in the name of NPTEL, and right now, there are zero videos. You have two options where you can record a video from your mobile and then you can send it to the cloud. The second option is you have videos on your laptop or desktop, and from there you can send them to the cloud.

Coming back to Dartfish software, go to import and click on my Dartfish smart cloud, another window will open. And you can see that the one we created, NPTEL collection, has appeared. For example, I have uploaded one video for educational purposes. Select this video. Here you have two options. One is to view online, and the second one is to download. So, I am going to click the download button.

On the right-hand side, you can see the option that this particular video is downloading onto the laptop. Once it is done, you will get a green color indication, and then press close. As soon as you close the window, the video is already downloaded. You can see the video in the tray and video screen.

There is another option to import the video from the Dartfish TV channel. So, in the Dartfish TV channel, I have created a folder called Field Hockey Collection. Under that, I have uploaded one video. It is for educational purposes. So, you can select that video again using the same method; you have both options: view online and download.

If you press view online, you can view it on the web, and I am going to just download the video. As soon as it is downloaded, press the close button. Again, that video will pop up both in the tray and on the video screen for further analysis.

Imagine that you have completed the analysis and want to share the video with the coaches or athletes. For that, you go to the export and share button. A new window will pop up; there is an option called one video. Once you click that, there will be entry options with video and events, video only, or events only. If it is videos and events, it includes both the video and the tagging which you have done, or you can choose only the video. Or you can choose specific events which you want to share with the coaches or athletes. I just want to click videos and events. And at the bottom, how do you want to send that video? Whether you want to send the trimmed video with the video play range, as we have done previously.

Queue in and queue out. Or if you have identified any events, so you can identify the difference between the events, then we can send the video. I am going to choose the default one, which is no trimming, and then press the next button. You can see the two options: one with Smart Cloud and the Dartfish TV channel. In the Smart Cloud, You can see I am having 50 GB. And in the Dartfish TV channel, I am having 100 GB, as it is an educational version. It was limited to it.

So, in the MyDartfish Smart Cloud, The one which we have created, which is the NPTEL. I am selecting that and then pressing next. And mention it as basketball and then press the publish button.

Now, let us go to the cloud and check whether the video is uploaded in the NPTEL folder or not. You can see here the basketball one has been uploaded in the cloud. Now, if you want to share this video, you can double-click that video. You can see there are multiple options that come over here, which is known as share. Now, if you want to share the video, click on the basketball one, and at the right top corner, you can see the button called share, and press the share button. You have multiple options: either on Facebook, LinkedIn, X, WhatsApp, or you can even email the link to the coaches or the athletes, or simply copy the link and paste it in the WhatsApp group. So, all the athletes and coaches can access the specific video.

If you want to share a video with a WMV or AVI video format, which is not possible in Dartfish. Here you can see in the tray, among all the files, the one is looking different because it was recorded in MOV format, but still, the video can be played in Dartfish. If I

want to convert this MOV into MP4 format, again go to the export and share button, and another window will pop up. In that, there is an option called Convert Video Format.

Click on that. Press the NPTEL Dartfish video, where I want to save this, and press Next. And it is asking for what theme it has to be recorded. I am just going to give None, and then I am going to convert the video into MP4 H.264 HD format and then press publish.

Next, we move on to Windows layout. If you are not comfortable with the layout where the item list and trays are there, and if you want to change this, you can do that. Right now, if you choose item list or tray, it is not possible to move. Now, go to the windows, and then there is an option called lock window layout. I am going to uncheck that, and you can see the change in color in the tray. So, from here, I can move anywhere to my comfort and once you move this, you can see there is a yellow color arrow mark popping up. It is showing whether to drop the tray at the bottom, at the top, at the right side, or at the left. You can go anywhere. It can be here at the top, at the left-hand side, or at the right-hand side. So, I will leave it over here. At the top, there is a folder view, and at the bottom is a tray. And if you want to reset everything and return to the previous template, go to the window and reset the window layout. It will return to the previous format.

Next, let us see **how to customize the command button in the dotfish.**

For example, if you want to delete something, you need to press the delete button. As simple as that. Similarly, if you want to create a new key, then you have to choose the specific command. For example, I am just selecting active layout preset 2, and at the bottom, it is showing press shortcut key. I am going to click there, and then I press Shift, Alt, and then 2.

If it had been assigned to any other command, it would pop up at the bottom. Let us try that. I will press control, alt, and 4, and it is showing that it is already assigned to activate edit workspace. So, we cannot use that. Now, I am going to change it to shift plus alt plus 2 and then press the button called assign.

It will show at the top. Then apply the customize button and then OK. So, this is how you will create a customized command button for smooth recording and analyzing the video.

Next, go to the **tools and select options**, a new window will pop up.

In general, you can change the time format either from milliseconds to hundredths of a second, tenths of a second, or seconds. In addition, if you go to analysis, there is an option called drawing tool. Below that, it is clearly mentioned that the measuring unit is in meters. As a biomechanist, if you want to change any of these parameters, you can change that. The second one is the clip navigation; the jump length is 10 frames. For example, in the previous video, we learned that to move forward, you will be using Control plus the right arrow, so it will go each frame. This means it will jump 10 frames for one click. If you wish to reduce it, you can reduce it, or if you want to increase it, you can increase it according to the requirement of this port. Once it is done, press Apply and then OK. [So far, we have covered all the concepts in the library module].

With this information, you can observe the athlete's performance, which is the second stage of qualitative analysis.

[The next two **modules** focus **on performance analysis**]

The first one is the live module, where you will be recording the video live and providing feedback to the coaches and athletes instantaneously. In this module, there is an option called Panel. For example, if I choose basketball as an example, you can see multiple actions like 2-point shots, 3-point shots, and free throws. So, we will note the information on how many times the 2-point shot or 3-point shot was taken by Team A or Team B. Based on this, statistical feedback will be provided to the coaches and athletes.

The next module is the **Replay**.

The similar functionality of the live module will be here in this replay module. Instead of going live, we will be just uploading the video that is already recorded. The same tagging panel will be opened, and we will be notating the information, and we will generate the game statistics to provide feedback for the athletes. Only if you are working on this performance analysis, we need to work on these two modules. In this course, we are focusing only on biomechanical analysis, which is both qualitative and quantitative.

[For that, we are moving to the **next module called Edit**]

Edit: In this module, at the top, the toolbar and at the bottom, almost similar functionalities are there from the library module. In addition, you can see at the right side there is a tool called drawing pen. The first one is the presets, which is the ready tool for the coaches and biomechanists. For example, if I want to choose the arrow, I can choose the arrow immediately with that specific color. So, how to create the presets? For example, if I am selecting the first line and at the bottom, there is a properties tool in that I can choose the color which I want, for example, red, and I can choose the line width whichever I want, I can choose the style of the line, and then go to the top, the specific line which I have changed, right-click it, and then save preset. So, if I click that and then if I draw the line, you can relate to the changes which you have done here. It is reflecting now

If the coaches and biomechanists pre-plan what line tools are required to provide the feedback, we can preset all these functions and get ready for the analysis. Throughout the presets, there are four icons there. The first one is the selected drawings. If I click that, whatever the drawings which are on the video screen, I can select that and move it. And the third icon is the undo button. And the fourth icon is the redo button. Lastly, if I do not want this specific line, I can use the second icon, delete, to remove the lines.

[**Next, we move on to 2D tools**]

2D tools are related to qualitative analysis. The first one is the scribble. By the name itself, it is very clear that we can scribble lines on the video to provide feedback. If you wish to change the properties of a specific line, you can click on it and then change the color. I can change the width of these lines.

Next, we move on to the line tool. I can draw a line exactly straight. In addition, if I hold the shift button, I can draw a line along the axis. If I move the mouse, it will go directly to the 45-degree or the 90-degree along the axis. So, that is the advantage if you are holding the shift button. The next tool is the curve tool. Here, I can draw a curvy line by connecting multiple points according to my convenience and the requirements of the sports. As and when I reach the line, it will fill with color to highlight the area.

If you wish to change the color of the fill, You can make it darker or make it transparent. You can also change the color to differentiate the area you have marked. In addition, you can change the line transparency, line color, and line width.

The next tool is the polyline tool.

With this tool, I can connect straight lines, which is similar to the curvy line. As we connect the dots, the area within the polyline will be highlighted. These lines will help us provide feedback in terms of zonal marking. Or man-to-man marking in respective sports.

Next, we move on to the oval tool.

You can draw an oval to highlight specific information. In addition, if you wish to draw a circle, you have to hold the shift key, and you can draw a circle and highlight it. Changing the properties of this line and fill is similar to the previous tools.

The next tool is the rectangle, where we can select either a square or a rectangle to highlight a specific area or zone. If I wish to draw only a square, I need to hold the shift button. And I can draw a square from smaller to larger.

The next tool is the marker tool, which helps us understand where exactly the foot movements are, and from here, you can understand the the pattern in which the movement was taken. This marker tool can be used in multiple sports and provides feedback for the athletes.

The next one is the clone tool. I can select the clone button. Highlight the area which I want to clone. I will drag it to the right side. Right-click on the image and press the button called freeze. If you notice that at the top of the image, it is clearly mentioned that this moment was held. And from here, if you want to play the video frame by frame, you can provide feedback on the rest of the videos and why the specific moment was held. The coach may need to provide specific information at this moment, and the software is providing an opportunity to freeze this particular moment for better understanding by the players.

The next one is the Zone Highlight

In this tool, I can highlight a particular person or an object to specify that. In this example, I wish to show the last person in the field hockey who is not covered by any of the defenders. At the same time, you can see the rest of the players very clearly. That is why the zone highlight tool is used. There are a few more tools on the left-hand side where you can zoom in. Using the hand tool, you can move the video and zoom out. There is an option to flip the video horizontally. You can play the video and you can provide feedback.

The last one is the analysis recorder

When you click that, it will open in a new window. We can record the video, annotate the information with the preset tools, and a few highlighters over here.

And we can provide feedback for the athlete. For example, I will record the video and do some annotation specifying the block start. At this moment, the line of force is not appropriate for efficient running. I will stop the video. Now, I am playing the video that I have recorded for the athlete. So, I am stopping here. Either I can go back and do the editing, or I can discard the video. Now, there is an option to export and share. Once I click that, I hope you remember we have two options: we can send the video to the Smart Cloud, which is your account where you can store a maximum of 50 GB, and the Dartfish Channel. As you know, from the Smart Cloud, you can share the link with the players and coaches for reviewing the video. Lastly, there is an option called showing window, and when we have completed the recording, that specific video is saved in our drive. From here, we can share it with the athletes.

 [So, thank you, and see you in the next video.]