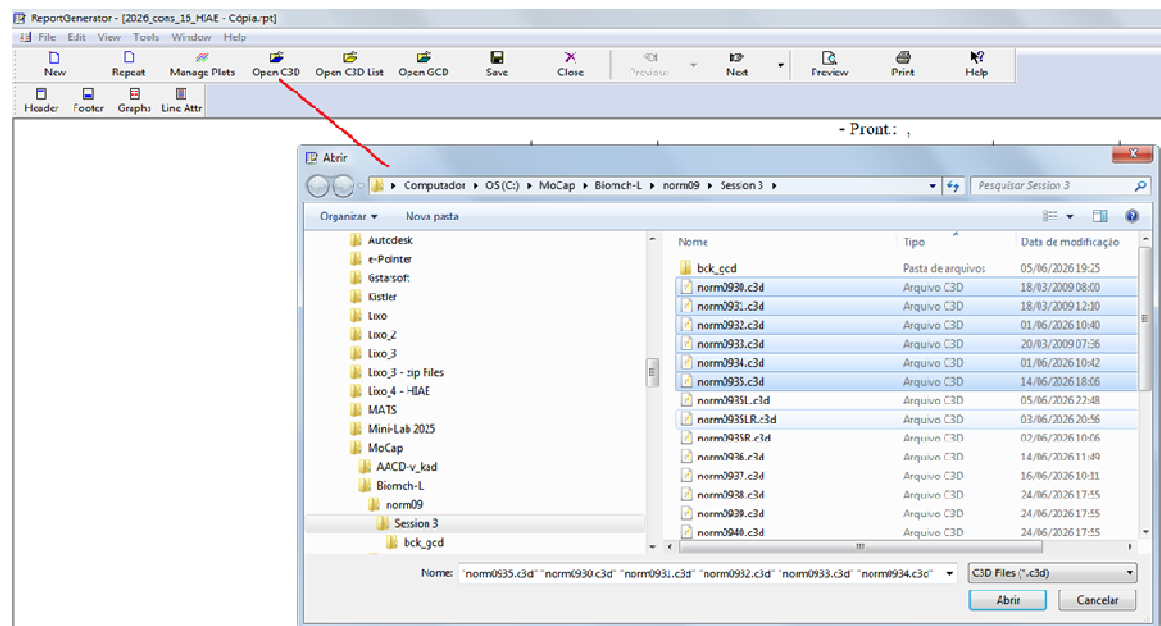


ReportGenerator – Minor Adjustments

A1] Open C3D — recovery of multiple-file selection

The "Open C3D" command now supports selecting multiple C3D files at once, recovering a capability equivalent to what is already available in "Open GCD". When two or more files are selected, the "C3D File Pre-Selection" window is presented for review before conversion (see item C1).



B1] Fractional Graph Scale Increments

"Graph Properties"\'Scaling\'\'Increment" now accepts decimal values, such as 0.5, 0.4, or 0.2, instead of whole numbers only. This is particularly useful for joint moment and power graphs, where whole-number increments are often too coarse to represent the data clearly.

Fractional increments are limited to 1 decimal place (such as 0.2, 0.4, or 0.5). Values that would require 2 decimal places (such as 0.25 or 0.15) are not accepted, because the resulting numbers become wide enough to overlap the unit label printed next to the axis. If such a value is entered, a warning message is shown and the increment is not applied.

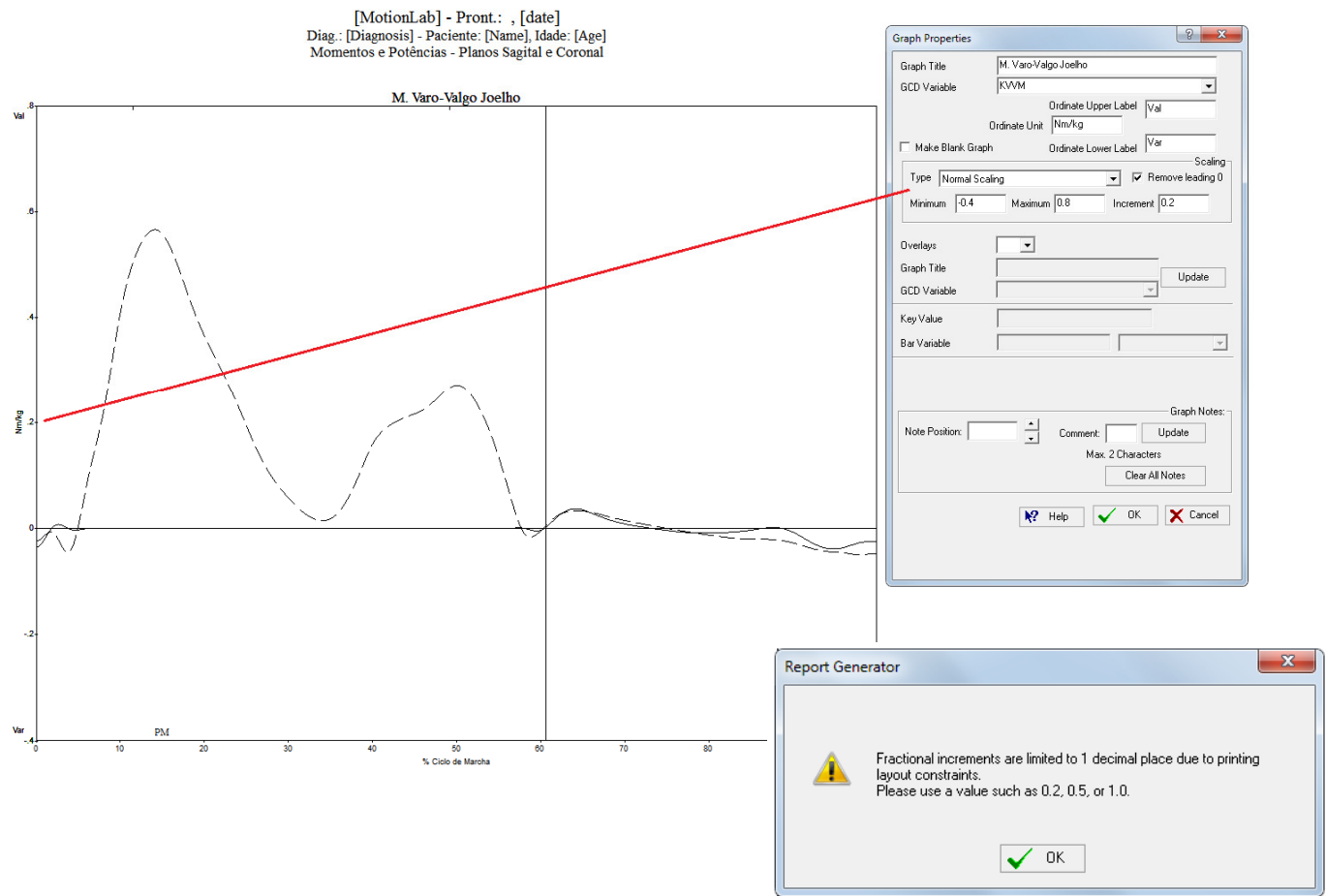
How to use it:

1. Open "Graph Properties" for the graph to be modified.
2. Set "Type" to "Normal Scaling".
3. Enter the desired "Minimum", "Maximum", and "Increment" values. "Increment" may now be a decimal number, limited to 1 decimal place.
4. Click "OK" to apply.

The number of decimal places displayed on the axis is set automatically according to the increment value entered: no decimal places for whole-number increments, and one decimal place for fractional increments such as 0.5 or 0.2.

"Remove leading 0"

When this option is checked, the "0" before the decimal point is removed from axis values between -1 and 1 (for example, "0.5" is shown as ".5", and "-0.4" as "-.4"), saving horizontal space next to the unit label. The value zero is always shown as a plain "0", regardless of this option.



Additional Features: ReportGenerator 2.400

A1] Tools\“Patient Database” stores basic patient and exam records, and automatically fills the corresponding fields in the RPT file. This feature replaces a small number of items from the former Vicon Clinical Manager (VCM) database, which was discontinued due to the unviability of the Borland Database Engine (BDE), exclusive to 32-bit operating systems.

Field List:

Alert: items marked (1) are required. If they are not filled in, closing the Patient Database will result in the loss of the record.

- "Patient ID": chart number. Required (1). Cannot be edited after the record is created. Linked to the RPT field {patno}.
- "Exam Date": date of the exam. Required (1). RPT field {date}.
- "Occurrence": visit number for this patient (1st, 2nd...). Required (1). Cannot be edited after the record is created. RPT field {Occurrence}.
- "Date of Birth": used to calculate the patient's age on the exam date. RPT field {BirthDate}.
- "Patient Name": required (1). RPT field {Name}.
- "Diagnosis": category and subcategory, selected from a list. RPT field {Diagnosis}.
- "Gender": drop-down list. RPT field {Gender}.
- "Physician": referring physician, selected from a list. RPT field {Physician}.
- "Motion Analysis Laboratory": selected from a list. RPT field {MotionLab}.
- "Notes": free text. RPT field {Notes}.

In addition to the 10 fields above, one further RPT field is calculated by the program rather than typed in directly:

- {Age}: the patient's age, in completed years, on the exam date. Calculated from "Date of Birth" and "Exam Date" — there is no separate "Age" field to fill in on the Patient Database screen.

How the dynamic link works:

Each RPT field listed above corresponds to one piece of data stored in the Patient Database. When a report template (.rpt) contains one of these fields — written between curly braces, exactly as shown (for example, {Name} or {Occurrence}) — ReportGenerator automatically replaces it with the actual value from the currently active patient record, every time a GCD file is opened or inserted.

Until a patient is selected, every one of these 11 fields appears in square brackets instead (for example, [Name], [Occurrence]), to indicate where each value will appear once a patient is linked to the report.

The "Notes" field is inserted into the report exactly as typed, without removing or converting line breaks; the RPT template itself controls how the resulting text wraps or breaks across lines.

The screenshot displays the ReportGenerator 2.400 software interface. At the top, a menu bar includes 'Tools', 'Window', and 'Help'. Below it is a toolbar with icons for 'C3D List', 'Open GCD', 'Save', 'Close', 'Previous', 'Next', 'Preview', 'Print', and 'Help'. The main window title is 'Laboratório de Estudos do Movimento Einstein - Pront.: norm11, 21/01/2009'. Below the title, it shows 'Diag.: Marcha normal - Paciente: Nadia Maria da S., Idade: 25' and 'Cinemática 3D (ângulos de Euler)'. The interface is divided into several sections:

- Left Panel:** A 'Tools' menu is open, showing options like 'Format...', 'Global Options...', 'C3D Conversion...', 'Patient Database...', 'Recover Last DB', 'Calculate GCD Variables...', 'Export GCC to CSV...', and checkboxes for 'Interpolate between Samples', 'Use Shading to Indicate SD', 'Use Data Line Style for SD', and 'Hide Data in SD'.
- Graphs:** Several line graphs are displayed, each representing a different motion analysis parameter: 'Obliquidade Pélvica', 'Versão Pélvica', 'Rotação Pélvica', 'Rotação do Quadril', 'Rotação do Joelho', 'Valgo-varo do Joelho', and 'Progressão do Pé'. Each graph shows data points and a trend line over a percentage of the gait cycle.
- Patient Database (VCM/Report Generator) Window:** This window is open in the foreground, showing a form for entering patient and exam data. It includes fields for 'Patient ID' (patno (1)), 'Exam Date' (exam_date (1)), 'Occurrence' (occurrence (1)), 'Date of Birth' (birthdate), 'Patient Name' (patient_name (1)), 'Diagnosis' (diag_category / diag_subcategory), 'Gender' (sex), 'Physician' (physician_name), 'Motion Analysis Laboratory' (motionlab (1)), and 'Notes' (exam_notes). The form is populated with data for patient 'Nadia Maria da S.' and exam 'Marcha normal'.
- Legend:** A legend titled 'Legenda 1-7' and 'Legenda 8-14' is located at the bottom left, showing different line styles and colors used in the graphs.
- Search and Export:** At the bottom of the Patient Database window, there is a search bar with 'Search by Id (left) and/or Patient Name (right window):', a 'Search Register' button, a 'Clear Search' button, and navigation buttons for '<< Previous <<', '>> Next >>', and a 'Save' button. There is also an 'Export to CSV File' button.

At the bottom of the Patient Database window, there is a note: 'ATTENTION: (1) Required field to create a patient record. Note: Database fields linked to the report file (.rpt) are updated only when a GCD file is opened/inserted.'

Note on the Patient ID field:

"Patient ID" is the database integrity key (primary key) for each patient record. Where the patient does not have a hospital chart number, an identification document number (such as a national ID or tax ID number) may be used instead. Once a record is created, this field cannot be edited. The {patno} field in the report header/footer works the same way as the other ten dynamic fields — {Name}, {date}, {Occurrence}, {BirthDate}, {Diagnosis}, {Gender}, {Physician}, {MotionLab}, {Notes}, and {Age} — once a patient is selected via "Apply to RPT and Exit", it is automatically filled with the current Patient ID. Under the original VCM database, this field — together with Exam Date — was likewise dynamic, resolved through the VCM/Paradox connection (in some laboratories, also linked to Excel via OLE/DDE).

As a practical consequence, if the value used as Patient ID is not an actual chart number, but an identification document number instead, the dynamic field in the report template should be changed to plain text, and the chart number should be typed in manually.

Buttons:

- "New": starts a new record. "Patient ID" and "Occurrence" can only be typed in on this occasion, since they form the integrity of the record against duplicate entries (patno: primary key).
- "Save Register": saves the record and keeps the window open.
- "Apply to RPT and Exit": saves the record, copies the patient data into the open report, and closes the window.
- "Cancel": closes without saving.
- "Search Register": searches by "Patient ID" and/or "Patient Name". Type at least 3 characters in either field before searching.
- "Previous" / "Next": navigates through the search results, one record at a time.
- "Clear Search": clears the search fields.
- "Edit Data": unlocks the current record for editing. "Patient ID" and "Occurrence" remain locked even in edit mode.
- "Export to CSV File": exports all database records to a CSV file, for use in a spreadsheet. This exports registration data, not biomechanical values.

Fields automatically filled in the report:

When a patient is selected with "Apply to RPT and Exit", the following 11 fields in the report header/footer are replaced with the actual data: {patno}, {Name}, {date}, {Occurrence}, {BirthDate}, {Diagnosis}, {Gender}, {Physician}, {MotionLab}, {Notes}, and {Age}. Until a patient is selected, these fields appear in square brackets ([Name], [date]...), exactly as described, to indicate where each value will appear.

The header and footer are only updated when a GCD file is opened or inserted, or when "Apply to RPT and Exit" is used with a GCD file already loaded.

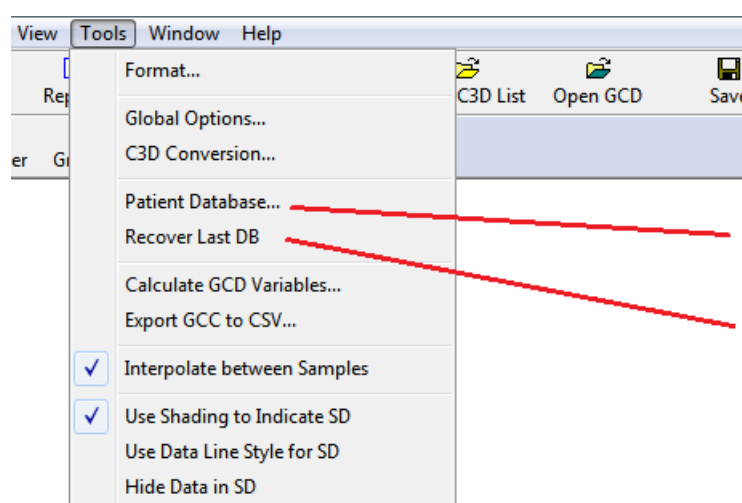
A2] Recover Last DB: Database Backup and Recovery

The patients.db data storage file is automatically copied every day. If the file becomes damaged, it can be recovered from the most recent backup.

How the daily backup works:

- A copy is made the first time ReportGenerator is opened each day. Only one copy per day is kept — opening the program again on the same day does not create a second one.
- Location: 'C:\ProgramData\Motion Lab Systems\ReportGenerator\bck\'
- Each backup file is named 'patients_YYYYMMDD.db'.

- Backups older than 15 days are deleted automatically.
- If the backup fails for any reason, ReportGenerator continues to open normally.



Recover Last DB:

"Tools\"Recover Last DB". Use this command if the patient database stops working correctly, or appears with no data.

1. Menu "Tools\"Recover Last DB"
2. A confirmation box shows the date of the most recent backup that will be used. Click "Yes" to continue, or "No" to cancel.
3. The damaged file is moved to a separate folder ('corrupted\') — it is not deleted.
4. The backup is copied to replace the active 'patients.db'.
5. A confirmation message is displayed. It is not necessary to restart the ReportGenerator session.

If no backup is available (for example, on a recent installation), an error message will explain this, and nothing is changed.

Recovering an older backup manually: "Recover Last DB" always uses the most recent backup.

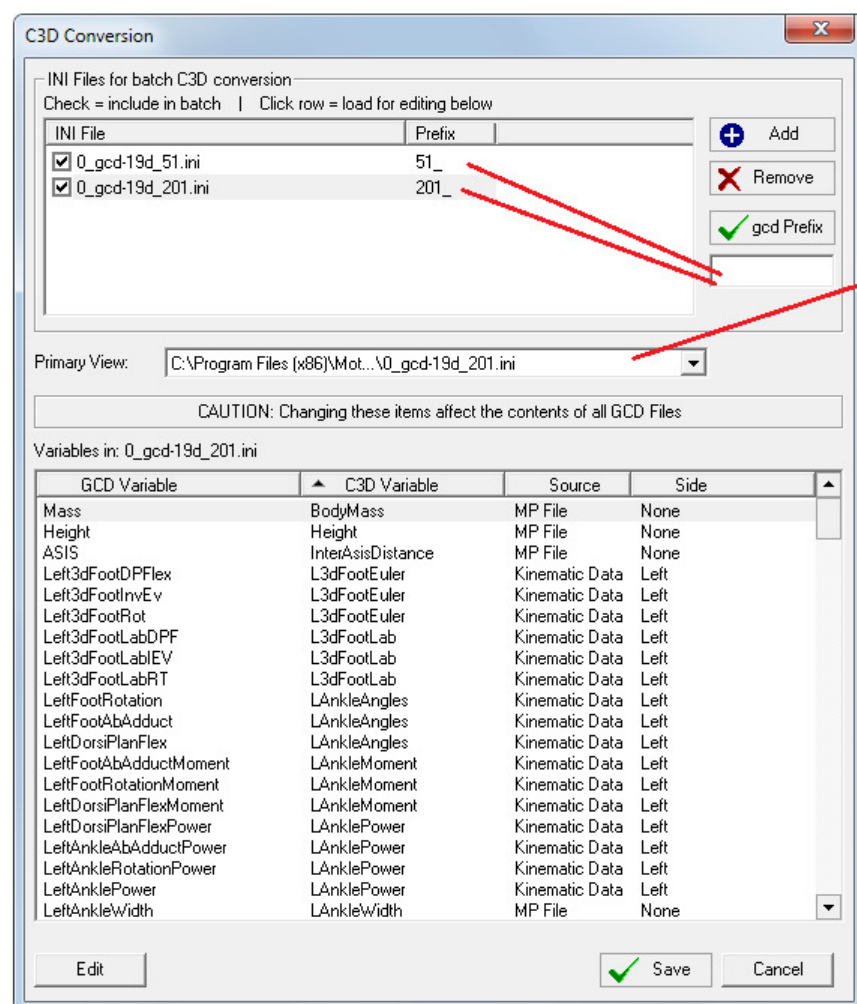
To use an older one instead:

1. Close ReportGenerator.
2. Make a safety copy of the current 'patients.db' file (in 'C:\ProgramData\Motion Lab Systems\ReportGenerator\'), by moving it to another folder.
3. Go to 'C:\ProgramData\Motion Lab Systems\ReportGenerator\bck\' and locate the backup file with the desired date ('patients_YYYYMMDD.db').
4. Right-click the file and choose "Copy As" — save the copy directly into the ReportGenerator folder, naming it 'patients.db'.
5. Reopen ReportGenerator and check the Patient Database. If the problem persists, try an older backup.

Although version 2.400 is not officially supported, database problems can be reported by email to labmarcha@gmail.com

B1] Multiple INI Files for C3D Conversion (new feature)

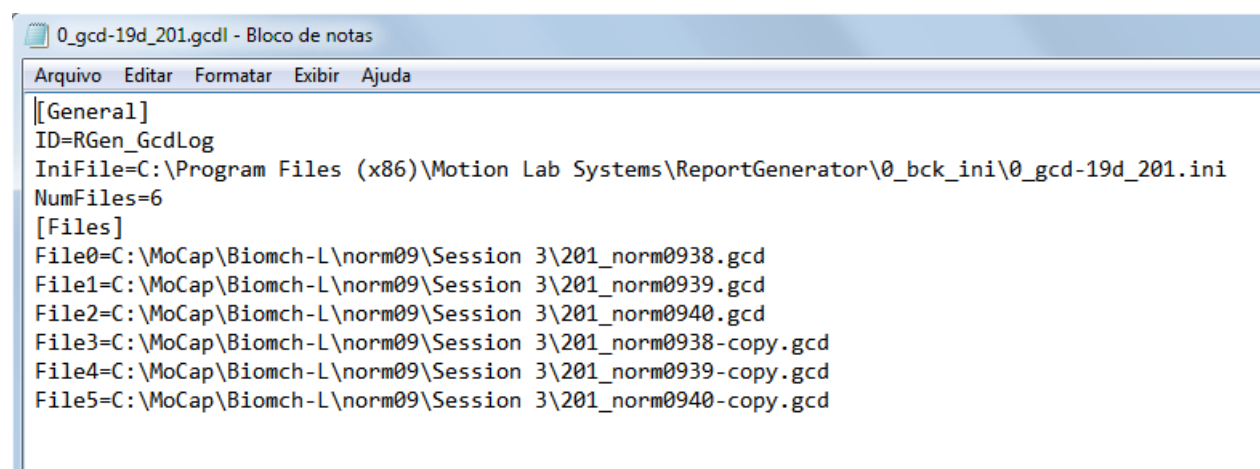
It is now possible to add multiple conversion INI files in "C3D Conversion". To distinguish between the GCD files generated by each INI, a "Prefix" must be assigned to the GCD file names generated during conversion — this is required only when two or more INI files are checked for batch conversion; with a single INI file checked, the "Prefix" field may be left blank. The files selected in "Primary View" are displayed automatically after conversion. The remaining GCD files must be inserted afterward for viewing and printing.



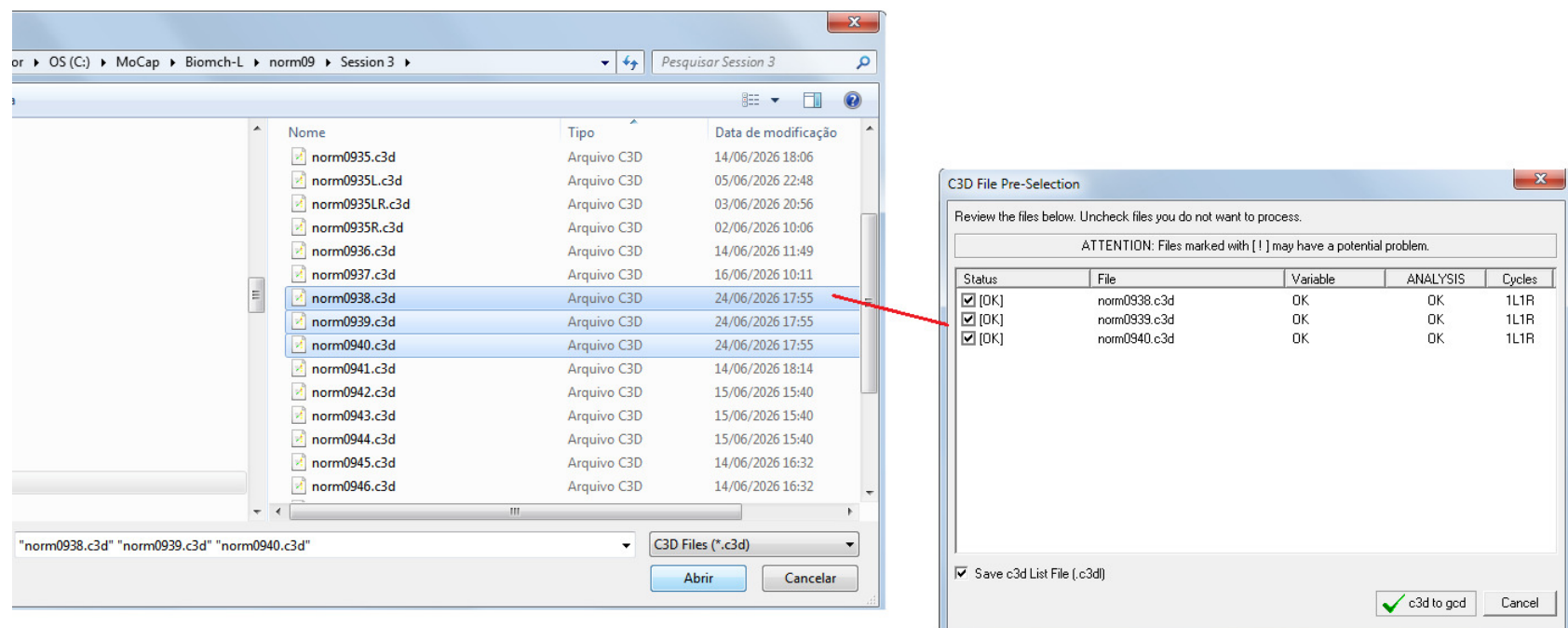
B2] GCD List Files (.gcdl)

Together with the GCD files, each conversion also produces a file with the extension *.GCDL (GCD List), saved in the patient's C3D files folder. This file allows the corresponding GCD files — primary, secondary, and so on — to be imported in a single step.

To import them: open "Manage Plots" and click "Load gcdl File", then select the *.gcdl file. All GCD files listed in it are added to the lower panel, "Data Files Used in Session". From there, use "Move gcd" to bring the desired files into the upper panel, "Data Files", which are the files actually shown on the graphs.



C1] Open C3D: batch processing and individual (one-by-one — 1/1) processing. When more than one C3D file is selected for conversion, a new inspection window is displayed, indicating how many cycles are marked in each C3D file and whether the spatio-temporal parameters were calculated by the Vicon Nexus software ("Generate Gait Cycle Parameters"). Files with no Analysis data, or with incomplete cycles, can be unchecked beforehand. The "Save C3d List File" option (*.c3dl) was created to store the list of C3D files selected for conversion, allowing the same file list to be reprocessed quickly in the future, if needed.



C2] Open C3D: After selecting the C3D files (see C1), the "C3D to GCD Conversion" window is displayed for each file, allowing the conversion parameters to be reviewed and adjusted before the GCD is generated.

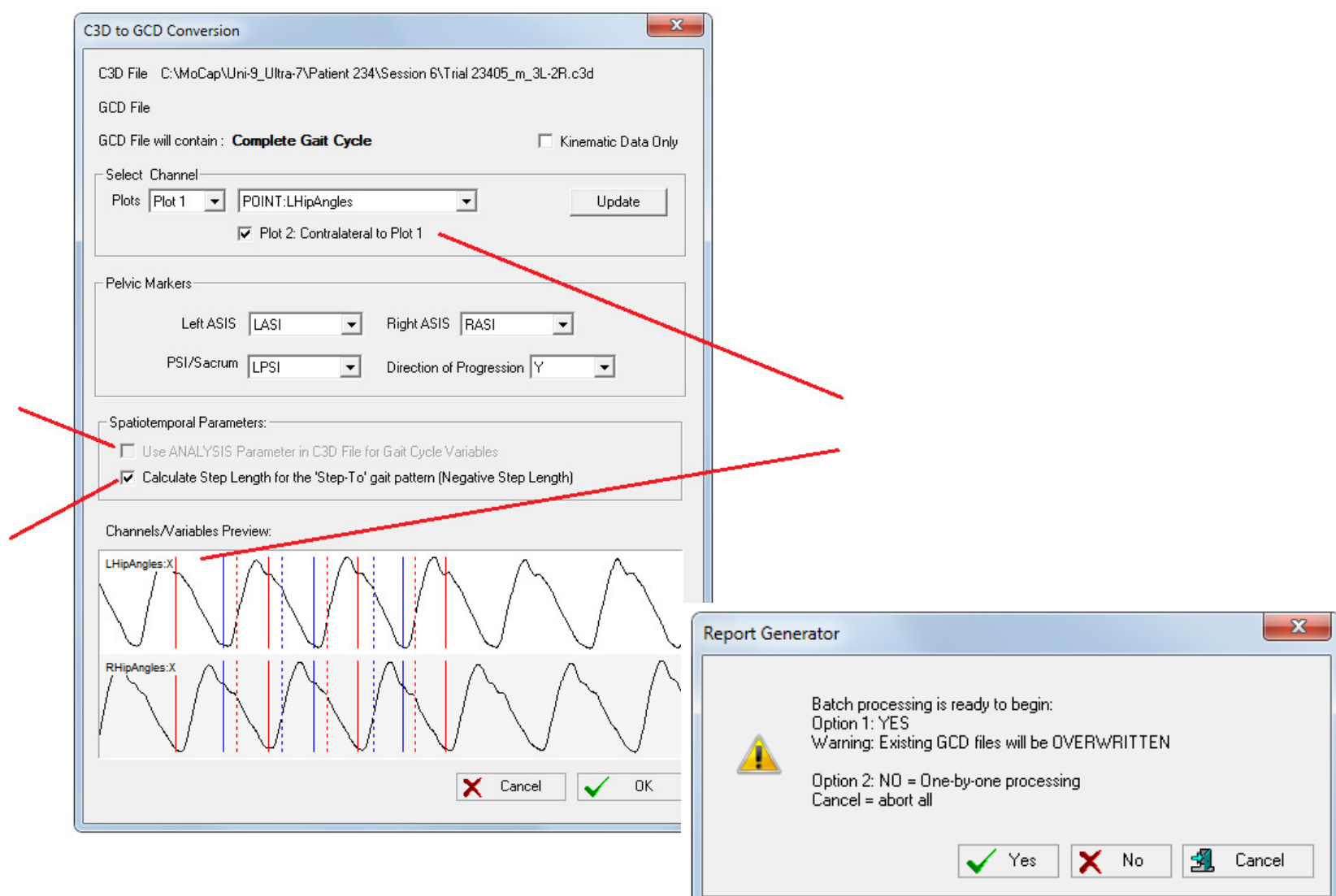
General fields:

- C3D File: path of the file being converted (read-only).
- GCD File: path of the output file (filled in after conversion).
- GCD File will contain: indicates whether the file will contain the complete gait cycle or kinematic data only, according to the "Kinematic Data Only" checkbox.

Select Channel:

- Plots: selects which channel/variable is shown in the preview area below ("Channels/Variables Preview").
- Update: refreshes the preview after changing the channel.
- "Plot 2: Contralateral to Plot 1": when checked, automatically mirrors in the preview the curve from the side contralateral to the channel selected — for example, selecting 'POINT:LHipAngles' shows both 'LHipAngles:X' (upper panel) and 'RHipAngles:X' (lower panel) at once, allowing visual comparison of both sides before confirming the conversion.

Pelvic Markers: defines the markers used for progression-axis orientation — Left ASIS, Right ASIS, PSI/Sacrum, and Direction of Progression —, arranged in a 2x2 grid (Left ASIS and Right ASIS on one row, PSI/Sacrum and Direction of Progression on the row below).



Spatiotemporal Parameters:

- "Use ANALYSIS Parameter in C3D File for Gait Cycle Variables": when checked, spatio-temporal parameters (Stride Time, Cadence, etc.) use the values already calculated by Vicon Nexus and stored in the C3D file ("Generate Gait Cycle Parameters"), instead of being recalculated by ReportGenerator. This option is automatically locked and unchecked for multi-cycle files (more than 1 cycle detected on either side) — in that case, spatio-temporal parameters are always calculated internally by ReportGenerator.
- "Calculate Step Length for the 'Step-To' gait pattern (Negative Step Length)": when checked, calculates an additional variable, ``!LStePLength_RGen` / `!RStePLength_RGen``, alongside the standard Step Length already stored in the C3D file. For a step-through gait pattern (the swing foot passes beyond the contralateral foot), the result matches the C3D's own Step Length; for a step-to pattern (no passing occurs), the result is a negative value, flagging the absence of passing. This allows ``!L/RStePLength_RGen`` to be compared directly against the C3D's own Step Length, as a check for the gait pattern actually present in the trial.

Note on multi-cycle files: for files routed to the multi-cycle flow (see C6), this window does not display the "Left Side" / "Right Side" cycle-selection tables (present in the single-cycle flow) — cycle selection does not apply, since every cycle detected in the C3D file is automatically converted into a separate GCD file (see C7), with no manual selection needed. This applies both to files with multiple cycles on both sides (e.g., 4L4R) and to files with cycles detected on only one side (e.g., 4L0R or 0L2R) — ReportGenerator supports and correctly converts both configurations.

Channels/Variables Preview: shows the curve(s) for the selected channel, with vertical markers for the gait events (Foot Strike/Foot Off) detected in the C3D file, for visual review before confirming.

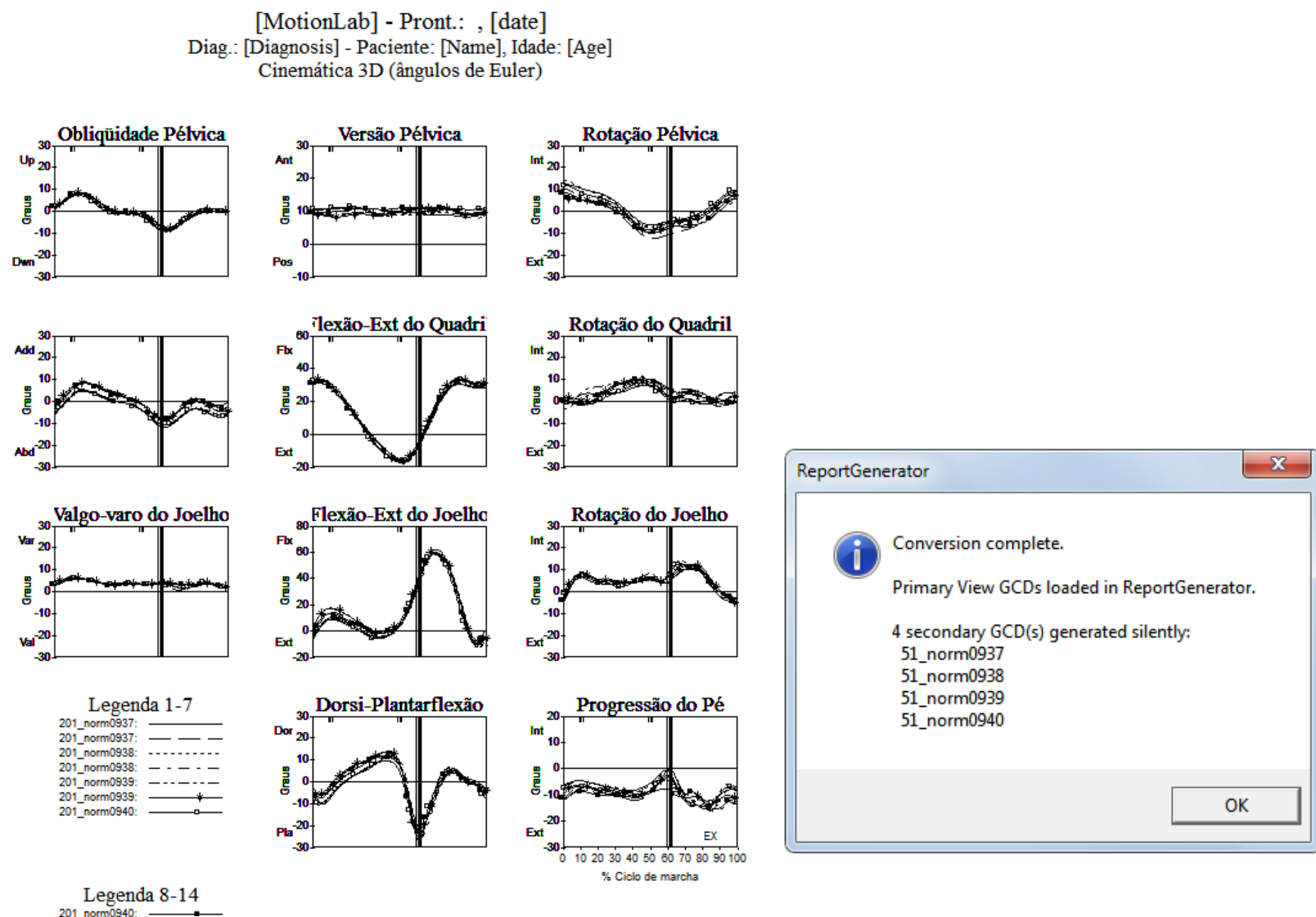
After clicking OK, if more than one file is in the conversion queue, the batch options box is displayed:

- Yes (Batch): the remaining files are converted automatically, one after another, with no further prompts. Existing GCD files are overwritten without warning.
- No (One by one): the program asks for confirmation before converting each file, and warns when a GCD file already exists.
- Cancel: stops conversion of the remaining files; files already converted remain as they are.

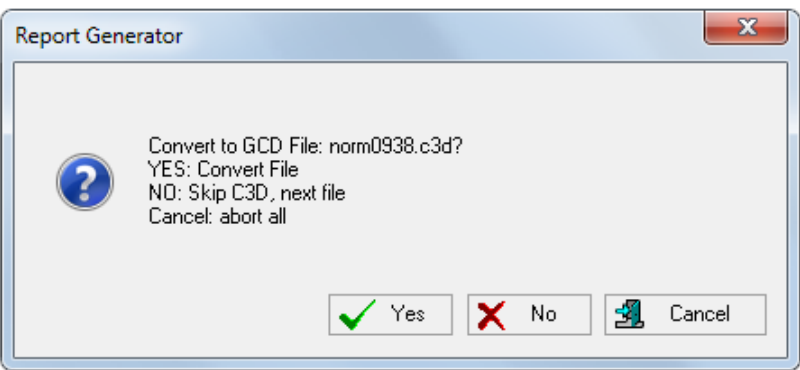
C3] YES option: all files are converted to GCD format, and the primary data (see C3D Conversion) is displayed in the graph and table window.

Conversion to GCD, according to the remaining INI files, is performed automatically; the files are stored, with their respective prefixes, in the same folder as the session's C3D files. Again, for each INI processed, a *.gcdl file (GCD List) is created with the list of files and tracks.

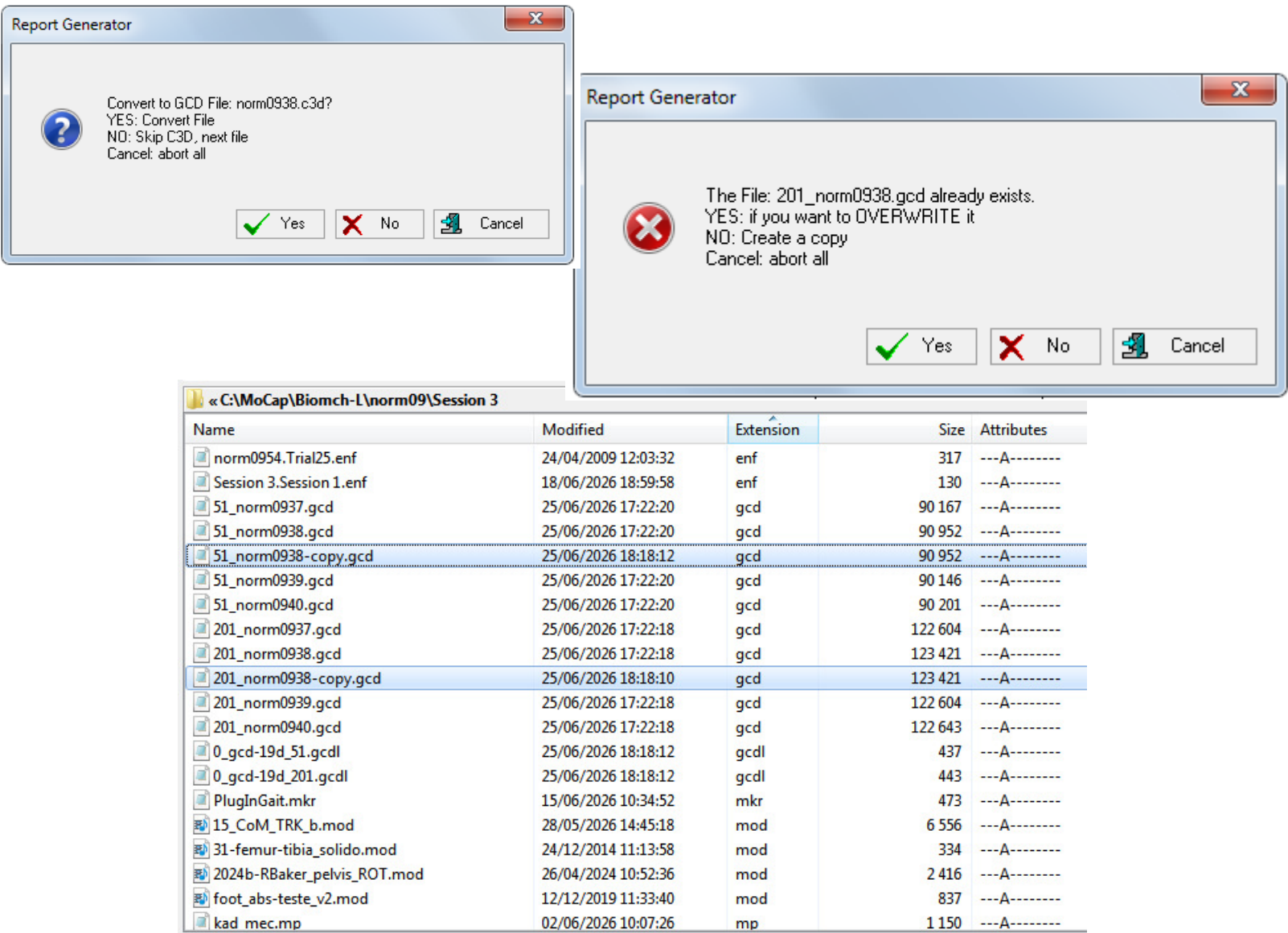
After batch processing, the list of processed secondary files is presented as a process notification.



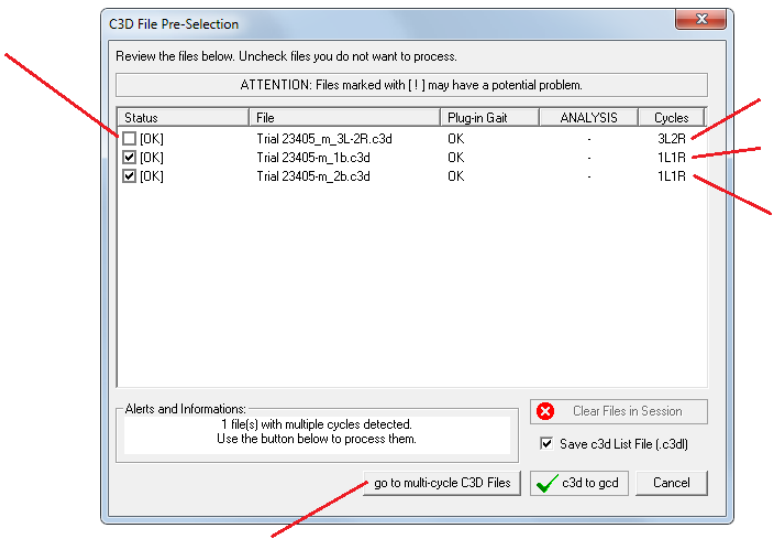
C4] NO option: 1/1 conversion displays a window with 3 options, allowing the user to convert, skip, or abort the C3D-to-GCD conversion process.



C5] Redoing a conversion while keeping the original files in the ReportGenerator session. This operation can only be performed in 1/1 mode. The first file conversion window is repeated. The new feature then recognizes that a GCD file with the same name already exists, and presents a new window, also with 3 options: YES (overwrite the existing GCD file), NO (create a copy, keeping the original file unchanged), and Cancel (exit the C3D-to-GCD conversion process). As with the previous conversion method, secondary files are processed, copied, or skipped according to the choices made for the primary files. In the example below, only the file norm0938.c3d went through the reprocessing-and-copy procedure, which resulted in 2 new files, due to the 2 INI files used in the C3D Conversion setup.



C6] Open C3D: batch processing with mixed single-cycle and multi-cycle files. When the C3D files selected for conversion include a mix of single-cycle files (1L/1R) and files with more than 1 cycle detected on either side (multi-cycle), processing cannot be done in a single step — two separate windows are required, each exclusive to one of the two conditions. In the "C3D File Pre-Selection" window, multi-cycle files appear with their checkbox unchecked and locked (they cannot be checked there) — only single-cycle files (1L/1R) can be processed directly from this window, following the standard flow (see C2 and C5).



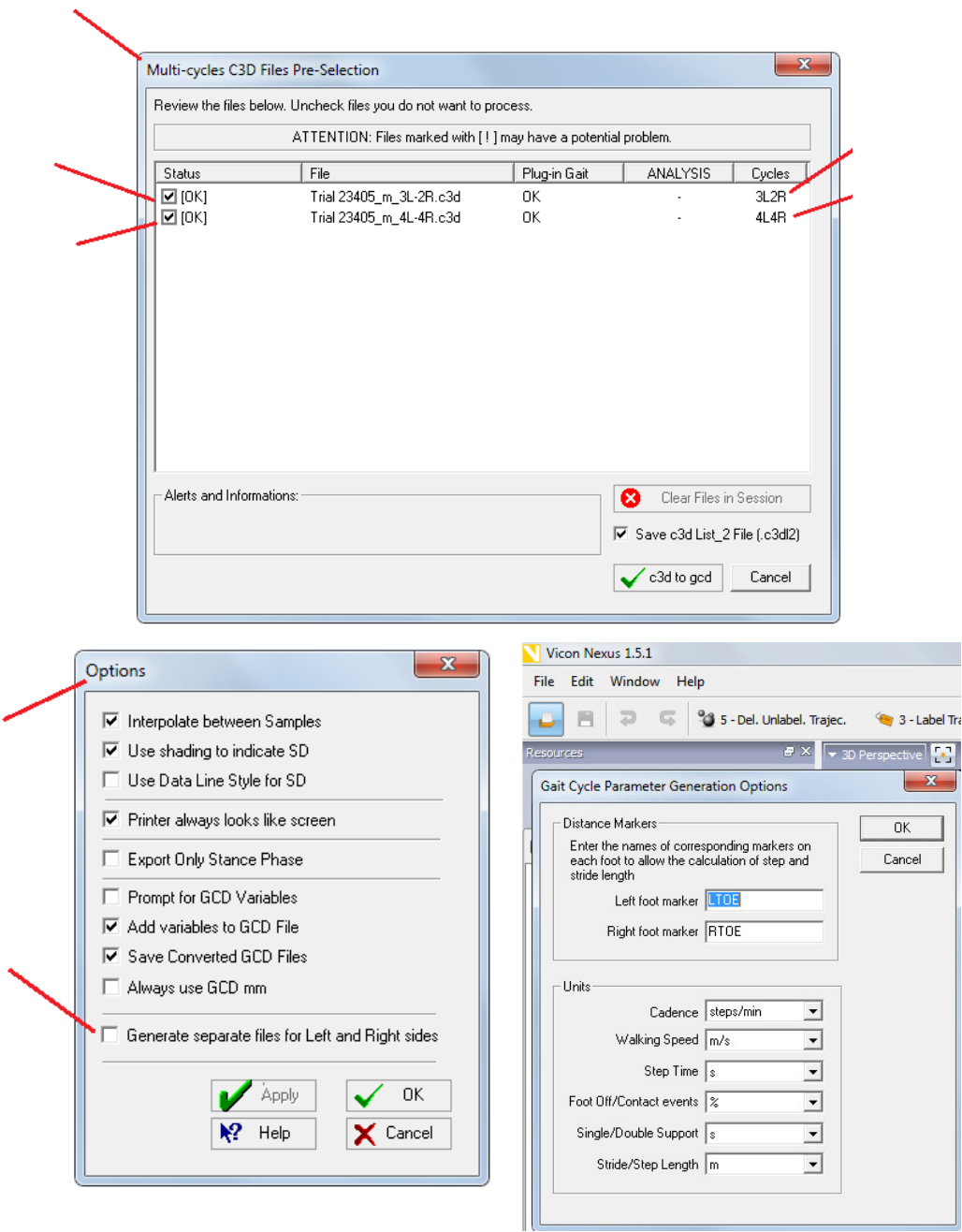
To process the locked multi-cycle files, click "go to multi-cycle C3D Files". This opens the "Multi-cycles C3D Files Pre-Selection" window, pre-loaded only with the files that were locked in the previous step — the single-cycle files are not carried over there, remaining available in the original window for conversion through the standard flow. In other words: a single selection batch can contain both file types at the same time, but each type is always converted in its own separate window.

C7] Multi-cycle conversion: mandatory file split by side: Conversion of multi-cycle files always produces separate GCD files for the Left and Right sides, one file per cycle detected (for example, "-L1", "-L2", "-R1"), regardless of the state of the "Generate separate files for Left and Right sides" checkbox, in "Tools"\'Global Options" (see image).

This checkbox only controls the behavior in the single-cycle flow: when unchecked (default), single-cycle conversion combines both sides into a single GCD file; when checked, it also generates separate files per side in that flow. In the multi-cycle flow, however, the split by side is always applied, whether the checkbox is checked or not — the option simply has no effect in that case.

The separate per-side GCD files generated by the multi-cycle flow can later be recombined into a single GCD file with both sides, using the "Combine Files/Save" command in the "Data Files" window (see [Combine L/R section, to be filled in]).

Note: for multi-cycle files, spatio-temporal parameters (Stride Time, Cadence, Step Length, and similar) are always calculated internally by ReportGenerator. The option to use the ANALYSIS data stored in the C3D file is locked and unchecked in this case (see C2). The spatio-temporal parameters calculated internally by ReportGenerator follow the same units normally configured in Vicon Nexus, under "Pipeline"\'Gait Cycle Parameter Generation Options" — for example, Cadence in steps/min, Walking Speed in m/s, Step Time in s, Foot Off/Contact events in % gait cycle, Single/Double Support in s, and Stride/Step Length in m.



D1] Export GCC to CSV: Extracts gait parameters already calculated by ReportGenerator's Gait Cycle Calculations (GCC) module — such as Trunk Obliquity/Minimum value in the gait cycle, Hip Rotation/Average value in stance phase, etc. — from multiple GCD files into a single spreadsheet, in CSV format, for statistical analysis — whether for research purposes or clinical analysis.

Attention: this feature requires GCD files that have already been processed beforehand with "Tools"\Calculate GCD Variables". Files that have not gone through this processing will export empty variable values ("null"), except for basic biomechanical measurements, such as weight, height, segment length, etc.

Steps:

1. "Variable list (.varl)": define the list of parameters for export. Use "New" to create a list (opens "Save As" to define where to save the file), "Open" to load an existing one, or "Edit list..." to add/remove parameters.
2. "GCC Files to Export": use "Add" to list the GCD files to include.
3. "Output CSV File": use "New" to choose where to save the CSV file (opens "Save As" directly), or "Open" to select an existing one to complement.
4. Check the "Append to CSV File" checkbox if you want to add the results to an existing CSV file, instead of creating a new one. When checked, a confirmation message appears in the alerts area: "ATTENTION: APPEND MODE ACTIVE. NEXT SAVE WILL ADD TO: [path]".
5. Click "Export GCC to CSV" — this button builds the exported data in memory, but does not write anything to disk yet.
6. Click "Save" or "Save As" to actually write the CSV file to disk. "Save" writes to the already-defined path, or opens "Save As" if no path has been defined yet; "Save As" always opens the dialog.

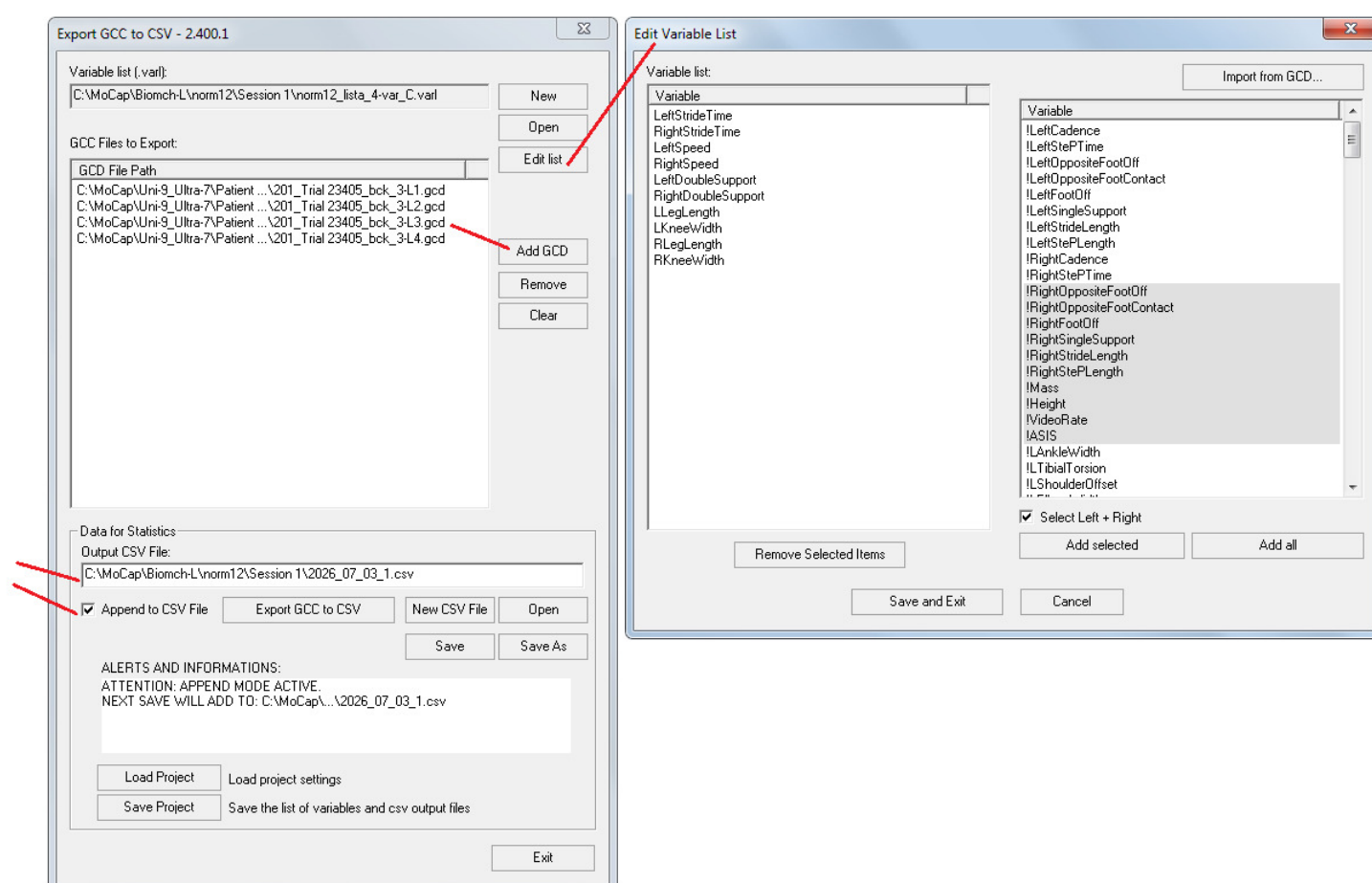
If the "Append to CSV File" checkbox is checked, but the indicated CSV file can no longer be found on disk (moved or renamed), an error message appears in the alerts area, and Append mode is not activated — nothing is exported until a valid CSV is indicated.

- "Load Project" / "Save Project": saves or reloads the entire configuration (variable list, GCD files, and CSV path) in a single '.sttl' file (statistical list).

D2] Editing the variable list for export

"Edit list..." opens a separate window for assembling the list of parameters to export.

- "Import from GCD...": reads the parameter names available in a GCD file and lists them in the right-hand panel. The names are shown with the `!` prefix (e.g., `!LeftCadence`), the same variable identifier used inside the GCD file itself — making it easier to locate and confirm the correct variable when searching.
- "Select Left + Right": when checked, adding one side automatically adds the corresponding parameter from the other side.
- "Add selected" / "Add all": copies parameters from the right-hand panel to the variable list.
- "Remove Selected Items": removes one or more selected parameters from the list.
- "Cancel": closes the window and discards any changes made in this session.
- "Save and Exit": prompts where to save the list as a '.varl' file, saves it, applies the list to the "Export GCC to CSV" window, and closes.



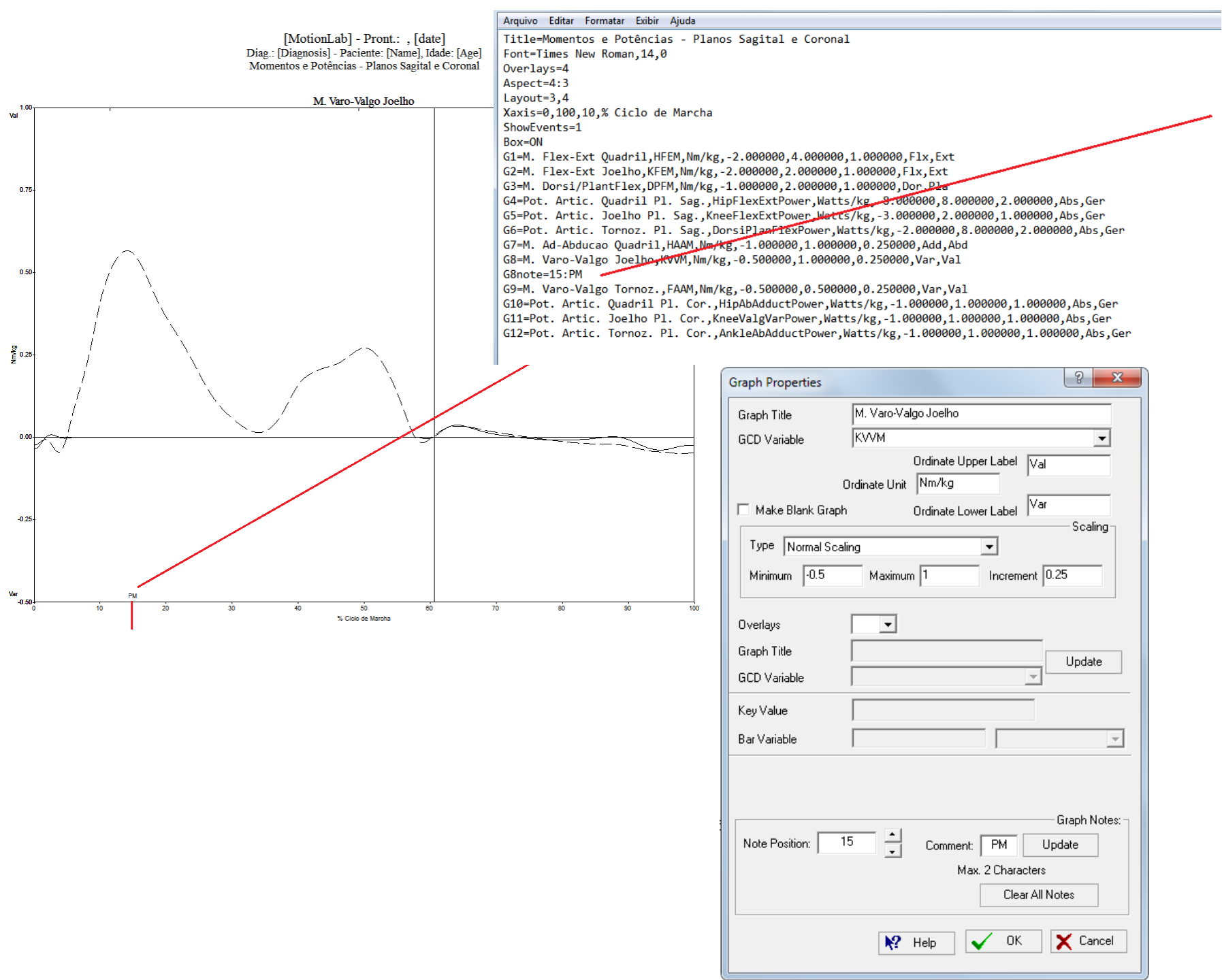
E1] Graph Notes

A short text note, limited to two characters, can be placed directly above the x-axis of any graph, at a specific point along the gait cycle, to flag a clinical observation for later reference in the report.

How to add a note:

1. Open the graph and access "Graph Properties".
2. Under "Graph Notes", set "Note Position" (0 to 100, in steps of 5, representing % of the gait cycle) and type a "Comment" (maximum 2 characters).
3. Click "Update".
4. Click "OK" to apply.

Click "Clear All Notes", within the same dialog, to remove every note from the graph at once.



F1] Combine L/R: recombining side-split GCD files into a single file: Conversion of multi-cycle files (see C6/C7) always generates GCD files split by side (Left and Right). The "Data Files" window (Manage Plots) has two new commands to recombine these split files into a single, combined GCD, with both sides integrated — in the same format historically used by single-cycle conversion.

"Import GCD to Merge": imports one or more `.gcd` files from disk directly into the "Data Files Used in Session" list (lower panel), without plotting them in the "Data Files" window (upper panel) or in the main RGen graph window. Useful for bringing in old, standalone files that are no longer loaded in the current session.

Note: the "Import GCD to Merge" button exists specifically to enable recombination of old single-side GCD files, already generated previously and present on disk, but no longer part of the active RGen session — bringing them back only into the "Data Files Used in Session" list, from which they can be selected and combined with "Combine Files/Save". There is no need to reopen the original C3D file or redo the conversion to recompose these files.

"Combine Files/Save": combines two selected GCD files (one Left, one Right) in the "Data Files Used in Session" list into a single file. To use: select the two files in the list (Ctrl+click to select both) and click "Combine Files/Save".

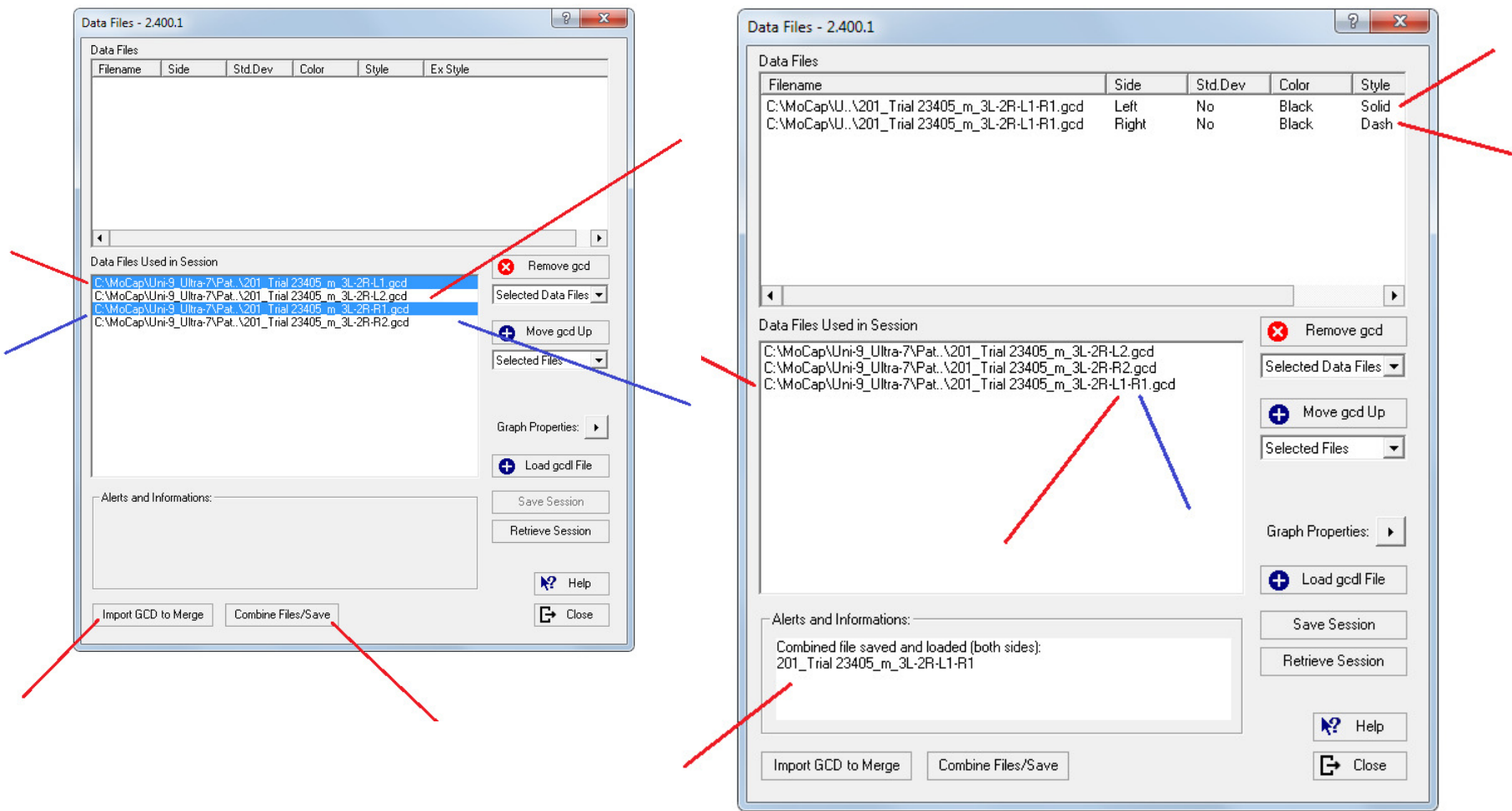
The command performs a series of safety checks before writing:

- Automatic recognition of side and trial, from the file name (suffix "-L1", "-R2", etc.). If the two selected files are the same side, or from different trials, the combination is blocked.
- Mismatched cycle number warning: if the cycle number of the Left file differs from the Right file (for example, "-L2" combined with "-R6"), a confirmation box asks whether to proceed anyway — a possible sign of wrong selection.
- Blocking on missing or mismatched patient data: session data (weight, height, segment lengths, etc.) must be identical in both files. If any is missing in one of the two, or has a different value between them, the combination is blocked — a sign of files from different patients or sessions.

The combined file reconstructs the same structure historically used by the single-cycle format (Left-side spatio-temporal parameters, then Right-side, followed by the session data, and then the Left kinematic curves followed by the Right ones) — ensuring compatibility with external spreadsheets and scripts already set up for that format.

The combined file's name preserves the cycle suffixes of the two source files (for example, `Trial 23405-c_1b-L1-R1.gcd`), for traceability of which combination was made.

After a successful combination, the "Data Files" window (upper panel) is cleared and reloaded with only the combined file, plotted on both sides, for immediate visual review; the "Data Files Used in Session" window (lower panel) keeps the remaining, not-yet-combined files, removing only the two that were just used.



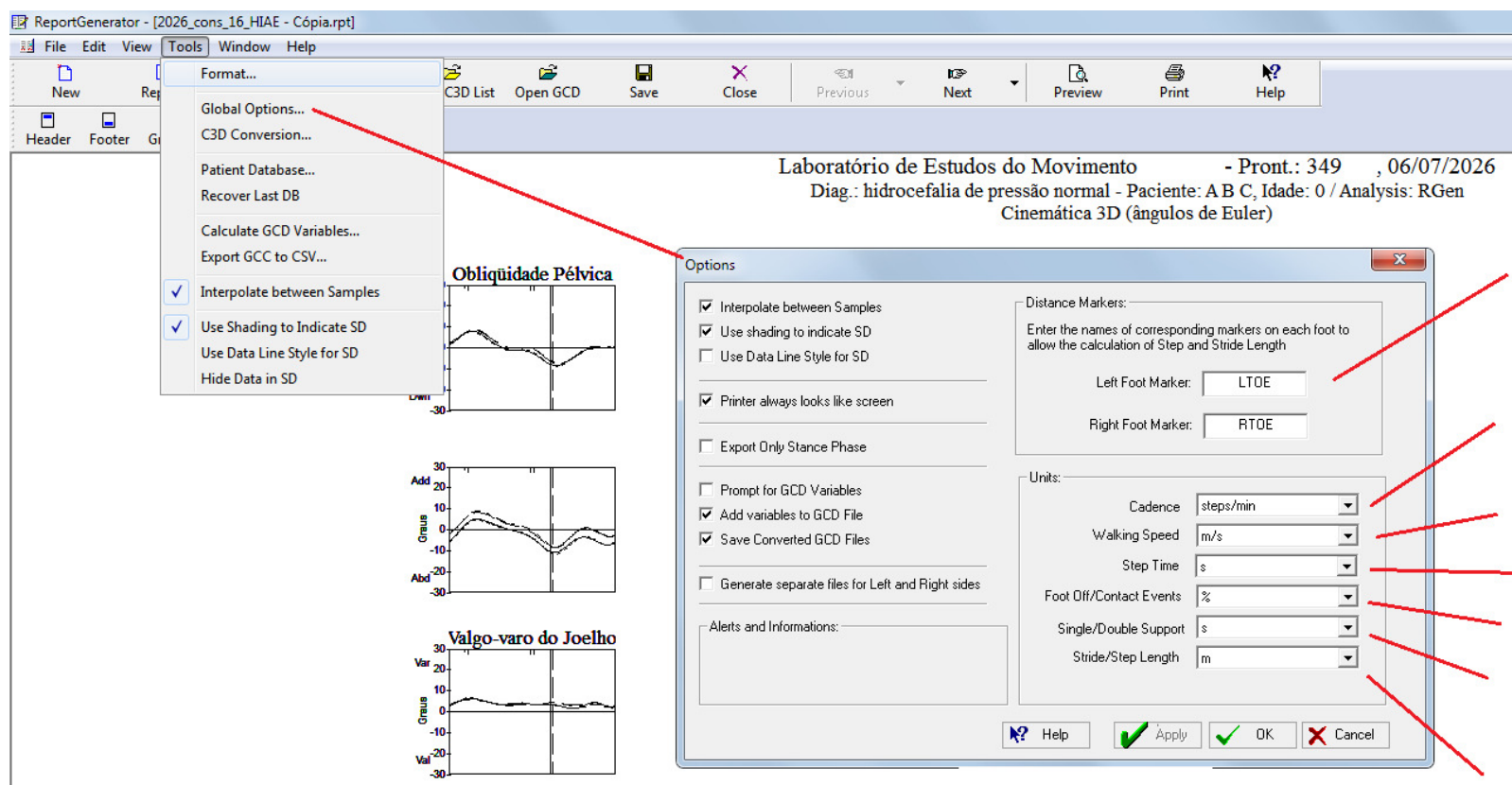
G1] Tools\Global Options: Options was expanded with two new sections, "Distance Markers" and "Units", and a new "Alerts and Informations" area at the bottom of the window. The previous "Always use GCD mm" checkbox was removed — the unit used for Stride/Step Length now covers that same purpose, with more options than just meters or millimeters.

Distance Markers: "Left Foot Marker" and "Right Foot Marker" define which C3D marker names are used to calculate Step and Stride Length (including the signed Step Length — see the "StePLength_RGen" note further below). The default values are "LTOE" and "RTOE", matching the standard Plug-in Gait model.

If either field is changed from its default, the "Alerts and Informations" area shows a warning: results may differ from the Plug-in Gait biomechanical model (Vicon Nexus). This is only a warning, not a restriction — the calculation proceeds normally with whichever marker names are entered, but the clinical interpretation of Step/Stride Length depends on those markers matching the same anatomical points used by the biomechanical model in use.

Units: This section mirrors the "Gait Cycle Parameter Generation Options" window in Vicon Nexus, letting the six spatio-temporal parameters below be generated in ReportGenerator using the same set of units available in Nexus:

- Cadence: 1/s, 1/min, steps/s, steps/min, strides/s, strides/min
- Walking Speed: m/s, cm/s, mm/s, in/s
- Step Time: s, %
- Foot Off/Contact Events: s, %
- Single/Double Support: s, %
- Stride/Step Length: m, cm, mm, in



Internally, ReportGenerator always calculates these six parameters from the C3D file's own native units (the "POINT" data group — millimeters for distance, seconds for time), regardless of which unit is selected here. The selection made in "Units" only controls the unit used when writing the value to the GCD file — it does not change how the value is calculated, only how it is expressed.

Note: this also means ReportGenerator's own internal calculations no longer depend on, or need to match, whatever unit configuration was used when the C3D file's "ANALYSIS" data was generated in Nexus. The two are independent: "ANALYSIS" values, if used (see "Use ANALYSIS Parameter" in "C3D to GCD Conversion"), are read from the C3D file as originally recorded by Nexus; values calculated internally by ReportGenerator instead follow the unit configured here, in "Options".

Important — checking unit consistency between the C3D file and the GCD graph file:

Existing .rpt report templates were built assuming the GCD file holds spatio-temporal values in the Nexus default units (steps/min, m/s, s, %, m). Several .rpt tokens already include their own conversion factor on top of that assumption — for example, {StePLength*100#1} to display centimeters from a GCD value stored in meters, or {StePLength_RGen*1000#1} to display millimeters.

If the unit selected in "Units" is changed from the default for any of the six parameters, any .rpt template already in use that applies its own conversion factor to that same parameter will show an incorrect value — the GCD value would already be in the newly selected unit, and the .rpt token would convert it a second time.

Before changing any unit away from its default in a laboratory that already has .rpt templates in production use, review those templates and remove any conversion factor tokens (such as *100 or *1000) that assumed the previous, default unit — for every field affected by the change, both current and future.

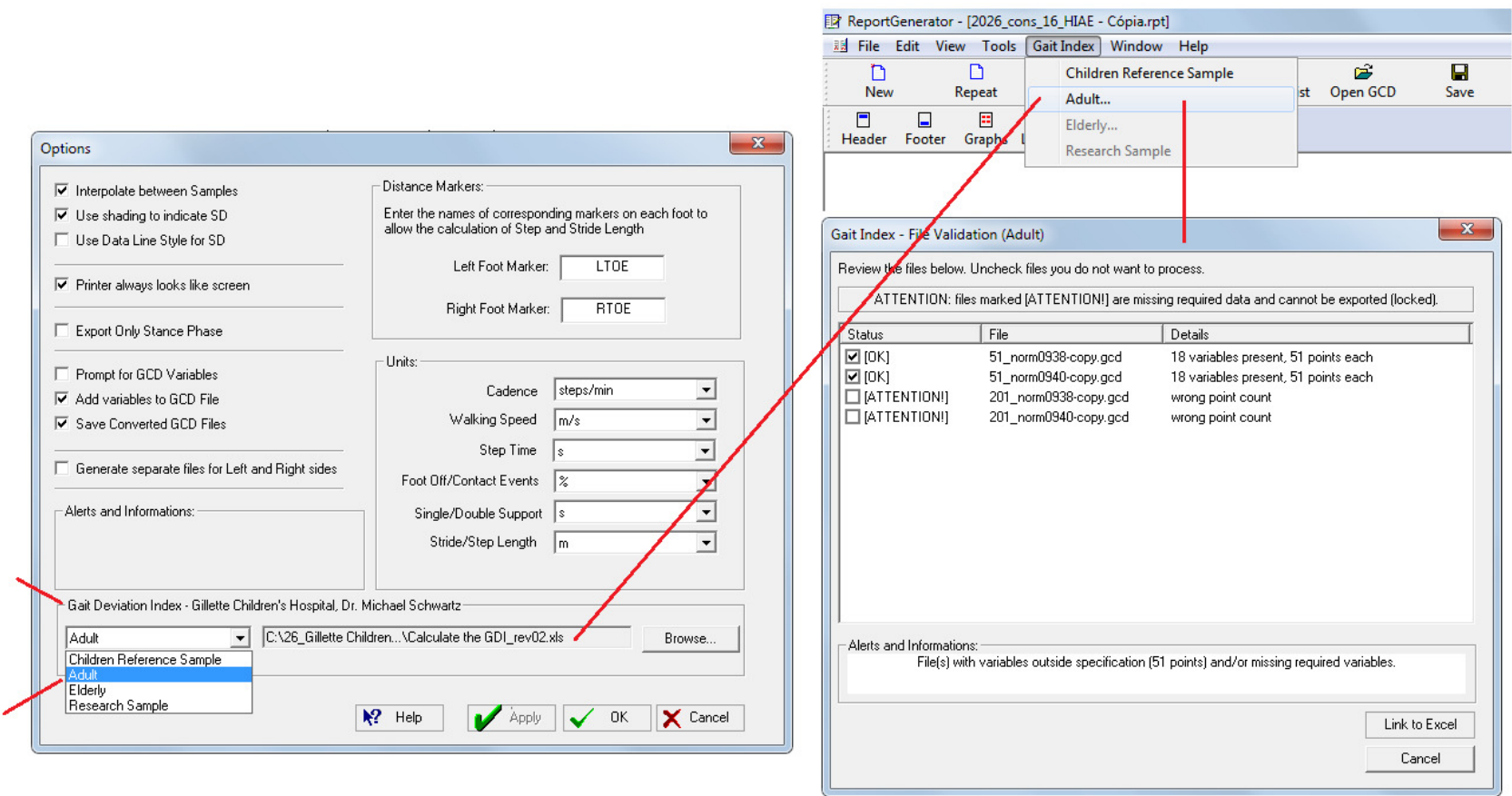
H1] Version 2.400.1: Gait Deviation Index (GDI): Gillette Children’s Hospital, Michael Schwartz, PhD - Director of Bioengineering Research

Schwartz MH, Rozumalski A. The Gait Deviation Index: a new comprehensive index of gait pathology. Gait Posture. 2008 Oct;28(3):351-7. doi: 10.1016/j.gaitpost.2008.05.001. Epub 2008 Jun 18. PMID: 18565753.

The Gait Deviation Index (GDI) is a single-number summary measure of overall gait pathology, developed at Gillette Children's Specialty Healthcare. ReportGenerator automates the GDI calculation by linking each processed GCD file to an Excel reference spreadsheet — one separate spreadsheet per population category (Children Reference Sample, Adult, Elderly, Research Sample). Each spreadsheet contains the reference dataset and calculation formulas for its specific category; ReportGenerator does not perform the GDI calculation itself — it opens the linked spreadsheet, feeds it the GCD data automatically, and reads back the result.

Configuring the spreadsheet path for each category (Tools\Global Options): Before the GDI feature can be used, the path to the reference spreadsheet (.xls) must be configured for each population category you intend to use. This is done in the "Gait Deviation Index" section at the bottom of the Options window (Tools\Global Options):

- 1-Use the dropdown list (top-left of this section) to select the population category you want to configure: Children Reference Sample, Adult, Elderly, or Research Sample.
- 2-The field to the right shows the spreadsheet path currently configured for the selected category. This field is read-only — the path can only be changed via the "Browse..." button.
- 3-Click "Browse..." to select the .xls file for that category. Each category keeps its own independent path — selecting a different category in the dropdown updates the field to show that category's own configured path (or an empty field, if no spreadsheet has been configured yet for that category).
- 4-Repeat steps 1–3 for each category you use in your laboratory. It is not necessary to configure all four; categories left unconfigured simply remain unavailable for use (see below).
- 5-Click OK or Apply to save.



Categories without a configured spreadsheet path appear grayed out in the Gait Index menu (main menu bar) and cannot be selected — this prevents attempting to run the calculation without a valid spreadsheet linked.

Running a GDI calculation:

With at least one category configured, select Gait Index → the desired category from the main menu. A file validation window lists the GCD files currently loaded in the session, checking each one for the required variables and 51-point resolution; files that fail validation are marked "[ATTENTION!]" and locked out of the batch. Click "Link to Excel" to process the checked files — ReportGenerator opens the configured spreadsheet, feeds it each file in turn, and records the resulting GDI (Left and Right) in the patient database.

Viewing recorded GDI results:

In Tools\Patient Database, with a patient/exam selected, click "Gait Deviation Index" to open the GDI Results window. It lists every GDI result already recorded for that exam (file, GDI Left, GDI Right, date/time processed), along with the sample Mean and Standard Deviation calculated across those results. Click "Copy Data to Clipboard" to copy this table — including the Mean/SD summary — as tab-separated text, ready to paste directly into Word, Excel, or any text editor as a formatted table.

Patient / Exam:

Patient ID:
patno (1)

Exam Date:
exam_date (1)

Occurrence:
occurrence (1)

New

349113

06/07/2026

1st

Date of Birth:
birthdate

Patient Name:
patient_name (1)

Diagnosis:
diag_category / diag_subcategory

Gender:
sex

Physician:
physician_name

Motion Analysis Laboratory:
motionlab (1)

Notes:
exam_notes

Tap Test

Search by Id (left) and/or Patient Name (right window):

Search Register

Clear Search

<< Previous <<

>> Next >>

Edit Data

Export to CSV File

Gait Deviation Index

Save Register

Apply to RPT and Exit

Cancel

ATTENTION: (1) Required field to create a patient record.

Note: Database fields linked to the report file (.rpt) are updated only when a GCD file is opened/inserted.

GDI Results

GDI results already recorded for this exam:

File	GDI Left	GDI Right	Processed At
51_norm0938-copy.gcd	116.01	118.35	12/07/2026 18:10:26
51_norm0940-copy.gcd	121.40	120.99	12/07/2026 18:10:27

Copy Data to Clipboard

Close

Status:

Content copied to the clipboard. You can now paste it into Word.
Mean and Standard Deviation included in the copied data.

Sem título - Bloco de notas

Arquivo	Editar	Formatar	Exibir	Ajuda	
File			GDI Left	GDI Right	Processed At
51_norm0938-copy.gcd			116.01	118.35	12/07/2026 18:10:26
51_norm0940-copy.gcd			121.40	120.99	12/07/2026 18:10:27
Mean (n=2)			118.70	119.67	
SD (sample)			3.81	1.86	

H2] Reference: spreadsheet macro source code
For laboratories that need to maintain or troubleshoot the reference spreadsheet, the internal Visual Basic (VBA) source code of the macros used by ReportGenerator to automate the GDI calculation — including importar_gcd_RGen, the macro that receives the GCD file path directly from ReportGenerator.

```
Public Planilha_vcm As String
Public contador As Integer

Sub importar_gcd_RGen(gcd_file As String)

arquivo_gcd = gcd_file

Workbooks.OpenText Filename:= _
    arquivo_gcd, Origin:= _
    xlWindows, StartRow:=1, DataType:=xlDelimited, TextQualifier:= _
    xlDoubleQuote, ConsecutiveDelimiter:=True, Tab:=False, Space:=True, _
    Semicolon:=False, Comma:=False, Other:=False

Planilha_vcm = ActiveWorkbook.Name

'Lado Esquerdo
'===
'LeftPelvicTilt

Cells.Find(What:="!LeftPelvicTilt", After:=ActiveCell, LookIn:=xlFormulas _
    , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
    MatchCase:=False).Activate

LPT = ActiveCell.Row

Range(Cells(LPT, 1), Cells(LPT + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 10).Select
ActiveSheet.Paste

'===
'!LeftPelvicObliquity

Cells.Find(What:="!LeftPelvicObliquity", After:=ActiveCell, LookIn:=xlFormulas _
    , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
    MatchCase:=False).Activate

LPO = ActiveCell.Row

Range(Cells(LPO, 1), Cells(LPO + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 11).Select
ActiveSheet.Paste

'===
'!LeftPelvicRotation

Cells.Find(What:="!LeftPelvicRotation", After:=ActiveCell, LookIn:=xlFormulas _
    , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
    MatchCase:=False).Activate

LPR = ActiveCell.Row

Range(Cells(LPR, 1), Cells(LPR + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 12).Select
ActiveSheet.Paste

'===
'!LeftHipFlexExt

Cells.Find(What:="!LeftHipFlexExt", After:=ActiveCell, LookIn:=xlFormulas _
    , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
    MatchCase:=False).Activate
```

LHFE = ActiveCell.Row

Range(Cells(LHFE, 1), Cells(LHFE + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 13).Select
ActiveSheet.Paste

'===
'!LeftHipAbAdduct

Cells.Find(What:="!LeftHipAbAdduct", After:=ActiveCell, LookIn:=xlFormulas _
 , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
 MatchCase:=False).Activate

LHAA = ActiveCell.Row

Range(Cells(LHAA, 1), Cells(LHAA + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 14).Select
ActiveSheet.Paste

'===
'!LeftHipRotation

Cells.Find(What:="!LeftHipRotation", After:=ActiveCell, LookIn:=xlFormulas _
 , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
 MatchCase:=False).Activate

LHR = ActiveCell.Row

Range(Cells(LHR, 1), Cells(LHR + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 15).Select
ActiveSheet.Paste

'===
'!LeftKneeFlexExt

Cells.Find(What:="!LeftKneeFlexExt", After:=ActiveCell, LookIn:=xlFormulas _
 , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
 MatchCase:=False).Activate

LKFE = ActiveCell.Row

Range(Cells(LKFE, 1), Cells(LKFE + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 16).Select
ActiveSheet.Paste

'===
'!LeftDorsiPlanFlex

Cells.Find(What:="!LeftDorsiPlanFlex", After:=ActiveCell, LookIn:=xlFormulas _
 , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
 MatchCase:=False).Activate

LDPF = ActiveCell.Row

Range(Cells(LDPF, 1), Cells(LDPF + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 17).Select
ActiveSheet.Paste

'===

'!LeftFootProgression

Cells.Find(What:="!LeftFootProgression", After:=ActiveCell, LookIn:=xlFormulas _
 , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
 MatchCase:=False).Activate

LFP = ActiveCell.Row

Range(Cells(LFP, 1), Cells(LFP + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 18).Select
ActiveSheet.Paste

Range("J54") = Planilha_vcm

'===

'Fim Lado Esquerdo

'===

'Lado Direito

'===

'RightPelvicTilt

Cells.Find(What:="!RightPelvicTilt", After:=ActiveCell, LookIn:=xlFormulas _
 , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
 MatchCase:=False).Activate

RPT = ActiveCell.Row

Range(Cells(RPT, 1), Cells(RPT + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 20).Select
ActiveSheet.Paste

'===

'!RightPelvicObliquity

Cells.Find(What:="!RightPelvicObliquity", After:=ActiveCell, LookIn:=xlFormulas _
 , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
 MatchCase:=False).Activate

RPO = ActiveCell.Row

Range(Cells(RPO, 1), Cells(RPO + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 21).Select
ActiveSheet.Paste

'===

'!RightPelvicRotation

Cells.Find(What:="!RightPelvicRotation", After:=ActiveCell, LookIn:=xlFormulas _
 , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
 MatchCase:=False).Activate

RPR = ActiveCell.Row

Range(Cells(RPR, 1), Cells(RPR + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 22).Select
ActiveSheet.Paste

'===

'!RightHipFlexExt

Cells.Find(What:="!RightHipFlexExt", After:=ActiveCell, LookIn:=xlFormulas _
 , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
 MatchCase:=False).Activate

RHFE = ActiveCell.Row

Range(Cells(RHFE, 1), Cells(RHFE + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 23).Select
ActiveSheet.Paste

'===
'!RightHipAbAdduct

Cells.Find(What:="!RightHipAbAdduct", After:=ActiveCell, LookIn:=xlFormulas _
 , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
 MatchCase:=False).Activate

RHAA = ActiveCell.Row

Range(Cells(RHAA, 1), Cells(RHAA + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 24).Select
ActiveSheet.Paste

'===
'!RightHipRotation

Cells.Find(What:="!RightHipRotation", After:=ActiveCell, LookIn:=xlFormulas _
 , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
 MatchCase:=False).Activate

RHR = ActiveCell.Row

Range(Cells(RHR, 1), Cells(RHR + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 25).Select
ActiveSheet.Paste

'===
'!RightKneeFlexExt

Cells.Find(What:="!RightKneeFlexExt", After:=ActiveCell, LookIn:=xlFormulas _
 , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
 MatchCase:=False).Activate

RKFE = ActiveCell.Row

Range(Cells(RKFE, 1), Cells(RKFE + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 26).Select
ActiveSheet.Paste

'===
'!RightDorsiPlanFlex

Cells.Find(What:="!RightDorsiPlanFlex", After:=ActiveCell, LookIn:=xlFormulas _
 , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
 MatchCase:=False).Activate

RDPF = ActiveCell.Row

Range(Cells(RDPF, 1), Cells(RDPF + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 27).Select
ActiveSheet.Paste

'===

'!RightFootProgression

Cells.Find(What:="!RightFootProgression", After:=ActiveCell, LookIn:=xlFormulas _
 , LookAt:=xlPart, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
 MatchCase:=False).Activate

RFP = ActiveCell.Row

Range(Cells(RFP, 1), Cells(RFP + 51, 1)).Select
Application.CutCopyMode = False
Selection.Copy

Cells(1, 28).Select
ActiveSheet.Paste

'Fim Lado Direito
Cells(1, 1).Select

'Cópia de dados -----

Workbooks(Planilha_vcm).Activate
Range(Cells(1, 10), Cells(54, 28)).Select
 Application.CutCopyMode = False
 Selection.Copy

'Colagem

Workbooks("Calculate the GDI_rev02.xls").Worksheets("gcd_import").Activate
Cells(1, 1).Select
ActiveSheet.Paste
Cells(1, 1).Select

'fechar gcd

Workbooks(Planilha_vcm).Activate
Application.DisplayAlerts = False
ActiveWindow.Close
Application.DisplayAlerts = True

analisar_Left

End Sub

Sub analisar_Left()

'!LeftPelvicTilt
Worksheets("GDI_2").Range("S3:S53").Value = Worksheets("gcd_import").Range("A2:A52").Value
'!LeftPelvicObliquity
Worksheets("GDI_2").Range("S54:S104").Value = Worksheets("gcd_import").Range("B2:B52").Value
'!LeftPelvicRotation
Worksheets("GDI_2").Range("S105:S155").Value = Worksheets("gcd_import").Range("C2:C52").Value

'!LeftHipFlexExt
Worksheets("GDI_2").Range("S156:S206").Value = Worksheets("gcd_import").Range("D2:D52").Value
'!LeftHipAbAdduct
Worksheets("GDI_2").Range("S207:S257").Value = Worksheets("gcd_import").Range("E2:E52").Value
'!LeftHipRotation
Worksheets("GDI_2").Range("S258:S308").Value = Worksheets("gcd_import").Range("F2:F52").Value

'!LeftKneeFlexExt
Worksheets("GDI_2").Range("S309:S359").Value = Worksheets("gcd_import").Range("G2:G52").Value
'!LeftDorsiPlanFlex
Worksheets("GDI_2").Range("S360:S410").Value = Worksheets("gcd_import").Range("H2:H52").Value
'!LeftFootProgression
Worksheets("GDI_2").Range("S411:S461").Value = Worksheets("gcd_import").Range("I2:I52").Value

'Banco de dados
Worksheets("GDI_2").Range("ae14").Value = ""
Worksheets("GDI_2").Range("ad14").Value = Worksheets("GDI_2").Range("z12").Value

analisar_Right

End Sub

```
Sub analisar_Right()  
  
    '!RightPelvicTilt  
    Worksheets("GDI_2").Range("S3:S53").Value = Worksheets("gcd_import").Range("K2:K52").Value  
    '!RightPelvicObliquity  
    Worksheets("GDI_2").Range("S54:S104").Value = Worksheets("gcd_import").Range("L2:L52").Value  
    '!RightPelvicRotation  
    Worksheets("GDI_2").Range("S105:S155").Value = Worksheets("gcd_import").Range("M2:M52").Value  
  
    '!RightHipFlexExt  
    Worksheets("GDI_2").Range("S156:S206").Value = Worksheets("gcd_import").Range("N2:N52").Value  
    '!RightHipAbAdduct  
    Worksheets("GDI_2").Range("S207:S257").Value = Worksheets("gcd_import").Range("O2:O52").Value  
    '!RightHipRotation  
    Worksheets("GDI_2").Range("S258:S308").Value = Worksheets("gcd_import").Range("P2:P52").Value  
  
    '!RightKneeFlexExt  
    Worksheets("GDI_2").Range("S309:S359").Value = Worksheets("gcd_import").Range("Q2:Q52").Value  
    '!RightDorsiPlanFlex  
    Worksheets("GDI_2").Range("S360:S410").Value = Worksheets("gcd_import").Range("R2:R52").Value  
    '!RightFootProgression  
    Worksheets("GDI_2").Range("S411:S461").Value = Worksheets("gcd_import").Range("S2:S52").Value  
  
    'Banco de dados  
    Worksheets("GDI_2").Range("ae14").Value = Worksheets("GDI_2").Range("z12").Value  
  
    banco_dados  
  
End Sub
```

```
Sub banco_dados()  
  
    Worksheets("banco_dados").Range("c5").Value = Worksheets("GDI_2").Range("ab14").Value  
    Worksheets("banco_dados").Range("d5").Value = Worksheets("GDI_2").Range("ac14").Value  
    Worksheets("banco_dados").Range("e5").Value = Worksheets("GDI_2").Range("ad14").Value  
    Worksheets("banco_dados").Range("f5").Value = Worksheets("GDI_2").Range("ae14").Value  
  
    Worksheets("banco_dados").Activate  
  
    Range("A5").Select  
    Selection.EntireRow.Insert  
  
End Sub
```

```
Sub nova_amostra()  
  
    Worksheets("control kinematics").Activate  
  
    'Left  
  
    Worksheets("control kinematics").Cells(1, contador).Value = "L_" & Planilha_vcm  
    '!LeftPelvicTilt  
    Worksheets("control kinematics").Range(Cells(2, contador), Cells(52, contador)).Value = Worksheets("gcd_import").Range("A2:A52").Value  
    '!LeftPelvicObliquity  
    Worksheets("control kinematics").Range(Cells(53, contador), Cells(103, contador)).Value = Worksheets("gcd_import").Range("B2:B52").Value  
    '!LeftPelvicRotation  
    Worksheets("control kinematics").Range(Cells(104, contador), Cells(154, contador)).Value = Worksheets("gcd_import").Range("C2:C52").Value  
  
    '!LeftHipFlexExt  
    Worksheets("control kinematics").Range(Cells(155, contador), Cells(205, contador)).Value = Worksheets("gcd_import").Range("D2:D52").Value  
    '!LeftHipAbAdduct  
    Worksheets("control kinematics").Range(Cells(206, contador), Cells(256, contador)).Value = Worksheets("gcd_import").Range("E2:E52").Value  
    '!LeftHipRotation  
    Worksheets("control kinematics").Range(Cells(257, contador), Cells(307, contador)).Value = Worksheets("gcd_import").Range("F2:F52").Value  
  
    '!LeftKneeFlexExt  
    Worksheets("control kinematics").Range(Cells(308, contador), Cells(358, contador)).Value = Worksheets("gcd_import").Range("G2:G52").Value  
    '!LeftDorsiPlanFlex  
    Worksheets("control kinematics").Range(Cells(359, contador), Cells(409, contador)).Value = Worksheets("gcd_import").Range("H2:H52").Value  
    '!LeftFootProgression  
    Worksheets("control kinematics").Range(Cells(410, contador), Cells(460, contador)).Value = Worksheets("gcd_import").Range("I2:I52").Value
```

```
'Right

Worksheets("control kinematics").Cells(1, contador + 1).Value = "R_" & Planilha_vcm
'!RightPelvicTilt
Worksheets("control kinematics").Range(Cells(2, contador + 1), Cells(52, contador + 1)).Value = Worksheets("gcd_import").Range("K2:K52").Value
'!RightPelvicObliquity
Worksheets("control kinematics").Range(Cells(53, contador + 1), Cells(103, contador + 1)).Value =
Worksheets("gcd_import").Range("L2:L52").Value
'!RightPelvicRotation
Worksheets("control kinematics").Range(Cells(104, contador + 1), Cells(154, contador + 1)).Value =
Worksheets("gcd_import").Range("M2:M52").Value

'!RightHipFlexExt
Worksheets("control kinematics").Range(Cells(155, contador + 1), Cells(205, contador + 1)).Value =
Worksheets("gcd_import").Range("N2:N52").Value
'!RightHipAbAdduct
Worksheets("control kinematics").Range(Cells(206, contador + 1), Cells(256, contador + 1)).Value =
Worksheets("gcd_import").Range("O2:O52").Value
'!RightHipRotation
Worksheets("control kinematics").Range(Cells(257, contador + 1), Cells(307, contador + 1)).Value =
Worksheets("gcd_import").Range("P2:P52").Value

'!RightKneeFlexExt
Worksheets("control kinematics").Range(Cells(308, contador + 1), Cells(358, contador + 1)).Value =
Worksheets("gcd_import").Range("Q2:Q52").Value
'!RightDorsiPlanFlex
Worksheets("control kinematics").Range(Cells(359, contador + 1), Cells(409, contador + 1)).Value =
Worksheets("gcd_import").Range("R2:R52").Value
'!RightFootProgression
Worksheets("control kinematics").Range(Cells(410, contador + 1), Cells(460, contador + 1)).Value =
Worksheets("gcd_import").Range("S2:S52").Value

contador = contador + 2
Worksheets("gcd_import").Activate

End Sub
```

```
Sub cont()

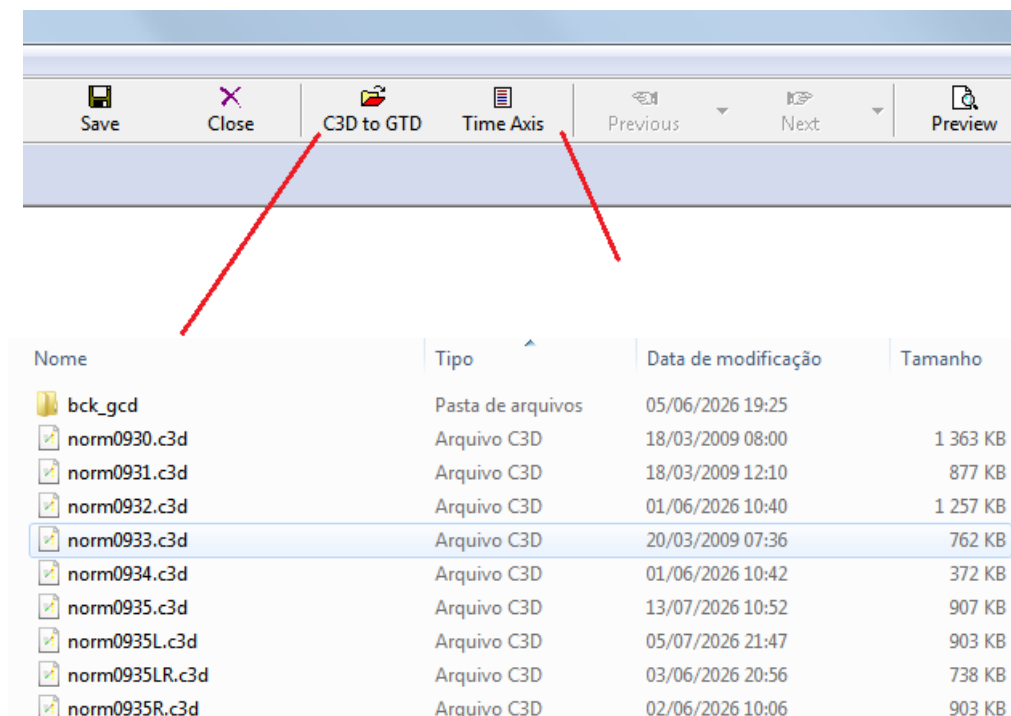
contador = 2

End Sub
```

l1] Gait Time Data (GTD): The X-axis in these new graphs has been converted from gait cycle percentage to time (seconds) to allow for precise temporal analysis. Each curve represents the angular velocity of the specific joint relative to its own local coordinate system. It is important to note that these values reflect joint-specific motion and do not represent the total 3D angular velocity of the body, which requires the synthesis of all joint contributions.

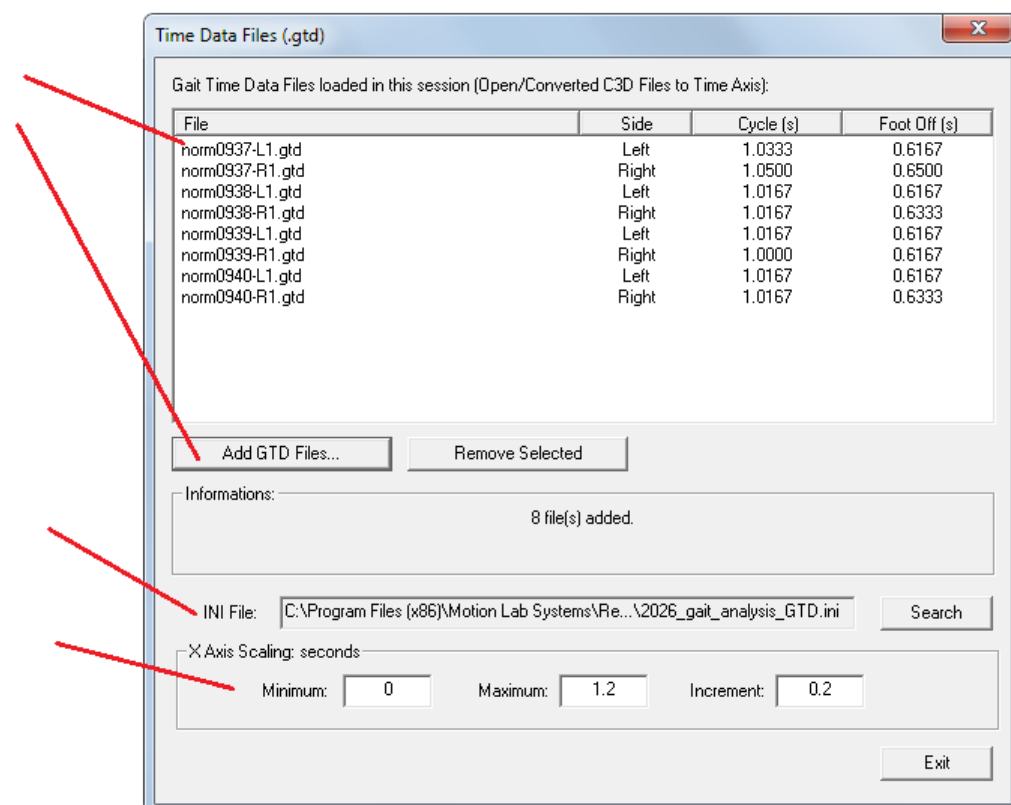
To generate a report using the Gait Time Data (time-scale) graphs:

a) Open C3D files. Use Open C3D or Open C3D List as usual to load the trial(s) you want to analyze.



b) Convert to Gait Time Data. Click C3D to GTD on the toolbar. This extracts the raw, frame-by-frame kinematic data from the selected C3D file(s) and saves it as a .gtd file, preserving the real time base (in seconds) of the capture instead of normalizing it to gait cycle percentage.

c) Manage Time Data Files. Click Time Axis to open the Time Data Files (.gtd) dialog. This panel lists every .gtd file loaded in the current session, along with the side (Left/Right), the cycle duration, and the Foot Off time detected for each file. Use Add GTD Files... to include additional files already converted in a previous session, or Remove Selected to drop one from the list.



d) Set the X-axis scaling. In the X-Axis Scaling: seconds section of the same dialog, define Minimum, Maximum, and Increment (e.g., 0 / 1.2 / 0.2). These values control the time range and the interval between tick marks shown on every time-scale graph in the report.

e) Build the report page. Add a report page whose graphs reference the .gtd data (as with any other page type). The graphs will plot each curve against real time (seconds) instead of gait cycle percentage, with a vertical marker at Foot Off for each trial, letting you compare trials of different durations on a common, physically meaningful time axis.

Note: Example graphs are in the final section: Appendices.

J1] Tools\Global Options \File Extension: Legacy GCD and New GCD2/GTD2: Global Options includes a new "File Extension" section, with two radio buttons: "Legacy GCD Files (RGen 2.307)" and "New GCD2/GTD2 Files (RGen 2.400.2)". This setting exists specifically to let a laboratory distinguish, by file name alone, which files came from an Report Generator version prior to 2.400.2 and which came from 2.400.2 or later, given that the underlying calculation itself changed with this version (see the following section).

Selecting "Legacy GCD Files" writes newly generated files with the traditional .gcd/.gtd extensions; selecting "New GCD2/GTD2 Files" writes them with .gcd2/.gtd2 instead. This choice affects only the extension used when saving newly generated files — it does not affect how the file content is calculated. Every calculation performed by version 2.400.2 (including the spline order described in the next section) applies in the same way regardless of which extension is selected here. Both extensions can always be opened and read by RGen, in either mode.

Changing this setting away from its previous state shows a warning in the "Alerts and Informations" area: "ATTENTION: This change will only alter the FILE EXTENSIONS. READ the HELP FILES for additional information." This warning is only a reminder of the scope of the change described above; it does not block the selection.

The screenshot shows the "Global Options" dialog box. Red arrows point to the "File Extension" section, where "New GCD2/GTD2 Files (RGen 2.400.2)" is selected. Another red arrow points to the "Units" section, specifically to the "Angular Velocity" dropdown menu which is set to "rad/s".

Global Options

☒ Interpolate between Samples
☒ Use shading to indicate SD
☐ Use Data Line Style for SD

☐ Export Only Stance Phase

File Extension:
☐ Legacy GCD Files (RGen 2.307)
☒ New GCD2/GTD2 Files (RGen 2.400.2)

☐ Prompt for GCD Variables
☐ Add variables to GCD File
☒ Save Converted GCD Files
☐ Generate separate files for Left and Right sides

Distance Markers:
Enter the names of corresponding markers on each foot to allow the calculation of Step and Stride Length
Left Foot Marker: LTOE
Right Foot Marker: RTOE

Units:
Cadence: steps/min
Walking Speed: m/s
Step Time: s
Foot Off/Contact Events: %
Single/Double Support: s
Stride/Step Length: m
Angular Velocity: rad/s

Alerts and Informations:

Gait Deviation Index - Gillette Children's Hospital, Michael Schwartz, PhD
Children Reference Sample: [C:\ProgramData\Motion L... \Calculate the GDI_rev01.xls] Browse...

Help Apply OK Cancel

K1] Edit\Report\Line Attributes: Screen and Printer line configuration

The "Line Attributes" window (Edit\Report\Line Attributes) received several changes between version 2.307 and 2.400.2. These changes group every command related to configuring and previewing graph lines into a single window, and add a way to preview, reset, and import line settings

1. "Printer always looks like Screen" moved from Global Options to Line Attributes

This checkbox was previously located in Tools\Global Options. It has been moved into the Line Attributes window itself, next to the Printer settings it controls. This groups it together with the other commands that configure and edit graph lines, instead of leaving it in a separate, unrelated dialog.

2. New command: "Copy from External RTP File"

This new button lets the user import the complete set of line settings (Screen and Printer: color, thickness, style, and identifier, for every line) from another report (.rpt) file, instead of configuring each line manually. Selecting a source file replaces every line setting in the current session with those stored in the chosen file.

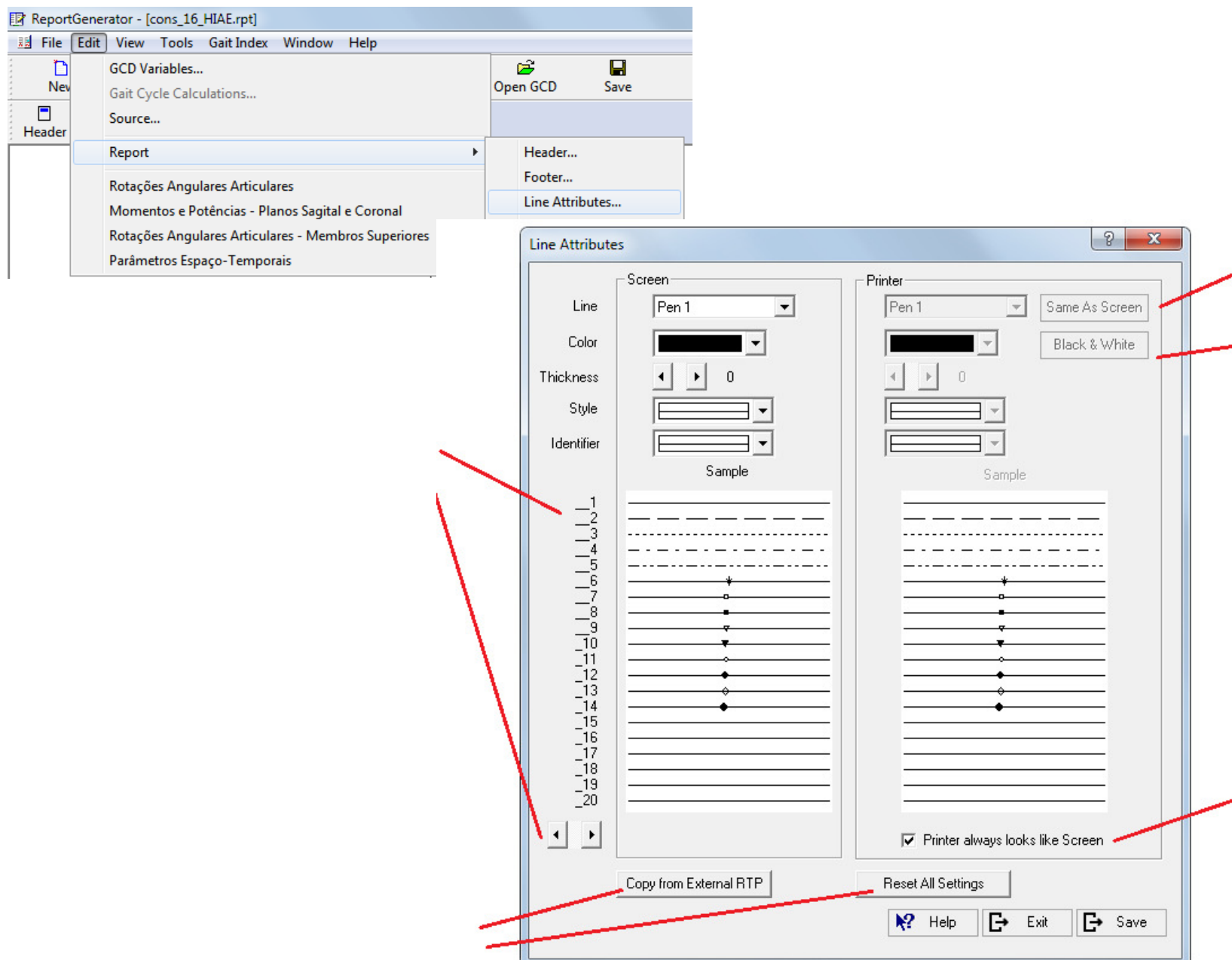
3. New command: "Reset All Settings"

This new button resets every line — for both Screen and Printer — back to its default configuration: minimum thickness, solid (continuous) line, black color, and no identifier marker. This provides a single, immediate way to clear all line customizations and start over from a known baseline, instead of resetting each line individually.

4. New Sample preview areas: Screen and Printer

Two new preview areas, labeled "Sample", show the current line configuration for every line, one below the other, for Screen and for Printer respectively. Each preview line reflects the color, thickness, style, and identifier currently assigned to that line number, updating immediately as settings are changed.

Since a report can use up to 120 lines, two navigation buttons below the Screen preview let the user move between blocks of 20 lines at a time, covering the full range from line 1 up to line 120.



----- UpDate: Report Generator 2.400.2 -----

A1] Cubic Spline Application Order: fitting over the full C3D trial before cycle cutting

Background: RGen uses a cubic spline (Press, Teukolsky, Vetterling & Flannery, "Numerical Recipes", chapter on cubic spline interpolation; de Boor, "A Practical Guide to Splines", 1978) both to interpolate curves for display and to calculate derivatives, such as angular velocity. Up to version 2.400.1, this spline was fitted separately to each gait cycle, after the cycle had already been cut out of the C3D trial. Version 2.400.2 changes this order: the spline is now fitted once, over every useful frame of the C3D trial, before any cycle is cut out. Each individual cycle is then read from this single, continuous fitted curve.

Why this matters: a cubic spline fitted to a short segment of data has less information near its own endpoints than it has in the middle, so the fitted curve tends to be less reliable close to the boundaries of whatever segment was given to it — the endpoints of the segment being fitted are always where this effect is largest. When the spline was fitted per-cycle (up to 2.400.1), the two least reliable points of every single cycle fell exactly on Start Cycle and End Cycle — the very frames used to compute cadence-related events and, more importantly, the frames where an angular velocity graph most needs to be accurate, since gait events such as Foot Strike and Foot Off happen close to those boundaries.

By fitting the spline over the full trial first, the frames that correspond to Start Cycle and End Cycle are no longer endpoints of the fitted curve — they sit inside a much larger, continuous run of real captured motion, with genuine neighboring frames on both sides. Each cycle is only cut out afterward, as a window read from that already-fitted curve. This does not change the mathematical model used (still the same cubic spline referenced above); it changes only the segment of data the spline sees when it is fitted, which improves the accuracy of the curve and its derivative specifically at the cycle boundaries.

Where this is used: both pipelines that generate cycle-normalized or time-based output from C3D data — "C3D to GCD" (percentage of gait cycle) and "C3D to GTD"/"Time Axis" (real time, in seconds) — now apply the spline in this same order. The practical effect is most visible in the sagittal-plane angular velocity graphs (rotation about the local X axis of the hip, knee, and ankle), calculated as the analytical derivative of this same spline: with the new fitting order, the velocity curve is smoother and more reliable near Start Cycle and End Cycle, where it previously showed the largest boundary-related distortion.

Angular velocity unit: Tools\Global Options\Units includes a new "Angular Velocity" setting, with two choices: degree/s and rad/s. degree/s follows the convention already used in the biomechanics literature (Winter, Perry, Kirtley) for gait angular velocities; rad/s follows the SI convention. Selecting rad/s multiplies every value by $\pi/180$ (0.01745329...) before it is written to the .gtd/.gtd2 file — the underlying calculation (the spline derivative described above) is identical either way; only the unit of the stored and displayed value changes. As with the other five spatio-temporal units in this same section, this setting affects newly generated files going forward; it does not convert values already stored in existing .gtd/.gtd2 files.

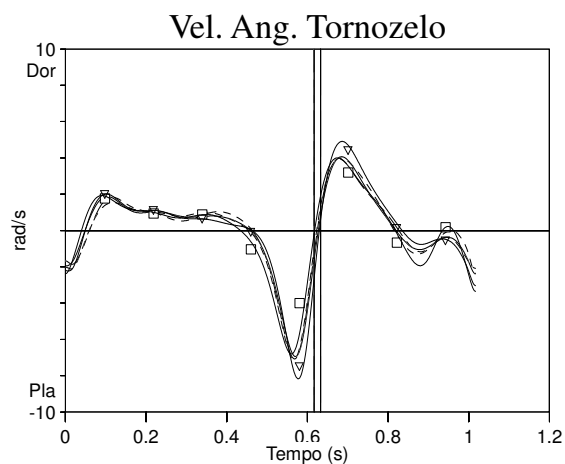
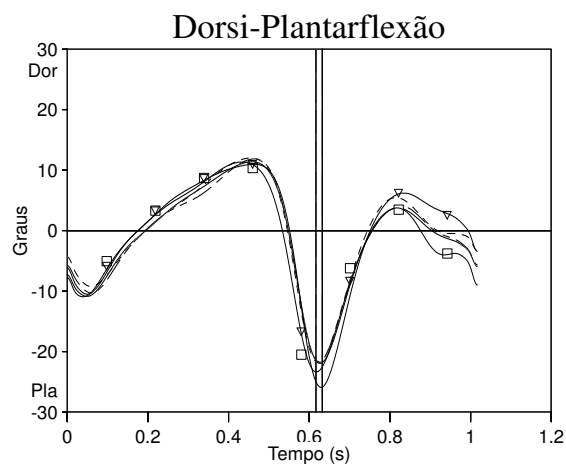
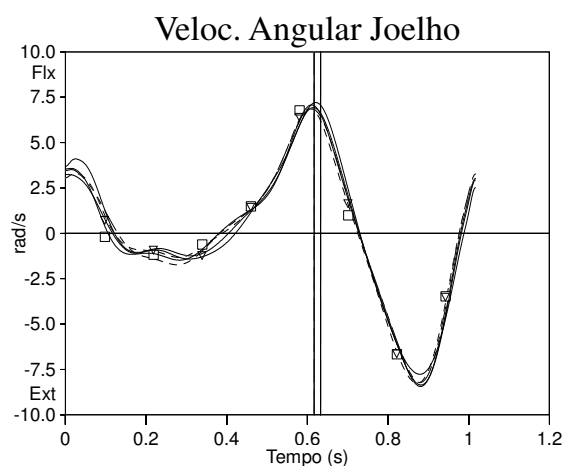
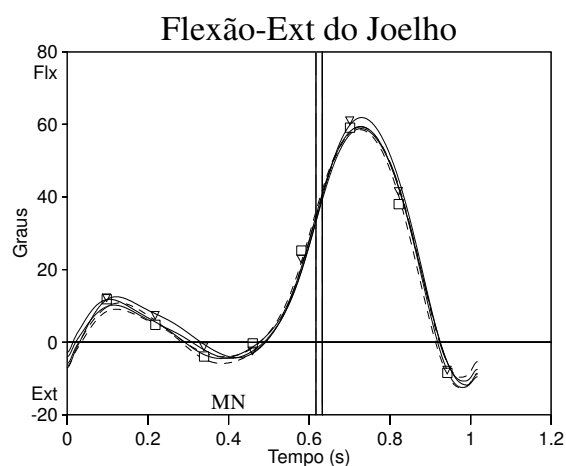
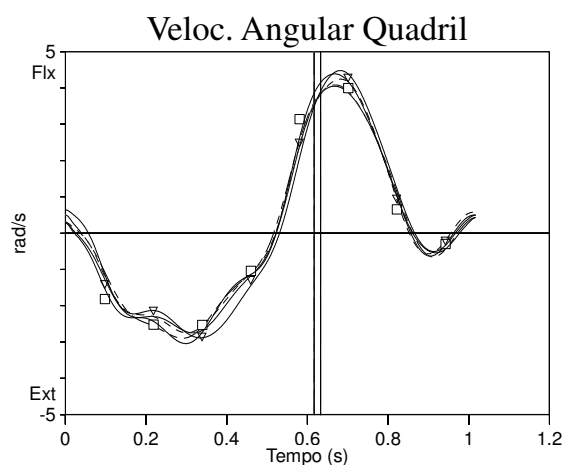
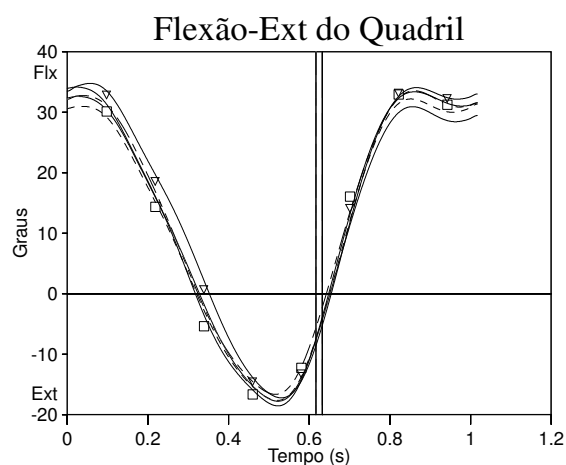
This change affects only the accuracy of the fitted curve near the boundaries of each cycle. Joint angle values sampled well inside a cycle are effectively unchanged; the spline itself, its degree, and the way each individual point is calculated from it remain exactly as before.

----- Global Appendices -----

A1] Gait Time Data (GTD2) Files:

3D kinematics: angular rotations (Euler angles) and Angular Velocities (degree/s or Rad/s) in the local axes of each segment.

Example of graphs: gtd2 Files.



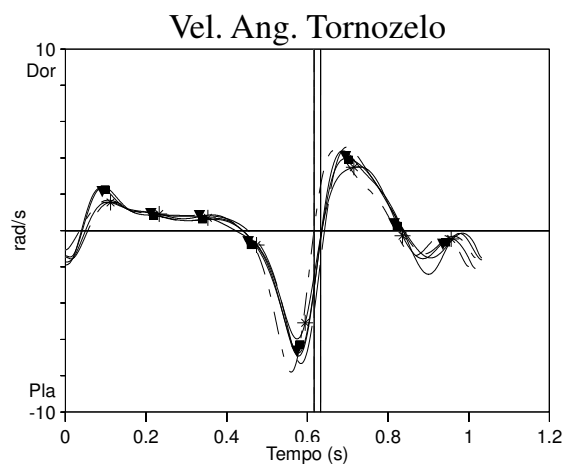
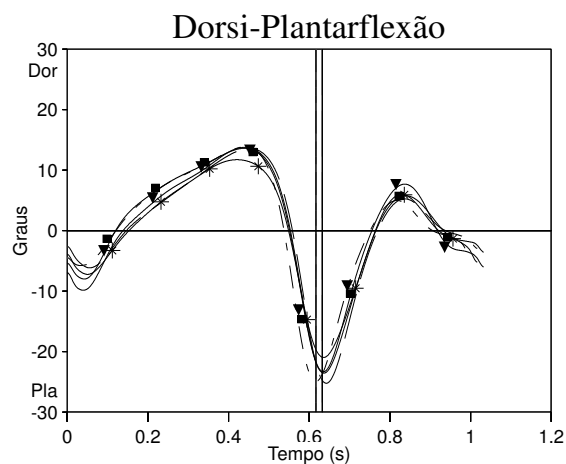
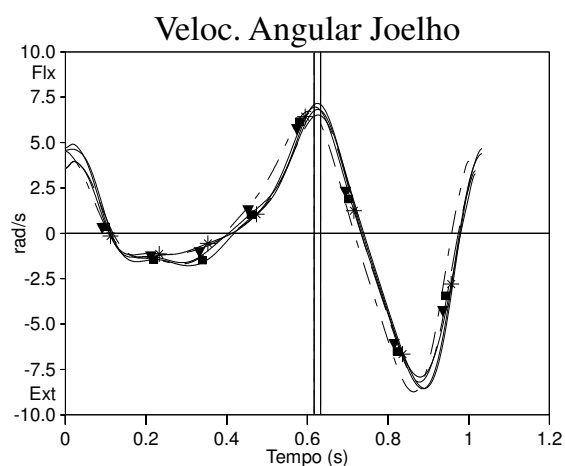
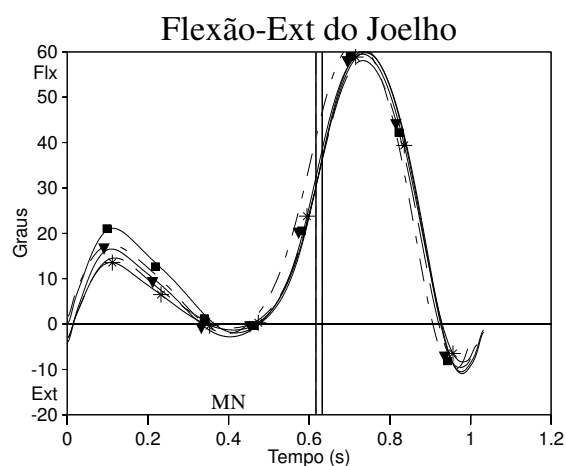
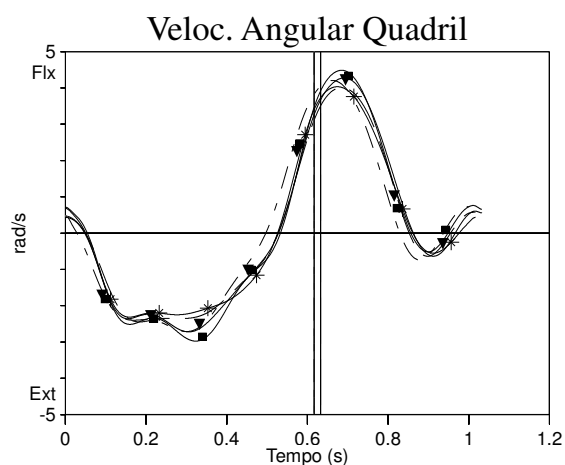
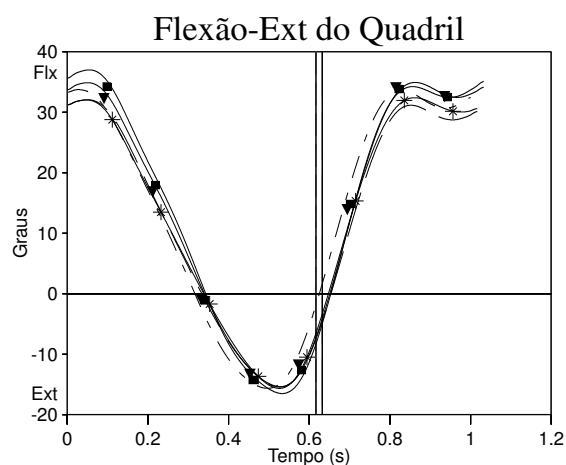
Legenda 1-7

norm0938-L1: —————
 norm0938-R1: —————
 norm0939-L1: - - - - -
 norm0939-R1: - - - - -
 norm0940-L1: - - - - -
 norm0940-R1: —————*

norm0941-L1: —————□

Legenda 8-14

norm0941-R1: —————■
 norm0942-L1: —————▽
 norm0942-R1: —————▼



Legenda 1-7

norm0938-L1: —————
 norm0938-R1: —————
 norm0939-L1: - - - - -
 norm0939-R1: - - - - -
 norm0940-L1: —————
 norm0940-R1: —————*

norm0941-L1: —————□

Legenda 8-14

norm0941-R1: —————■
 norm0942-L1: —————▽
 norm0942-R1: —————▼

A1] C3D File Pre-Selection: now also shown for single-file conversion

Until version 2.400.2, the "C3D File Pre-Selection" window (see item A1 of the 2.400 update and item C1 of the base Help) was only presented when two or more C3D files were selected for conversion. When a single file was selected, ReportGenerator went directly to the "C3D to GCD Conversion" window, skipping this review step entirely — Plug-in Gait status, ANALYSIS status, and any potential problem with the file were never checked or flagged in this case.

From version 2.400.3, a single selected file that is not multi-cycle also goes through the "C3D File Pre-Selection" window before conversion, exactly as already happens with two or more files. A single file that is itself multi-cycle continues to be routed directly to the "Multi-cycles C3D Files Pre-Selection" window (see item C6), unchanged.

A2] Cycles with a missing Foot Off (ToeOff) marker are no longer silently excluded

Background: a gait cycle candidate (defined by two Foot Strike events of the same side, marking Start Cycle and End Cycle) has always required a Foot Off (ToeOff) event of the same side within that interval to be recognized. Until version 2.400.2, a candidate without this event was discarded automatically, before conversion, with no message shown to the user. Since normal walking gait always produces a Foot Off event, this was never noticed in standard clinical use.

This becomes relevant for trials outside standard walking gait — for example, jump analysis or other lab protocols — where a Foot Off event may not be registered the same way it is in normal gait. Until this version, processing this type of trial in ReportGenerator required manually inserting an artificial ToeOff event in Nexus, with no real physiological meaning, only so the file would be accepted for conversion.

What changed: a cycle candidate without a Foot Off marker is now always kept, on both sides, instead of being discarded. Both Pre-Selection windows (single-cycle and multi-cycle) now detect this and flag it explicitly:

- The checkbox for the affected file starts unchecked.
- The "Alerts and Informations" area shows which side(s) — and, in multi-cycle files, which specific cycle number(s), e.g. "L2, R4" — are missing a Foot Off marker.

Leaving the checkbox unchecked (default):

The incomplete cycle is excluded from conversion, the same way any unchecked file is excluded today — no additional prompt is shown.

Checking the checkbox:

The incomplete cycle is converted along with the rest of the file. Joint angle curves (kinematics) are generated normally. Every spatio-temporal parameter that depends on a Foot Off event — Foot Off, Single Support, Double Support, Step Time, Stride Time and similar — is left blank for the affected side, instead of showing an incorrect value. Because Double Support depends on the Foot Off event of both feet, a missing marker on one side can also leave the corresponding field blank on the opposite side's cycle, when that specific cycle's calculation needs the missing event. The Alert message changes accordingly once the box is checked, describing the fields that will be left blank.

Multi-cycle files:

The same rule applies independently to each cycle candidate. Checking the box exports every cycle, including incomplete ones, following the existing per-cycle file naming ("-L1", "-L2", "-R1"...). Incomplete cycles can be identified by the cycle number already listed in the Alert message and, if not needed, removed afterward from Manage Plots > Data Files.

Important: this does not change anything for normal walking gait, which always includes a Foot Off event — existing files and existing workflows are unaffected. This addition is intended specifically for non-standard captures where inserting an artificial ToeOff marker is no longer necessary to process the file.

