



Quintic Automatic

Gait Report

Tutorial

www.quintic.com

Introduction

The Quintic Automatic Gait Report program is designed to work as an add on to our premier Biomechanics analysis software. Auto track your gait technique using the provided digitisation templates, export the Excel data file, and load it through the Quintic Gait Report program. This will then produce a PDF report, containing variables such as:

- Stride Characteristics (step length, stride time, stance time, stride velocities)
- Shoulder Kinematics
- Lower Limb Kinematics
- Alpha and Beta Intersection

This tutorial will lead you through the simple process in order to create these reports.

To access tutorials on Quintic Biomechanics v26 that are referred to throughout this tutorial please download them from http://www.quintic.com/tutorials_v26.htm.

Installing the Quintic Automatic Gait Report

Please follow the below instructions carefully in order to successfully install the Quintic Automatic Gait Report.

1. Download the Quintic License Key Generator, and run the 'setup.exe' application (NOT 'QuinticKeyGeneratorSetup').
2. In this application window, press on the 'Get System Code' button.
3. Copy the System Code generated into an email, along with the following information
 - a. Company Name
 - b. Contact Name
 - c. Contact Email Address
 - d. Report Name (gait)
 - e. Address
 - f. Phone Number
 - g. System Code (generated in the above step)
4. Please email to info@quintic.com.
5. After receipt of your email, Quintic will send you a unique Licence Key.

Loading the Report Software

Download the Quintic Automatic Gait Report program and open the zip file.

Select 'Quintic-GaitReportSetup' as shown in the image below.

Crystal Reports for .NET Framewor...	File folder					18/12/2014 17:02
DotNetFX40	File folder					18/12/2014 17:02
mdac28	File folder					18/12/2014 17:02
WindowsInstaller3_1	File folder					18/12/2014 17:02
Quintic-GaitReportSetup	Windows Installer Package	15,996 KB	No	17,033 KB	7%	18/12/2014 17:02
setup	Application	216 KB	No	535 KB	60%	18/12/2014 17:02

Follow the instructions, and when prompted, enter the Licence Key issued to you by Quintic.

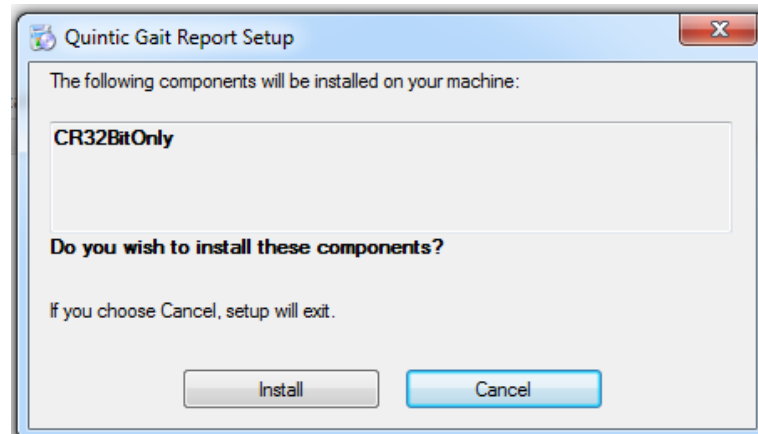
Step One

Once you have selected 'Quintic-GaitReportSetup' the window shown in the image below will appear



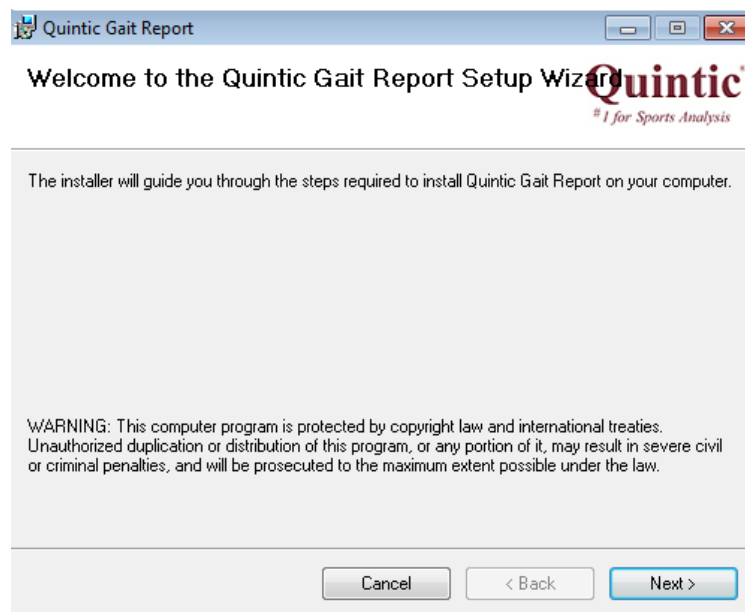
Step Two

Select 'install' and allow the computer to install the crystal report software.



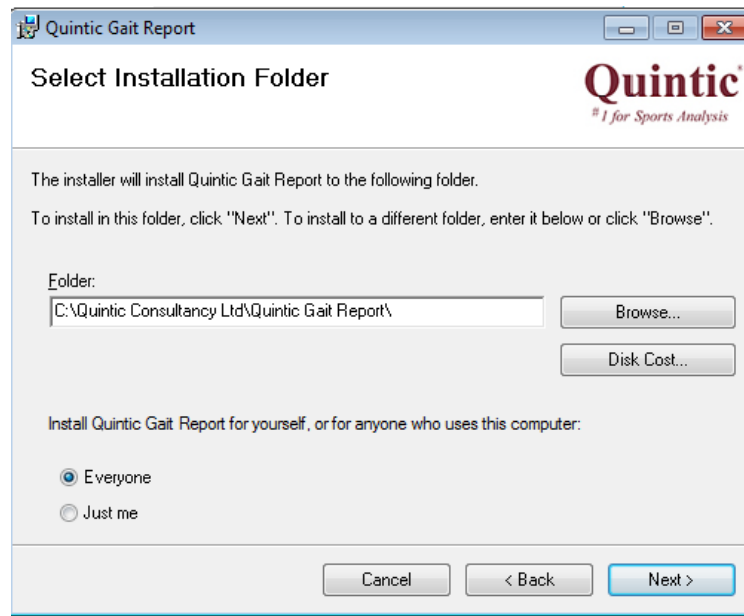
Step Three

Select 'Run' and the next screen will appear. Select 'Next' to move on in the installation process.



Step Four

Select 'Everyone' on the section asking who uses the computer, before you select 'Next' and move to the next installation window.



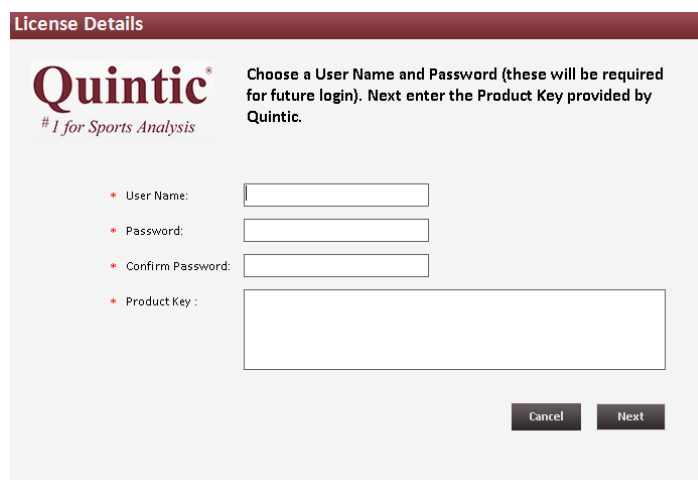
Step Five

The next window will ask you to confirm the installation which you will agree too by selecting 'Next'



Step Six

Once you have confirmed installation the programme will load automatically then the following screen will appear.



Once this screen has appeared you need to select your own username and password (select something you will remember easily). You must also enter your product key that was sent to you from 'info@quintic.com' after you sent the first code for the key generator.

WARNING: If re-installing the software onto a PC please make sure you create a copy of your report database BEFORE uninstalling the software from the PC. If you do not do this you will lose any existing athlete details from the database!

Creating a Copy of the Report Database

1. First, Go to the following folder location: C: Quintic Consultancy Ltd : Quintic Gait Report : DB.
2. Make a copy of the file named 'QuinticGaitSystem.mdb' and save it onto the desktop.
3. Uninstall the report software via the add/remove programs function found within the control panel.
4. Install the new version of the report software onto the PC and complete the licence registration process as above.
5. Now copy the file named 'QuinticGaitSystem.mdb' from the desktop to the following folder location: C: Quintic Consultancy Ltd : Quintic Gait Report : DB.

Microsoft Excel Drivers

A full version of Microsoft Excel is required for the Quintic Automatic Reports to read the required Excel Data Files. If any errors occur during the progress of uploading an Excel File, the following Excel driver may be required.

Please check if your PC is a 32bit or 64 bit version and download the appropriate driver from <http://www.quintic.com/downloads/QuinticGaitReport.html>

Camera Setup

In order to produce a complete report five Quintic live high-speed cameras are required. These cameras should be fully synchronised to record from the anterior, posterior, left lateral, right lateral views and zoomed in at lower posterior, with the athlete positioned clearly within the centre of the field of view (N.B. Please refer to Quintic Tutorial 7c for instructions on setting up cameras).

In instances where less than five cameras are available, it is still possible to produce a report for several data parameters. Please note that if you have only one camera you can collect data from either the left lateral, right lateral or zoomed posterior views. In order to get variables for the anterior or full posterior views both left and right lateral views are required.

Gait Formats

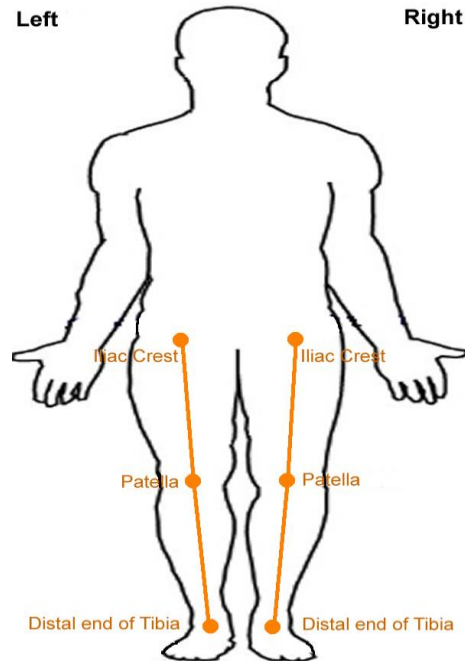
In the gait report there are two formats; Overground and Treadmill. Each format has slight variations in set up and procedure. Please ensure you use the correct format depending on how your video footage has been captured.

Reflective Marker Setup

In order to generate a complete report, 31 reflective markers need to be positioned on the following anatomical landmarks. These are the only reflective markers that need to be positioned.

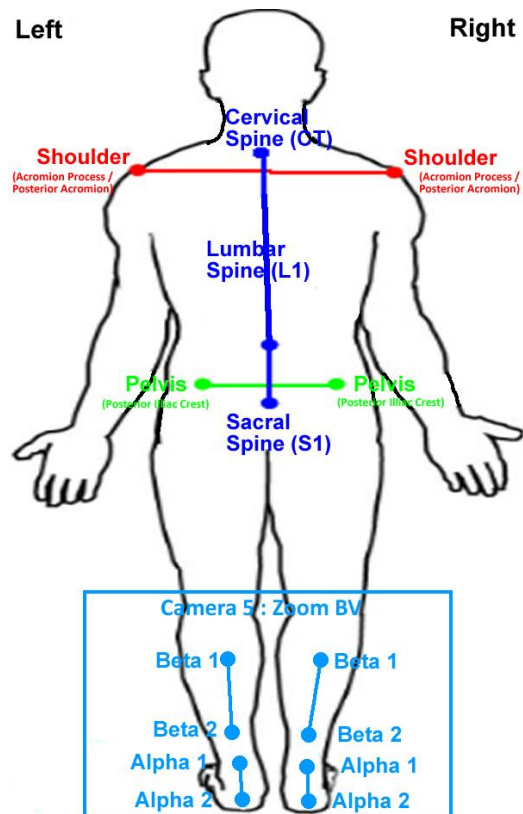
Front View

- Right Iliac Crest (Anterior)
- Left Iliac Crest (Anterior)
- Right Patella (Central)
- Left Patella (Central)
- Right Distal End of Tibia
- Left Distal End of Tibia



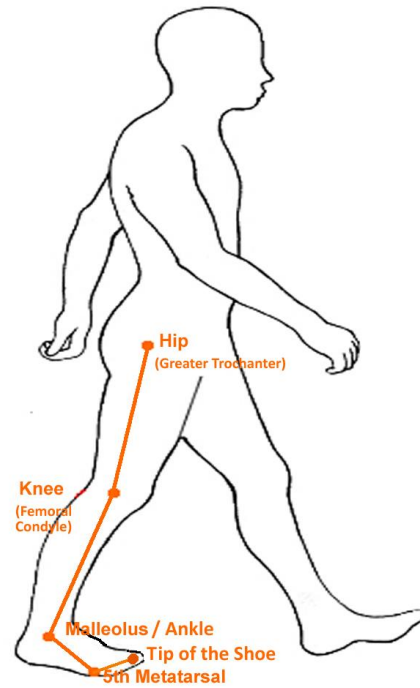
Back View

- Cervical spine
- Lumbar Spine
- Sacral Spine
- Right Shoulder (Posterior Acromion)
- Left Shoulder (Posterior Acromion)
- Right Pelvis (Posterior Iliac Crest)
- Left Pelvis (Posterior Iliac Crest)
- Right Beta 1 (Below Calf Belly)
- Left Beta 1 (Below Calf Belly)
- Right Beta 2 (Above Shoe)
- Left Beta 2 (Above Shoe)
- Right Alpha 1 (Top of Shoe)
- Left Alpha 1 (Top of Shoe)
- Right Alpha 2 (Above Sole of Shoe)
- Left Alpha 2 (Above Sole of Shoe)



Side View (Left/Right)

- Right Hip (Greater Trochanter)
- Left Hip (Greater Trochanter)
- Right Knee (Lateral Femoral Condyle)
- Left Knee (Lateral Femoral Condyle)
- Right Ankle (Lateral Malleolus)
- Left Ankle (Lateral Malleolus)
- Right 5th Metatarsal
- Left 5th Metatarsal
- Right Toe (Tip of Shoe)
- Left Toe (Tip of Shoe)



Format 1 – Treadmill

Calibration

In order to facilitate the calibration process, we would advise that you create a calibration video file for each camera view before collecting any data. For this, you should record the treadmill set-up within the field of view for a couple of seconds from each camera angle. From this, make a note of the height and length of the treadmill (or known section within the field of view) you are using, as this will be used later on (NB: **The calibration needed in the horizontal axis**).

Data Collection

In order for the software to produce reliable data, you will need to record and digitise exactly 10 gait cycles in each view. To do this, we recommend that you initially record 12 to 15 gait cycles, and then after the recording trim the file to begin 10 frames before the first heel contact, and ten frames after the tenth cycle (eleventh heel contact). Please make sure that you trim each file at the same video frame number to ensure that they remain fully in sync. When recording the video trials it is important that a consistent walking/running velocity is maintained.

Digitising the Video Files

Once you have collected data for 10 gait cycles, they are now ready to be digitised. If reflective markers are used, the Automatic Digitisation feature of Quintic Biomechanics can be utilised (N.B. Please refer to Quintic Tutorials 8a/8b for information on how to digitise).

During this digitisation process, as touched on earlier, the calibration needed is that of both the vertical and the horizontal axis. This will need to be done independently for each camera angle, such that a unique calibration file is saved for each. These files should be named appropriately so that it is easy to distinguish which camera angle they relate to when it comes to digitising. It is important to note that the accuracy of this calibration procedure will affect the results produced.

Left side view - Digitise 10 frames before first left foot contact to ten frames after the tenth gait cycle (eleventh heel contact). You can load this file independently or with right side view and other views.

Right side view - Digitise 10 frames before first right foot contact to ten frames after the tenth gait cycle (eleventh heel contact). You can load this file independently or with left side view and other views.

Front view - Digitise 10 frames before first right contact through to 10 frames after left foot has completed its tenth gait cycle (which means both left and right side has been digitised for 10 gait cycles). In order to load the front view file you need to have digitised and loaded both left and right side views.

Full Back View - Digitise 10 frames before first right foot contact to ten frames after the tenth gait cycle (eleventh heel contact). You do not need to worry about digitising to include 10 gait cycle on the left foot just on the right. In order to load the full back view you need to have digitised and loaded both left and right side views.

Alpha and Beta - Please refer to page 14 for full details on how to collect and digitise the Alpha and Beta angle.

Once calibrated, you will need to digitise each video file independently using the corresponding digitisation template. These digitisation templates can be downloaded from...

<http://www.quintic.com/downloads/QuinticGaitReport.html>

Format 2 – Overground

Calibration

In order to facilitate the calibration process, we would advise that you create a calibration video file for each camera view before collecting any data. For this, you should record the overground set-up within the field of view for a couple of seconds from each camera angle. From this, make a note of the length of the overground (or known section within the field of view) you are using, as this will be used later on (NB: **The calibration is needed in the horizontal axis**).

Data Collection

In order for the software to produce reliable data, it will allow you to analyse up to five gait cycle for each view, per report. Hence, to produce a full report you should produce FIVE video recordings of each view for a complete stride (25 videos in total). For each stride it is important that you begin digitising exactly 10 frames before initial ground contact of the relevant foot, and continue until exactly 10 frames after the next ground contact of the same foot. When recording video trials it is important that a consistent walking/running velocity is maintained throughout.

Digitising the Video Files

Once you have collected data for each view, you're video files are now ready to be digitised. If reflective markers are used, the Automatic Digitisation feature of Quintic Biomechanics can be utilised (N.B. Please refer to Quintic Tutorials 8a/8b for information on how to digitise).

During this digitisation process, as touched on earlier, the calibration needed is that of both the vertical and the horizontal axis. This will need to be done independently for both camera views, such that a unique calibration file is saved for each. These files should be named appropriately so that it easy to distinguish which camera view they relate to when it comes to digitising. It is important to note that the accuracy of this calibration procedure will affect the results produced.

Left side view - Digitise 10 frames before first left foot contact to ten frames after the next left foot contact (One full gait cycle). You can load this file independently or with right side view and other views.

Right side view - Digitise 10 frames before first right foot contact to ten frames after the next right foot contact (One full gait cycle). You can load this file independently or with left side view and other views.

Front view - Digitise 10 frames before first right contact through to 10 frames after left foot has completed one full gait cycle i.e. left contact to left contact (which means both left and right side has been digitised for one full gait cycle). In order to load the front view file you need to have digitised and loaded both left and right side views.

Full Back View - Digitise 10 frames before first right foot contact to ten frames after the next right foot contact (One full gait cycle). You do not need to worry about digitising to include the gait cycle on the left foot just on the right. In order to load the full back view you need to have digitised and loaded both left and right side views.

Alpha and Beta - Please refer to page 14 for full details on how to collect and digitise the Alpha and Beta angle.

Once calibrated, you will need to digitise each video file independently using the corresponding digitisation template. These digitisation templates can be downloaded from...

<http://www.quintic.com/downloads/QuinticGaitReport.html>

Alpha and Beta Data Collection and Digitisation

Unlike the rest of the report the data collection and digitising of the Alpha and Beta angles are the same in both format 1 and 2.

Data Collection

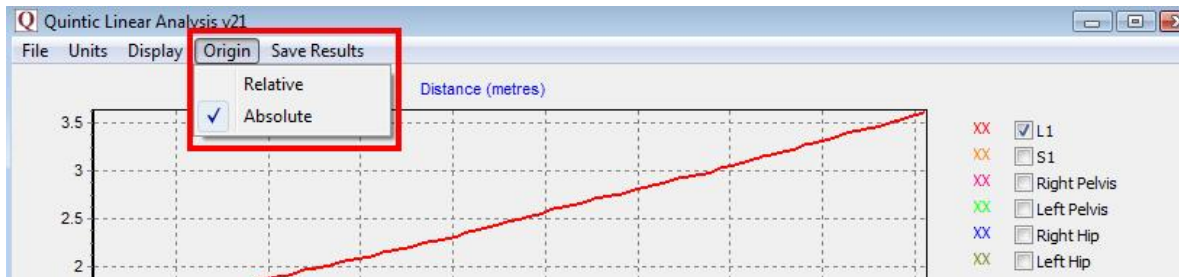
To calculate the Alpha and Beta angles you must position the camera zoomed in at just the foot markers located on the calf and lower foot (exact mark placement is shown in the images on page 7 of the report). You must record each foot for ONE stride (gait cycle). However you should start recording prior to first contact as you will need to digitise 10 frames before contact.

Digitising

The first task once recording of the Alpha and Beta angle has been completed is to copy the video and change the name of each video to represent which is left and which is right (or record two videos one for the left leg and one for the right leg). As mentioned in data collection you are to start digitising each video 10 frames prior to heel contact (or first contact). Before you start digitising you need to work out the total number of frames that the foot is in contact with the ground/treadmill. Then divide that by two to get 50% of contact phase. Once you have worked out the number of frames for 50% you must digitise the 10 frames before contact and the number of frames that make up 50% of the contact phase of one gait cycle.

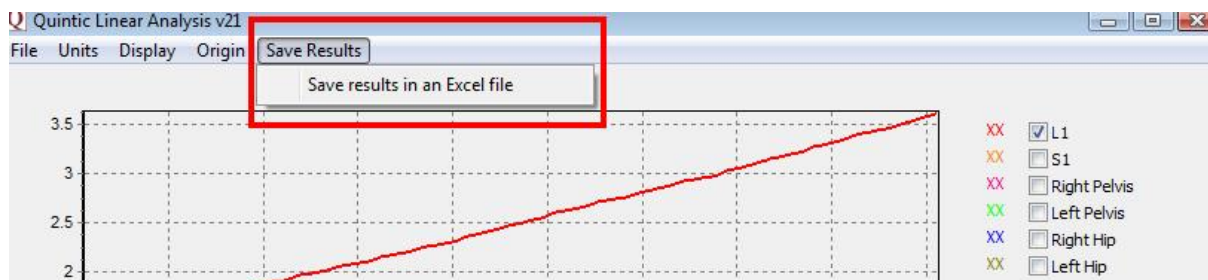
Creating the Excel Files

Once digitised, open the Linear Analysis Window (for help on this, please refer to the Quintic Tutorial 9).



Click on 'Origin', and click on 'ABSOLUTE' (see above screenshot). This is very important in order to produce a correct report.

Next, in order to produce the Excel file, click on 'Save Results', 'Save results in an Excel file' (as shown below), making note of the folder location of this saved file.



Repeat the steps above for each digitised video file. Please check that for each digitisation trace exactly ten strides have been measured.

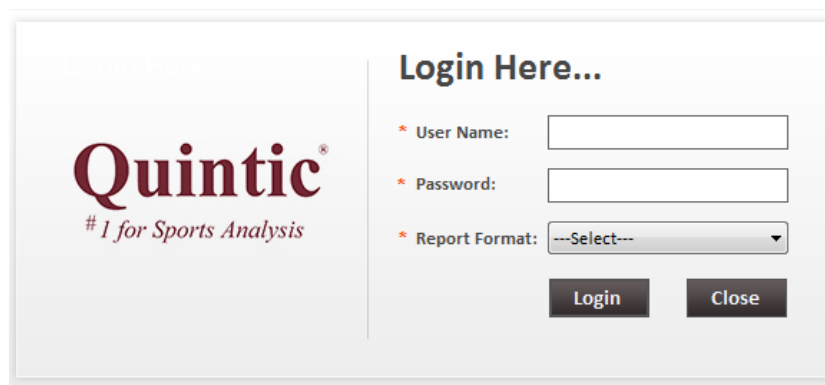
Using the Quintic Automatic Gait Report

Adding Athletes

Open the Quintic Automatic Gait Report program from the desktop icon created during the installation.

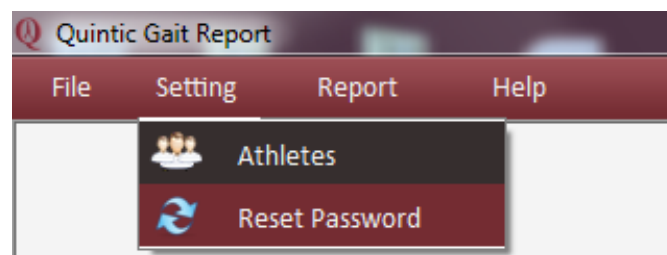
Please ensure the licence code sent to you by Quintic has been installed correctly, and your login details are correct.

Select which report format to use based upon your data collection (treadmill or overground).

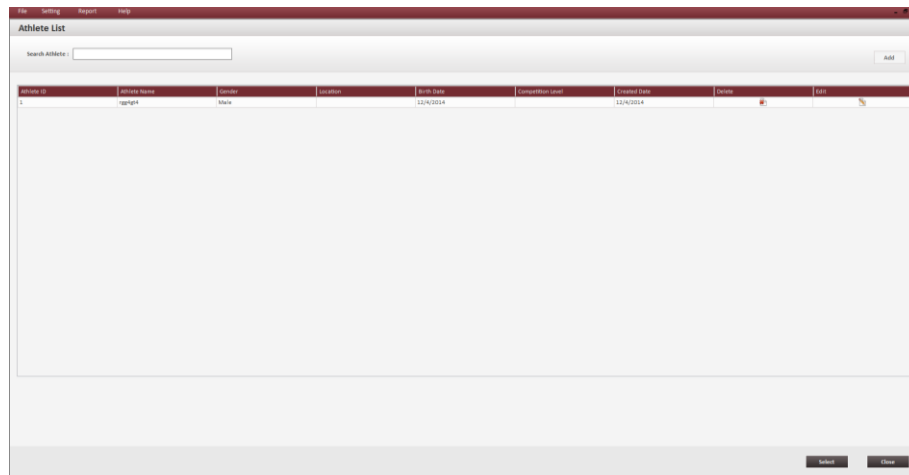


The image shows a login dialog box for the Quintic Automatic Gait Report program. On the left side, there is the Quintic logo with the tagline "#1 for Sports Analysis". On the right side, under the heading "Login Here...", there are three input fields: "User Name:", "Password:", and "Report Format:". The "Report Format:" field is a dropdown menu currently showing "---Select--". Below the input fields are two buttons: "Login" and "Close".

The first thing to do is to add an athlete into the database. On the top toolbar click on 'Setting', 'Athletes'.



The following window will appear, listing any players previously added into the database.



To add a new athlete, click on the 'Add' button. This will bring up the following form where you can enter all the Athlete's Details. The fields marked with a * indicate a required field.

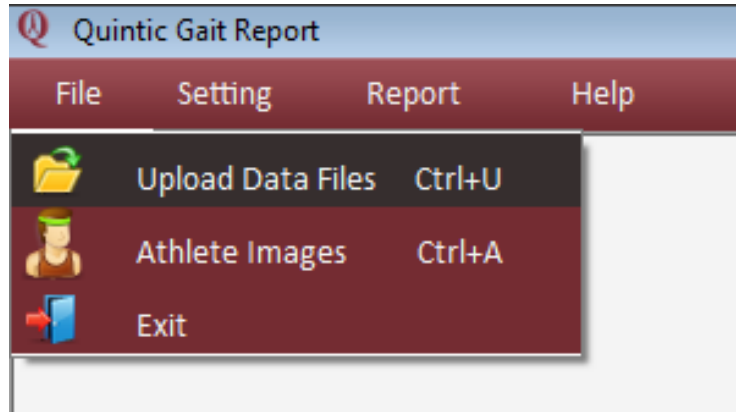
Once saved, the athlete will be added to the athlete list. From here they can be selected and a report can now be created for them.

Here you can also:

- Select a previously added athlete by clicking on their row in the table, then on 'Select'.
- Search the athlete list for a previous athlete by typing in the top box.
- Order the athlete list by any of the variables in the top red row.
- Edit / Delete any current athlete from the list.
- Add a new athlete.

Loading Sessions

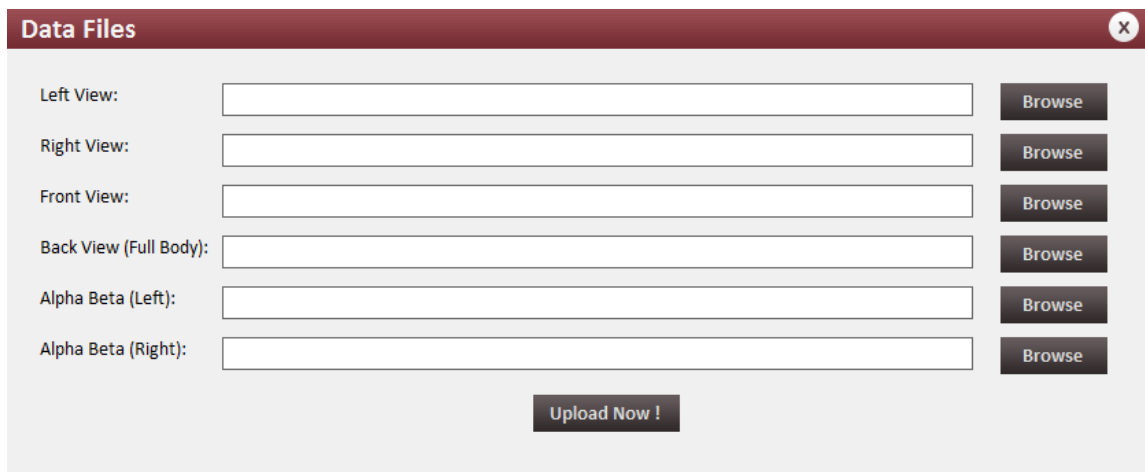
Data files can now be loaded for analysis. Click on 'File', 'Upload Data Files'.



This will then open a window from which you can select the desired Excel files that you wish to analyse.

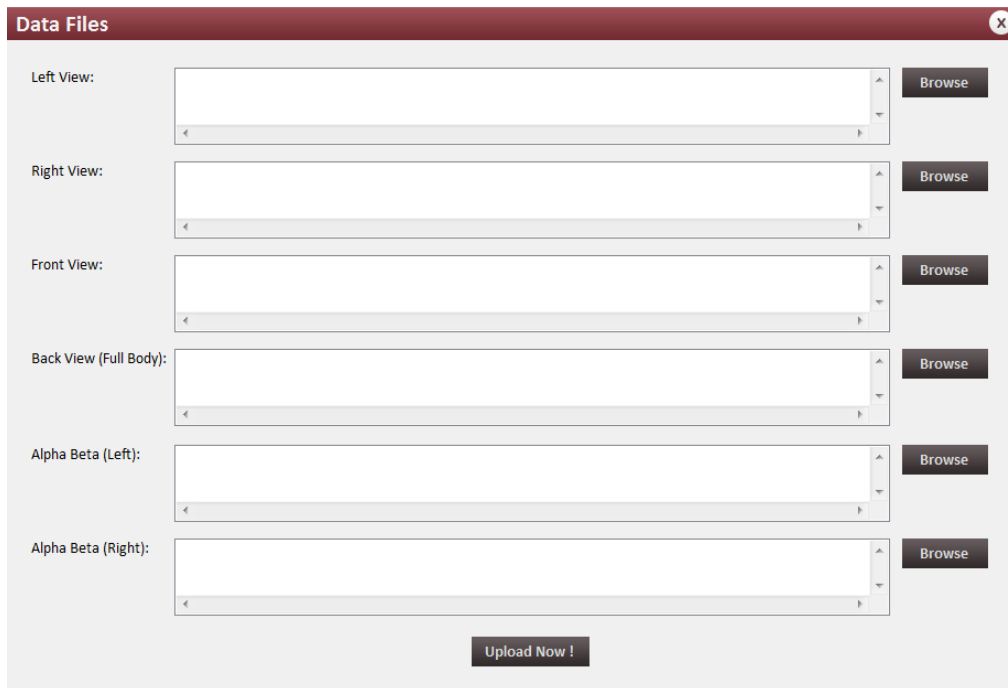
Format 1

In format 1 (Treadmill) you can load 1 file containing 10 gait cycles for each view.

A screenshot of the 'Data Files' dialog box. The dialog has a dark red title bar with the text 'Data Files' and a close button (X). The main area is light gray and contains six rows of input fields, each with a 'Browse' button to its right. The rows are labeled: 'Left View:', 'Right View:', 'Front View:', 'Back View (Full Body):', 'Alpha Beta (Left):', and 'Alpha Beta (Right):'. At the bottom center of the dialog is a dark gray button with the text 'Upload Now !'.

Format 2

In format 2 (Overground) you can load up to 5 files for each view. Each file should consist of one gait cycle.

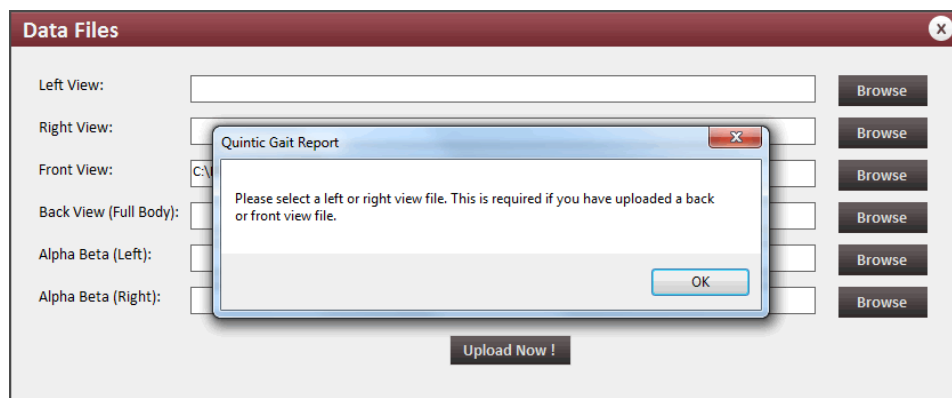


The screenshot shows a window titled "Data Files" with a close button (X) in the top right corner. The window contains seven rows, each with a label on the left, a text input field in the middle, and a "Browse" button on the right. The labels are: "Left View:", "Right View:", "Front View:", "Back View (Full Body):", "Alpha Beta (Left):", and "Alpha Beta (Right):". Below these rows is a dark button labeled "Upload Now!".

As mentioned previously, the program is able to produce either a report for between one and five camera views. **However, it is paramount that a video file is uploaded for the right and left side view even if you require analysis of the front and full back views.** Analysis of the Alpha and Beta intersect can be done independently as can both lateral views.

Loading Files Incorrectly

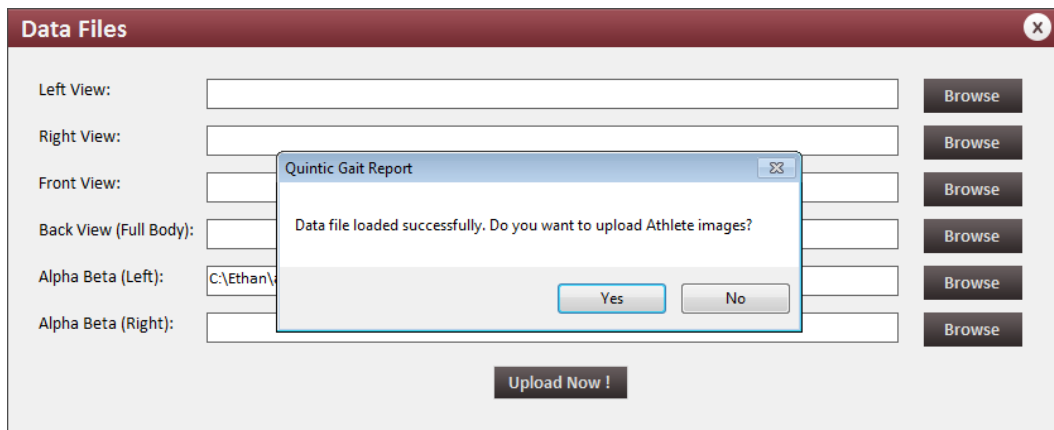
In both format one and two there are instructions on which files must be loaded into the system for the report to load successfully. The main error which will occur is if you try to load either the front or full back view you need to have loaded both the side views. If this occurs the following error message will occur.



The screenshot shows the same "Data Files" window as above, but with an error dialog box overlaid in the center. The dialog box is titled "Quintic Gait Report" and has a close button (X) in the top right corner. The text inside the dialog box reads: "Please select a left or right view file. This is required if you have uploaded a back or front view file." There is an "OK" button at the bottom right of the dialog box. The "Data Files" window behind the dialog box is partially obscured.

Once you have selected all the required files, click 'Save'. An animation of a person running will appear, notifying you that the program is processing the Excel file(s). This may take up to a minute if data for all five-camera views is uploaded.

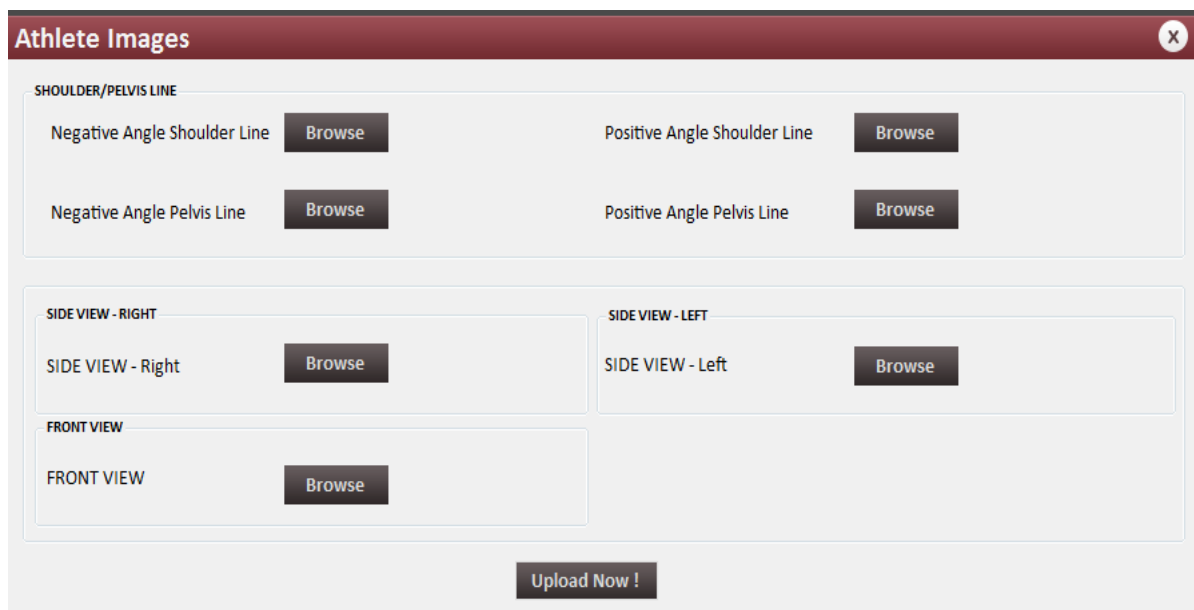
Once complete, the following information box will appear.



Adding Images

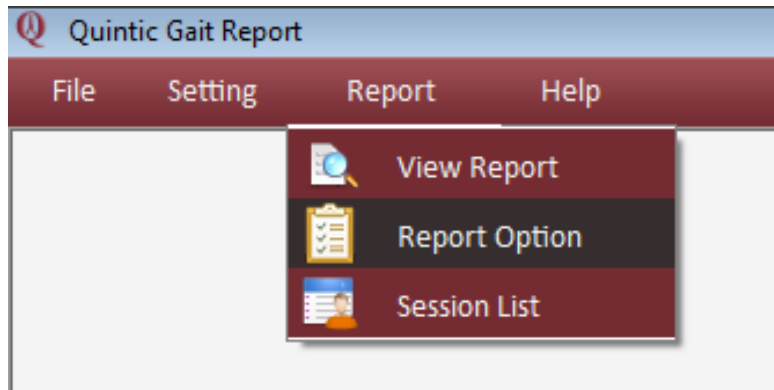
If you would like to upload athlete images please select 'Yes', or alternatively select 'No'.

If you select 'Yes' you will be presented the below screen from which you can select the desired images you wish to upload. Please note that images of angles should be exported from 'Quintic Biomechanics' as individual images. All images that have been exported from Quintic Biomechanics will be resized automatically to fit into the report, so please do not edit these images prior to uploading them (N.B. Please refer to Quintic Biomechanics v26 Tutorial 3 for information on how to export images).

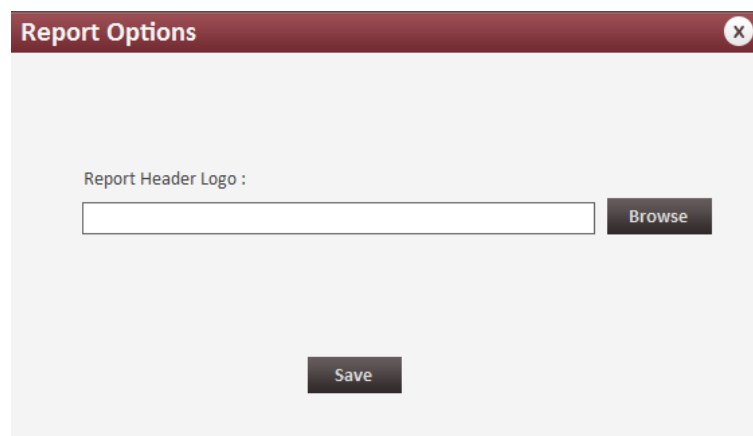


Add a Logo

Before creating the report, there is a customization option to add your own logo onto the front page. This option is only available before you create the report. If left blank/not changed, there will be no logo at the top Right hand corner of the front page. However, if you wish to add a logo, click 'Report', 'Report Option'.



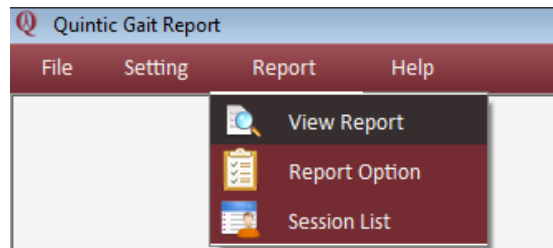
This will open the following window, where you can browse for the desired image and then 'Save' the changes.



N.B. This Logo will remain on all future reports unless you change or remove it.

Create the Report

The next step is to create a report. Click on 'Report', 'View Report' (as displayed below).



Once you have clicked 'View Report' the files loaded previously will now start to load as a new report. An animation of a human will open and the software will then proceed to produce your report, which may take a few minutes. Once complete your report will open automatically. The toolbar below appears above the report, and has the following functions:

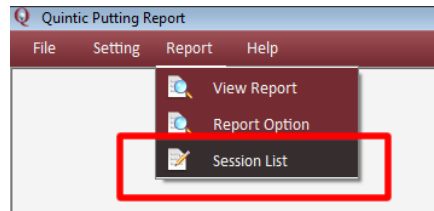


1. **Export Report** – Allows you to export the report as a PDF, Excel or Word Document.
2. **Print Report** – Prints the report straight from the program.
3. **Page Control** – These buttons allow you to navigate through the pages of the report.
4. **Find Text** – Allows you to search the document for a specific piece of text.
5. **Zoom Function** – Change the zoom of the report within the window.
6. **Add Report Summary** – Enables you to add comments / text into the 'Summary' box on the front page of the report.
7. **Save Session** – This allows you to save the created PDF into the program memory to load again at a later date.

Additional Program Features:

Session List

To view the Session List, click 'Report', 'Session List'



Here, by clicking on the blue File Name, you can load previously created reports into the program.

Change Login Details

Click 'Setting', 'Reset Password'. Here this will allow you to change your login details (Username and Password).

