Installation and User's Manual

Lince: a software application for the automatization of observational registers

This software was developed as part of the research project *Avances tecnológicos y metodológicos en la automatización de estudios observacionales en deporte* [Technological and methodological advances in *the automatization of observational studies in sport]*, funded by the General Research Council of Spain's Ministry of Science and Innovation (*Dirección General de Investigación, Ministerio de Ciencia e Innovación (*project *PSI2008-01179), over the period 2008-2011.*

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This manual provides a detailed description of how to install and use Lince with the Windows operating system.

Installing Lince

Lince can be installed via the following steps:

1. Go to http://www.observesport.com/ or http://lom.observesport.com/ and click on "Save file" or "Execute" to start the installation process.

2. Click "Next", "I have read and accept the conditions" and "Install" to prepare the program for installation (Figures 1 and 2).

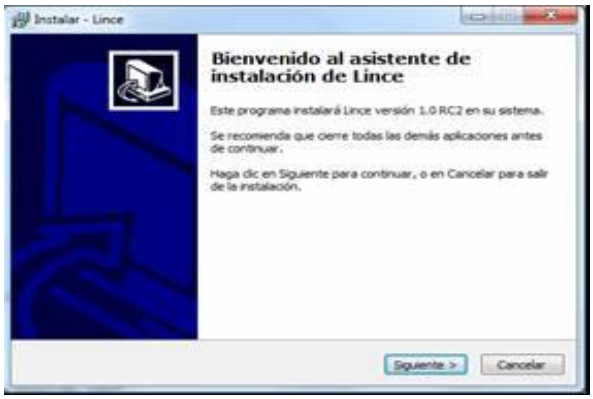

Figure 1: First window of the Lince installation wizard.

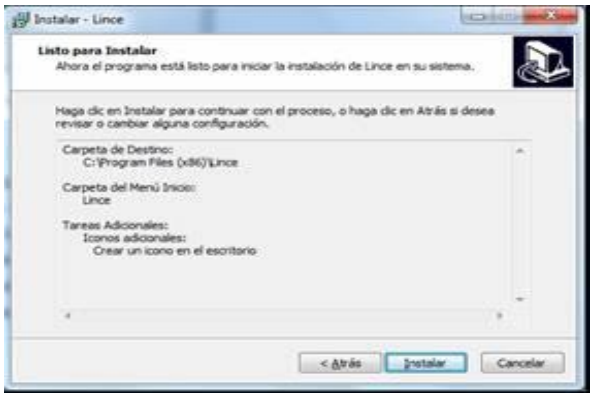

Figure 2: Final window of the Lince installation wizard.

3. You will then see a window for the required Java software (Figure 3).

Figure 3: Java installer

4. This does not need to be downloaded if it is already installed on your PC. If this is the case and you don't wish to reinstall the software you should click "No" when the Java set-up window (Figure 4) appears (don't worry if an error message appears).

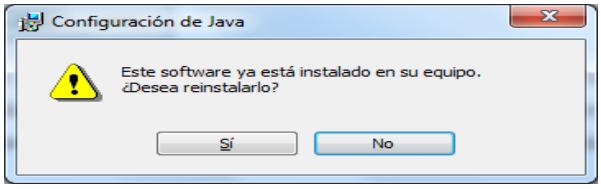

Figure 4: Java set-up window.

5. After a few moments a new window will appear confirming that Java has been installed and you should now click “Close” (Figure 5).

Figure 5: Window confirming that Java has been installed.

6. You then need to install the VLC media player. The first window that appears will ask you if you want to remove the previous version prior to installing the new one (Figure 6). Click “Yes”.

Figure 6: Window for removing a previously installed VLC media player.

7. Installation of the new version of the VLC media player will then begin. Simply click “Next”, “Install”, “Accept” and “Finish” on the windows of the installation wizard (Figures 7 and 8).

Figure 7: First window of the VLC media player installation wizard.

Figure 8: Final window of the VLC media player installation wizard.

8. Once the VLC media player is installed on your PC you are ready to use Lince.

Using Lince

This section explains the different functions of Lince. The best way of understanding how it works is to read this section carefully and try out each of the actions with the program itself.

To execute Lince, click on the desktop shortcut (Figure 9) or search for the program in the Start menu.

Figure 9: Desktop shortcut for Lince.

Start window: observation instrument

When you open Lince the first window to appear shows the observation instrument (Figure 10).

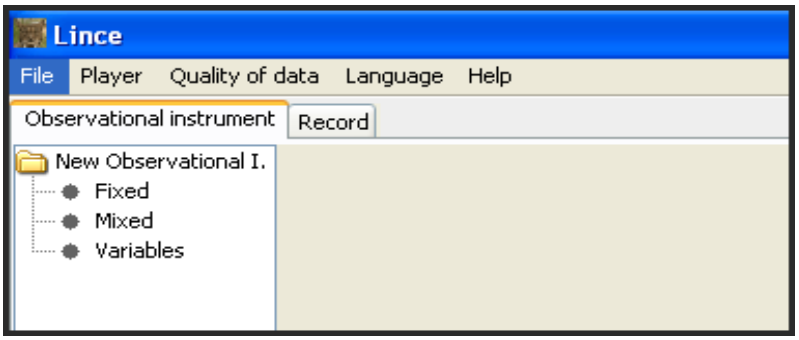

Figure 10: Start window of Lince.

Using this window you can perform the following operations:

9. Build the observation instrument, which can comprise three kinds of criteria:

- fixed criteria: aspects of the video that are constant throughout the recordings (e.g. day. time.. etc.).
- mixed criteria: aspects that change to some extent during the recording (e.g. different halves of a match).
- variable criteria: the data that are going to be recorded (e.g. observed behaviours).

In order to create these criteria you need to select the required type of criterion (fixed, mixed or variable) and click “Add criterion” (Figure 11).

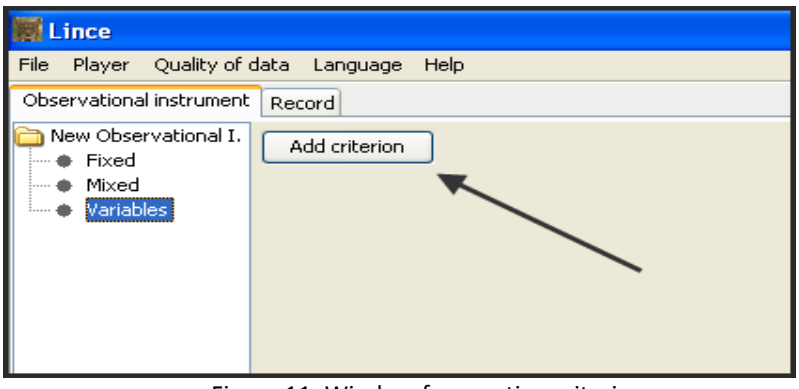

Figure 11: Window for creating criteria.

10. Once a criterion has been created it can be further defined by clicking on it and then specifying the following aspects (Figure 12):

A. Name: assign a name to the criterion.
B. Persistent: you can decide whether the criterion should be persistent or not. If you tick this box the criterion will remain constant from one episode to another once it has been selected.
C. Description: define the nature of the criterion.

If you make a mistake, click on “Remove criterion”.

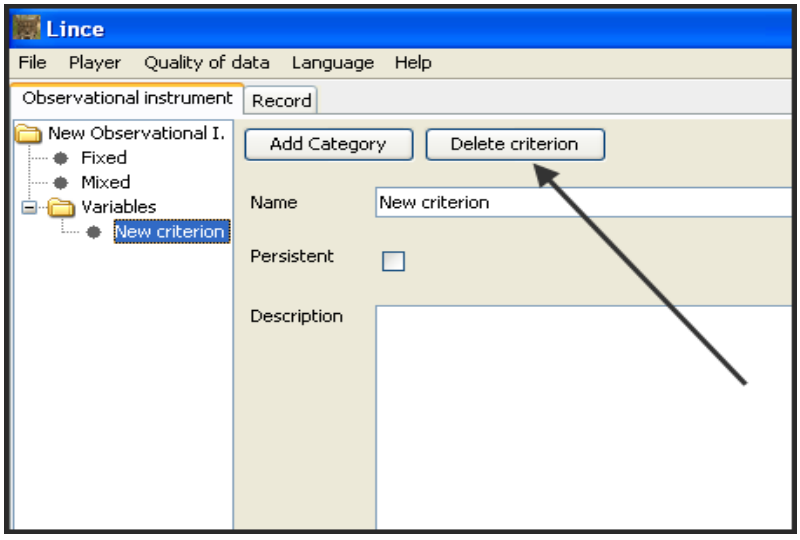

Figure 12: Window for defining criteria.

11. Once the criteria have been defined, categories (Figure 13) and sub-categories (Figure 14) can be included within them by clicking “Add category” and then specifying the following aspects:

A. Name: assign a name to the category.
B. Code: assign two or letters (never numbers or symbols) to represent the category.
C. Description: define the nature of the category.

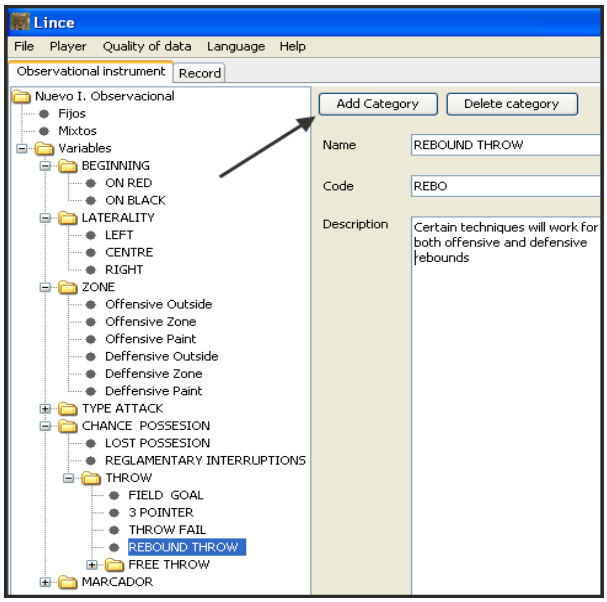

Figure 13: Window for defining categories.

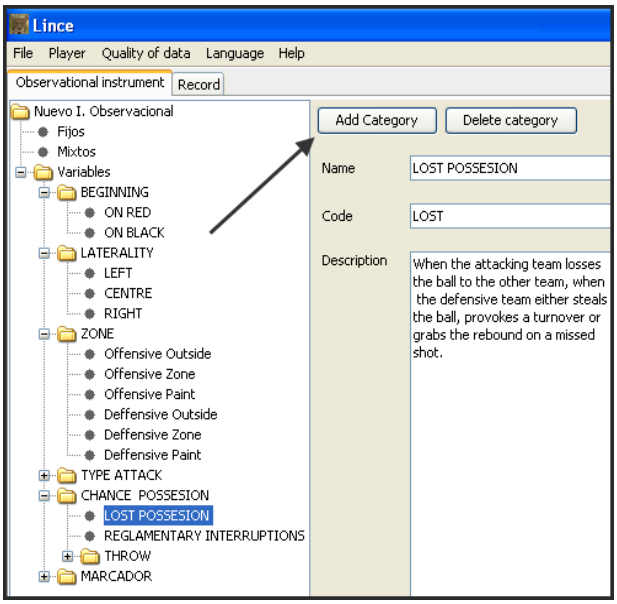

Figure 14: Window for defining sub-categories.

12. These actions can then be repeated to create a system of categories and sub-categories in a tree formation that represents the observation instrument (Figure 15). Sub-categories are only permitted for variable criteria.

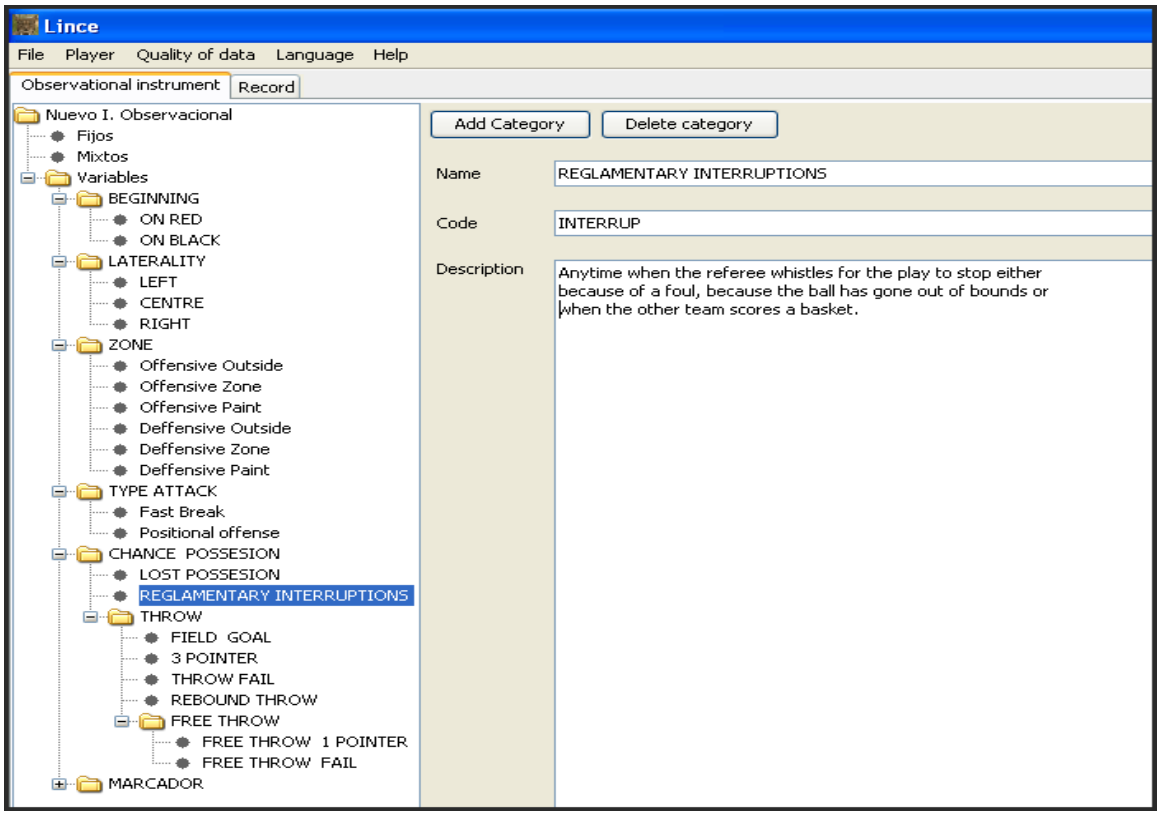

Figure 15: System of categories and sub-categories representing the observation instrument.

13. Once the observation instrument has been created it can be assigned a name and saved through the following commands: File > Observation instrument > Save observation instrument (Figure 16).

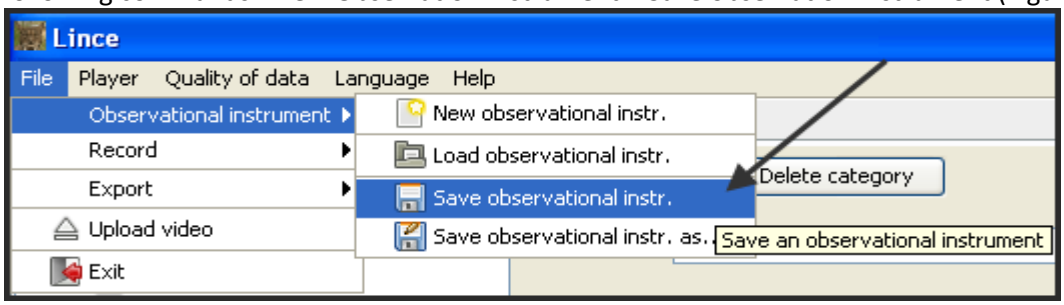

Figure 16: Procedure for saving the observation instrument.

The file extension will be assigned automatically as (.ilince).

14. Using the same route (File > Observation instrument) you can execute the typical file actions (Figure 16):

A. Create an observation instrument ("New observation instrument")
B. Load an observation instrument that is already saved ("Load observation instrument")
C. Save an instrument that is currently open ("Save observation instrument")
D. Save the instrument with a different file name ("Save observation instrument as…").

Once the instrument has been created and saved the next step is to prepare the observational register.

Preparing the observational register

This is done via the following steps:

15. Using the following window (Figure 17), decide whether you want to use an existing observation instrument or load a new one by clicking “Load observation instrument”.

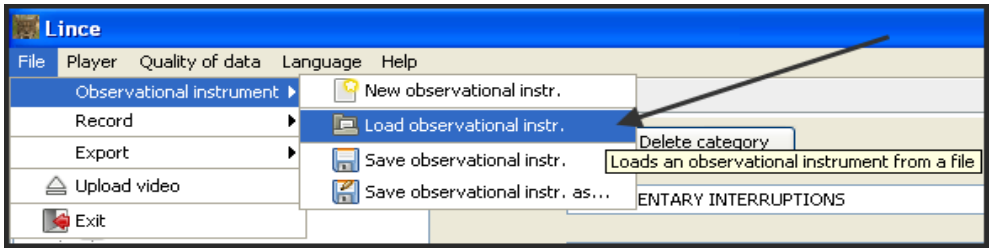

Figure 17: Procedure for loading the observation instrument.

16. Use the following window (Figure 18) either to create a new register by clicking “New register”, or to retrieve an existing one by clicking “Load register”.

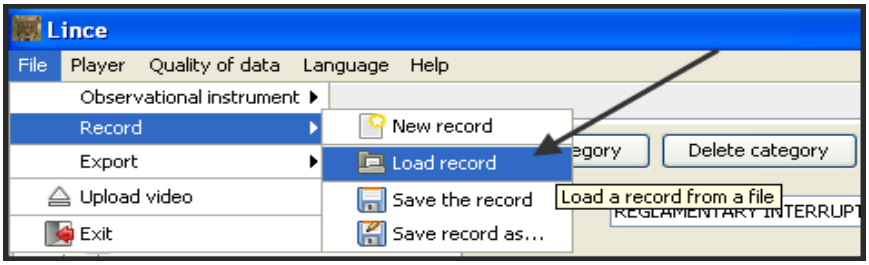

Figure 18: Procedure for loading existing observational registers.

NOTE: The retrieved register must coincide with the instrument with which it was created.

17. Finally, use the following window (Figure 19) to load the video (preferably in .avi format) by clicking “Load video” and searching for it on the hard disk.

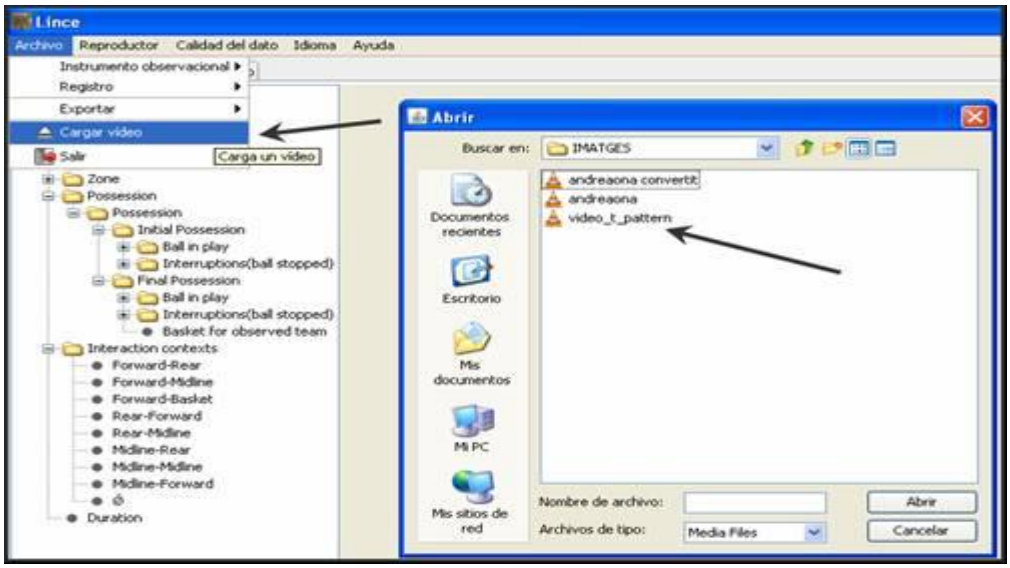

Figure 19: Procedure for loading the video from the hard disk.

Once the register has been prepared you can then begin to use it with the video.

Functions of the observational register

When we begin to use the observational register Lince will show a window (Figure 20) that displays its different functions:

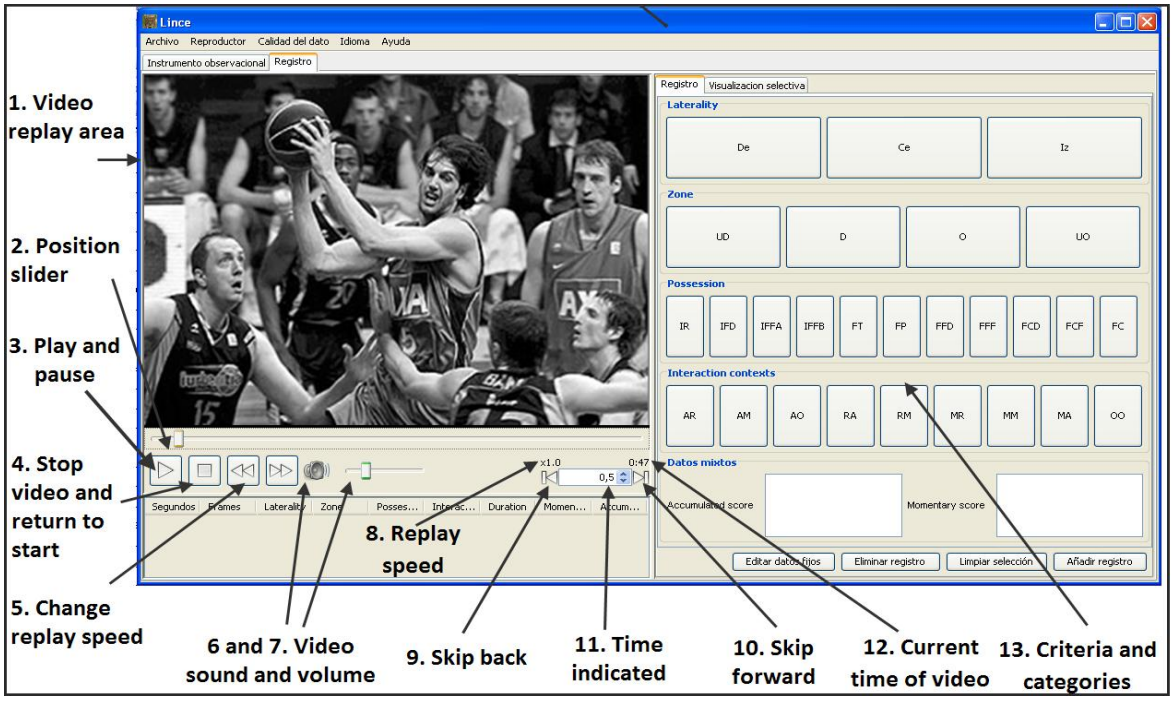

Figure 20: Functions of the observational register.

1. Video replay area. This refers to the area in which the video can be seen, the size of which can be modified via the horizontal and vertical bar that separates this area from the rest of the interface.

2. Position slider. This indicates the temporal position of the currently viewed image in relation to the duration of the video as a whole.

3. Play and pause. Allows the video to be played or paused. There are three ways of executing this command: clicking the play/pause button, pressing the keys **Alt + A**, or right clicking the mouse.

4. Stop video and return to start. Enables the video to be viewed again from the start.

5. Change replay speed. Enables image replay to be speeded up or slowed down.

6 and 7. Video sound and volume. Provides a mute setting and enables volume control.

8. Replay speed. Indicates the speed of video replay.

9, 10 and 11. Skip back (9) or skip forward (10) the time that is indicated in the box (11).

12. Current time of video. This indicates how much of the video has been played.

13. Criteria and categories. Thumbnails that correspond to the different behaviours which may appear. If you click on a thumbnail that has been defined as persistent it will remain active from one episode to another.

Creating a register

A register is created via the following steps:

a) Click the “Play” button (Figure 20) to replay the video.

b) Pause the image using the pause button or by right clicking the mouse or by keying **Alt + A**, and then mark the appropriate categories.

c) Click on “Add register” (Figure 21) or press down on the mouse wheel.

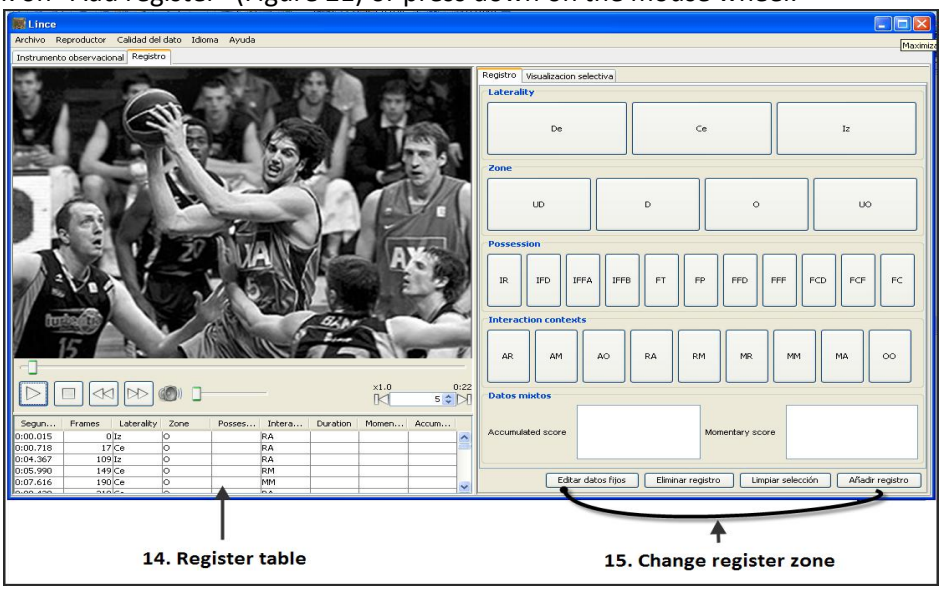

Figure 21: Functions used in creating a register.

d) If you make a mistake there are two ways of modifying the register:

d1) by using the buttons in the “Change register zone” (Figure 21):

- **“Delete register”**: Select a row of the register and it will be deleted.
- **“Clear selection”**: This will erase the category selection you have made.
- **“Add register”**: This will add a row to the register table.

d2) it can also be done directly in the “Register table” by double clicking in order to edit the cell and introduce the correct item of data. If the newly introduced code is not correct Lince will leave the cell empty.

e) Images that have already been registered can be replayed by double clicking on a row of the “Register table” (Figure 21).

f) Once the register is complete, go to File > Register > Save register (Figure 22). The file will be saved with the extension “.rlince” (**r**egister of **lince**).

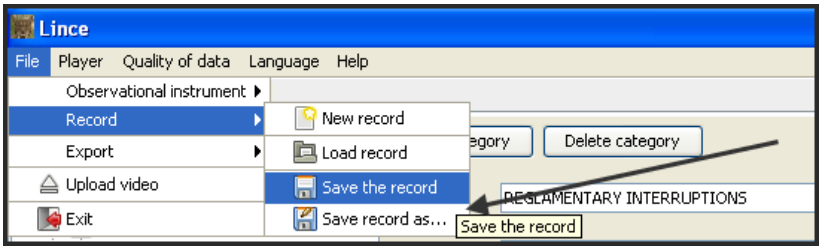

Figure 22: Functions for saving the register.

Exporting the data register

The saved register can be exported via the following commands:

f) Go to “File” and click on “Export” (Figure 23), from where a drop-down menu allows you to choose from among the main programs used for the treatment of observational data (Theme, SDIS-GSEQ, SAS and Excel).

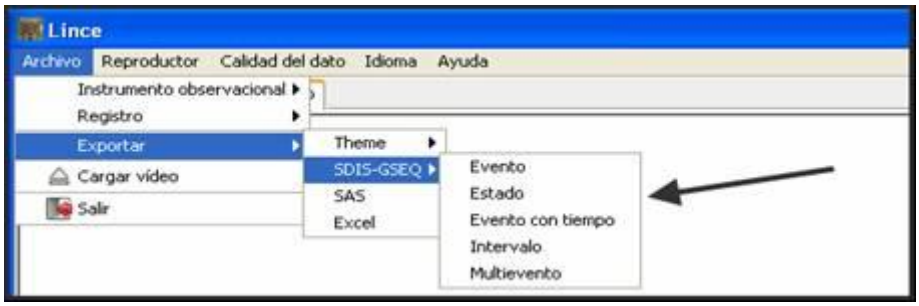

Figure 23: Functions for exporting the data to different observational programs.

g) Once you have chosen the export format a window will appear in which you can select the criteria to be considered in the export procedure (Figure 24):

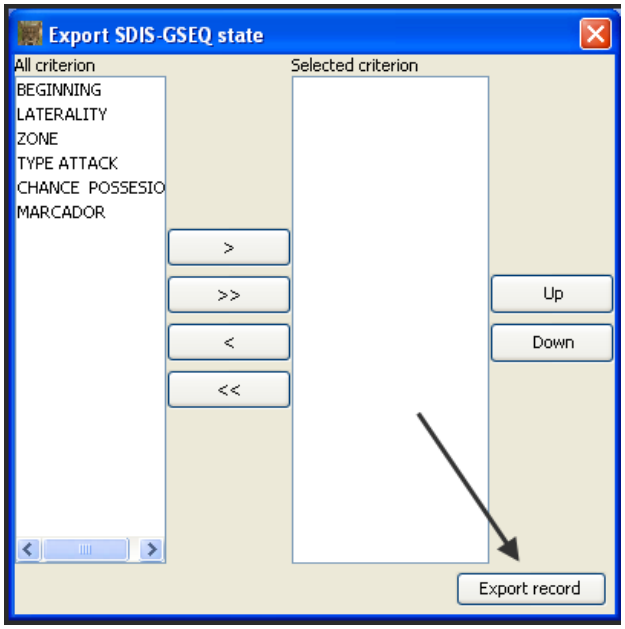

Figure 24: Window for selecting the criteria whose data will be exported.

In this window you select the criteria from the list on the left and move them to the right-hand column by using the buttons in the middle. The buttons “Move up” and “Move down” can be used to order the selected criteria.

H) Once the criteria have been selected, click on “Export register” (Figure 24) (which will allow you to browse and choose the required location on your hard disk.

Calculating data quality

Data quality can be calculated using the kappa coefficient and via the following commands:

i) On the tool bar, select “Data quality > Kappa” (Figure 25).

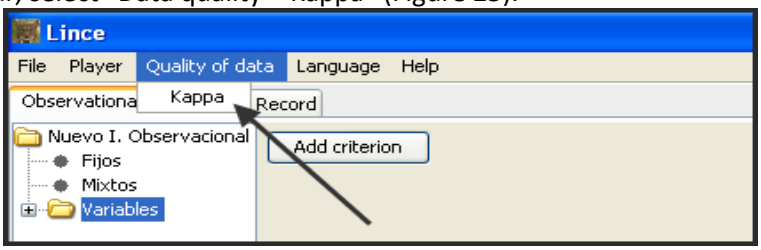

Figure 25: Window for accessing the kappa coefficient calculation.

j) You will then see a window similar to the one used for exporting data (Figure 26). In this window you select from the list on the left the criteria with which the kappa coefficient will be calculated.

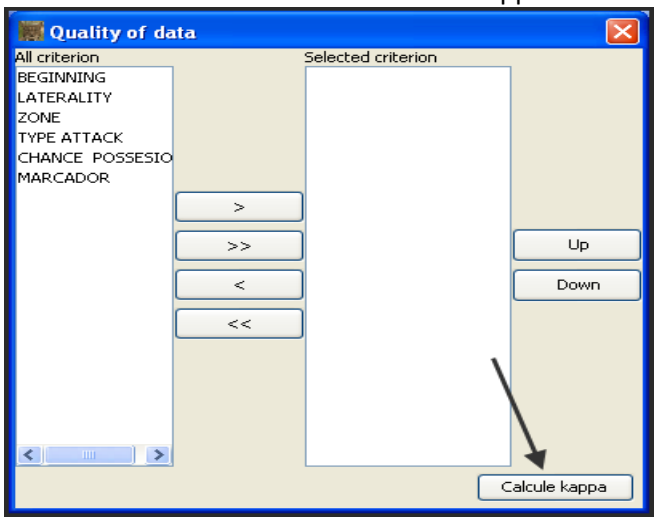

Figure 26: Window for selecting the criteria with which the kappa coefficient will be calculated.

k) Once the criteria have been selected and ordered, click on “Calculate kappa” (Figure 26). If you have a register already open the application will ask you for another file with which to make the comparison. In the event that no file is currently open you will have to select two files for the comparison.

m) Once the calculation has been made, Lince will display a results window (Figure 27) showing the kappa coefficient for all the criteria, as well as the overall mean value.

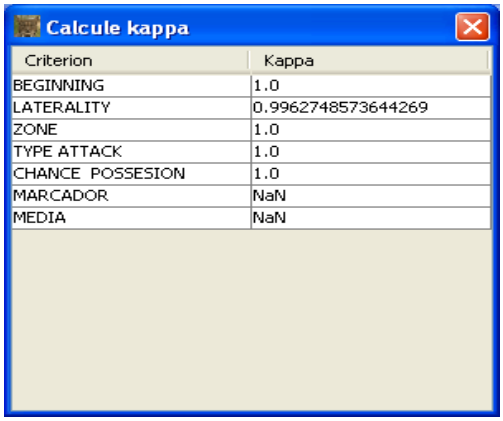

Figure 27: Results of the kappa coefficient calculation.

Selective viewing

This function enables you to select specific registers and images that you wish to view and save (e.g. attacks in basketball through the centre of the court and in the ultra-offensive zone). The steps to be followed here are:

n) Click on “Selective viewing” (Figure 28), select the categories that you are interested in and then click on “Search”. In the example shown below the categories selected are “Ce” and “UO”.

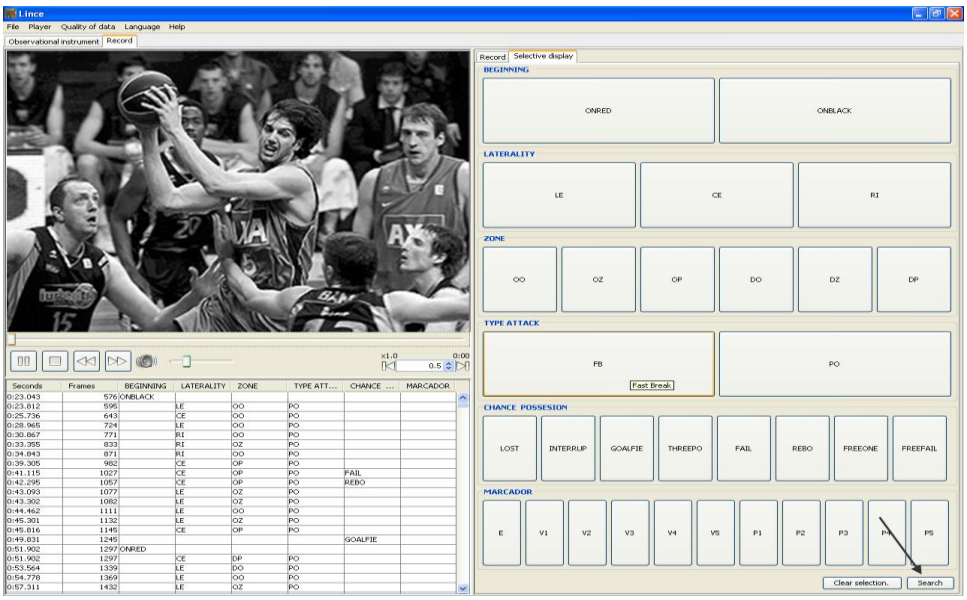

Figure 28: “Selective viewing” window.

o) The registers that coincide with your selected categories (in this case, “Ce” and “UO”) will then be shown in the window (Figure 29).

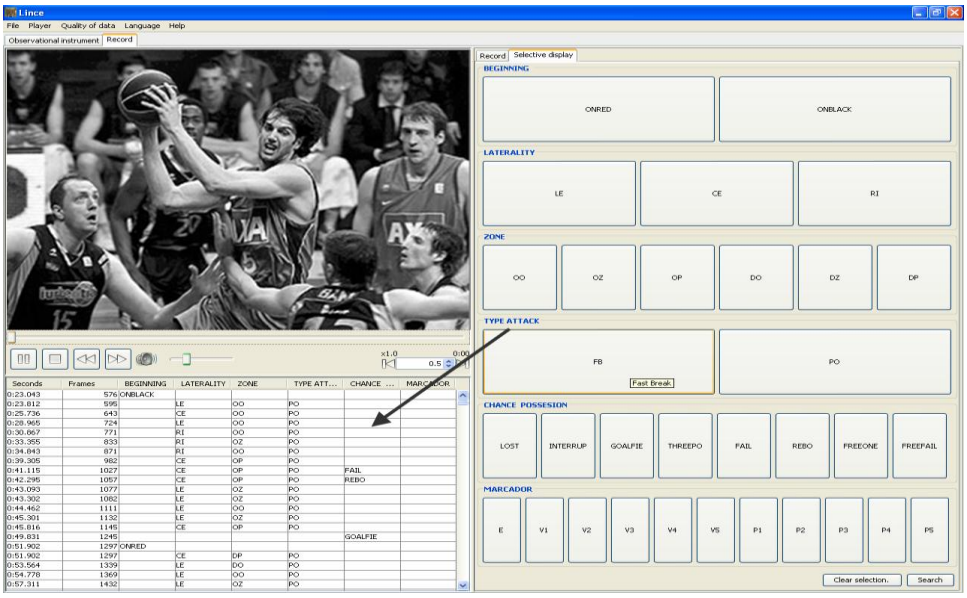

Figure 29: “Selective viewing” window after performing a category search.

The functioning of these selected registers is exactly the same as in previous options, and you can access the images by double clicking on them.