

DESCRIPTIVE OVERVIEW

The CapnoTrainer® GO brings together physiology, psychology, and technology to create powerful learning tools for identifying good and bad breathing habits, for learning to disengage bad ones that compromise physical and mental competence, and for learning new ones that promote health and performance. The **Professional GO System** is a comprehensive integrative learning platform that includes hardware and software. This document is an overview of Professional System software and database.

CapnoTrainer GO: for recording breathing physiology both in the office and in the field

GO Professional software: for observing, evaluating, teaching, and learning breathing habits

GO Cloud Database: for managing data, records, clients, and trainers.

The **GO Professional GO System software**, which includes its **HIPAA Compliant GO Cloud Database**, is a **subscription program** renewable annually on a per instrument basis. The software operates on PC and Apple computers, Android phones and iPhones, and tablets and iPads. Updates are auto-installed by default, but can be managed manually if desired. Live tech support, by appointment, is provided for GO Professional customers. Users click on Tech Support to make an appointment at any time.

The System software provides for managing clients, multiple trainers, and rental of instruments by clients. You can do Groupwork with up to six clients at a time, including both respiratory and HRV physiology. Unlike the Basic System, advanced HRV recording options are a part of the Professional system. There is also an EMG option (up to four signals) for those interested in monitoring muscle activity during breathing; the sensors must be purchased separately. The Universal Bluetooth dongle provided with the instrument allows for automatic Bluetooth connection with up to six CapnoTrainers, six Bluetooth HRV devices, and four EMG signals simultaneously; this feature is not available on cell phones or tablets.

Live Physiological Monitoring

Observe, record, and manage up to 18 physiology signals.

Learn about respiratory chemistry, breathing mechanics, and heart rate variability.

Observe live respiratory physiology, including two algorithmic signals – 3 signals:

Raw PCO₂, End-tidal PCO₂ (PetCO₂), and Capnia Index (mmHg below/over 35).

Observe breathing mechanics based on unique airflow algorithms – 5 signals:

Gasps/min, aborted breaths/min, breath-holds/min, breaths/min, relative volume.

Edit some of the algorithms as per your own definitions, e.g., what is a breath?

See multiple combinations of graphic & digital displays that include:

Live CO₂ signals: Raw PCO₂, breath-to-breath PetCO₂, Capnia Index.

Live HR signals: beat-to-beat HR, RR interval, FFT

Live history graphs: Turn ON/OFF sets of history graphs (0, 3, 6) in all raw signal display options.

Corollary Physiology Bar: View and adjust digital presentations of algorithmic signal values.

Name Bar: View digital history of primary signal, from 0 to 10 means or **medians** (default).

Observe and record Heart Rate Variability (HRV), including nine algorithmic signals – 10 signals:

Beat-to-Beat Heart Rate, Respiratory Sinus Arrhythmia (RSA) Amplitude, RR Interval,

Arousal, Parasympathetic Tone, Parasympathetic Reserve, FFT, HF, LF, and VLF.

Implement Testing Protocols for evaluating, teaching, and learning breathing habits.

Evaluate breathing habits and teach/learn new mechanics consistent with good chemistry.

Choose predefined breathing testing protocols, as shown below.

Configure Breathing Template controls: inhalation, exhalation, and transition times.

Configure Template tracking features: multiple kinds of balls, and colors.

Create unique data records with task ID markers for each test-phase, e.g., baseline

Review results of testing during live sessions and in the Cloud Database.

BREATHING-RATE CHALLENGE

Learn to “allow” breathing rate and volume to self-regulate.

Configure moving target on Template: types of balls.

Set number of breathing rates for testing (two to six different rates).

Define each breathing rate to be implemented (4 - 25/minute).

Assign the time for breathing at each of the assigned rates (1 - 5 minutes).

TRANSITION-TIMES CHALLENGE

Learn to “allow” for the respiratory reflex through negative practice.

Define two kinds of breaths: a minimum and a maximum transition time.

Set the **minimum** transition time between exhale and inhale (0 - 20 seconds).

Set the **maximum** transition time between exhale and inhale (0 - 20 seconds).

Assign a specific number of times that each kind of breath is to be completed.

Set number of minimum - maximum transition sequence repetitions presented.

Organize Tasks that trigger good and bad breathing habits.

Configure Task Sequences for evaluating and learning breathing.

Choose a task to begin a task sequence: Baseline, Challenge, Recovery, and User-defined.

Choosing your first task will automatically begin a new data record (if you have selected a Client).

Click on Stop Task Sequence when you are finished to immediately review the testing results.

Create and save User Defined Sequences if desired for future applications.

Provide animated feedback for easier understanding.

Less technical breathing feedback learning is helpful for children.

SMILE: Change Facial Expressions by learning to regulate PetCO₂.

FILL the Barrel: Maintain the right level PCO₂ concentration in the Barrel.

TOUCH the Inner Circle: Complete the exhale, breathe gently.

Audio and special effects feedback for more intuitive learning.

Self-regulation breathing, not external manipulation, is a fundamental objective.

AUDIO: Choose the source: speaker, headset, microphone. Provide audio feedback based on threshold settings, including: sound off/on, analog (continuous) & digital sounds (discrete), volume increase/decrease, musical notes, animal sounds, and even automated verbal feedback, i.e., mmHg verbal call-outs for PetCO₂.

VISUAL: Provide visual feedback based on threshold settings, including signal color, background color, colored zones, animated displays.

Manage live session user information for optimal record keeping.

Record who is teaching and who is learning, and for what.

Choose Clients, create new Clients, edit Client Profiles.

Choose Groups, create new Groups, edit Group Profiles.

Do Groupwork with up to six Clients and monitor them in the field.

Create new Associate Trainers and edit their Profiles.

Take text notes at any time, review them during the session or in the Database.

Record audio-notes, review them during the session or in the Database.

Take pictures (images) of screens (PNG), OR individual graphs at any time.

Review images in slide format during the session or in the Database.

Collect data for presentation in flexible and practical formats.

Using data in “smart” ways make for better teaching and learning.

Start and stop data collection.

Start new data records within the same session

Review multiple data records separately or together in the Database.

Mark specific within-session data records with task and test labels.

Annotate live data by panning the ongoing recording.

Data is marked as Homework when Clients conduct sessions without Trainers.

Data is associated with the Associate Trainer assigned to a Client.

Data is designated as “Self” data when doing personal work.

Collect data directly on cell phones and tablets in the field.

Collect data Offline and use the Cloud database tools for creating local PDF reports.

Take pictures (images) and notes WITHOUT data recording and save them on your computer.

Customize Screen, Display, and Graph features.

Teaching and learning require unique live physiology display configurations.

- Hide the entire screen (keep your client focused on their experience)
- Hide most icons to simplify the display.
- Display and adjust size and location of a miniaturized graphic or digital display of signals.
- Switch to GO Basic software whenever desired.
- Freeze the screen, pan the history, annotate the graph.
- Change signal features: color, lines, bars, thickness, actual data points.
- Set thresholds for audio and visual feedback.
- Reconfigure preset signal displays and save them as alternative displays.
- Change text font size for better screen readability and visibility.
- Control X-axis settings: Zoom in and out time frames (time window).
- Set the X-axis in absolute (e.g., 0 to 30 minutes) or actual Clock Time
- Control Y-axis settings: Invert and/or move the display to left/right side.
- Change PetCO₂ signal value expressions: mmHg, %-PCO₂, kilopascals.
- Change live history data points: means, medians, or moving medians.
- View & Set signal averages and medians for digital readouts associated with graphs.
- Collapse/close whole screen, or only specific graphs.

Cloud Account (Dashboard and Database) HIPAA Compliant

The **HIPAA Compliant** Go Professional System Database provides maximum data management flexibility for your clients your trainers, and yourself. Clients can view data reports, session images, Zoom video recordings, and fill-in PDF forms that they and their Trainers have completed and uploaded. You and your Associate Trainers (if any) can create and edit data reports of all kinds, including single session reports, homework reports, multi-session reports, and Groupwork reports. The Cloud Database is divided into two sections, the DASHBOARD and the DATABASE, each of which are described below.

Management Dashboard

- Configure your System for Personal use only.
- Configure your System for working with Clients.
- Configure your System for use by Associate Trainers.
- Configure your System for doing Groupwork.
- Provide Clients and Trainers with personal logins.
- Unique Dashboards are provided for Clients and Trainers.

- Track the work of your Clients.
- Track the work of your Associate Trainers.
- Track the Clients of your Associate Trainers.

- Choose Preconfigured Data Report Templates.
- Create alternative versions of Template Reports.
- Create, Edit and View Single-Session Data Reports.
- Create, Edit and View Multiple-Session Data Reports.
- Choose Sessions and Signals for Multi-Session Reports.
- Create, Edit and View Groupwork Session Data Reports.
- Compare data amongst Groupwork participants.
- Create, Edit and View Homework Session Data Reports.
- Practice using the Database with Prerecorded Data.
- Manage Zoom recordings of Sessions.

- Download 12 different blank fill-in PDF forms.
- Upload 5 completed fill-in PDF forms for Clients.
- Upload 7 completed fill-in PDF forms for Trainers.
- View/download completed Client/Trainer forms.
- View Homework assignments submitted by Clients.
- Create and edit Client and Trainer Profiles.
- View and Download PDF copies of Data Reports.
- View Notes taken during selected live sessions.
- View Slide Show of snapshots taken for selected sessions.

Database

- Take Report Notes within each Data Report.
- Make PDF copies of Data Reports.
- Create multiple Reports for specific sessions.
- View Breathing Testing results in separate records.
- View Task sub-session data within separate records.
- View live session markers associated with tests and tasks.
- View multiple data records within single sessions.
- View data pauses and associated delay time.
- Review all session data or just a subset data record.
- View Zoom recordings of current session.
- View Session Notes taken during live session.
- View slide presentation of Images collected in Live Session.

- Annotate Graphs within Data Reports.
- Replay data in a live format, pause and reset.
- Control X-axis time and Y-axis signal value ranges.
- Link changes on one graph with other graphs.
- Pan graphs, moving forward/back with mouse.
- Zoom IN/OUT specific regions of X-axis (time).
- Change graphical features: colors, lines, bars, grids.
- View annotations recorded during Live Sessions.
- Control/View numerical tables associated with graphs.
- Set data point sizes on graphs, link them with tables.
- View means, medians, and standard deviations.
- Export Data in variable formats.

Auto-assemble session reports

- Auto-assemble comprehensive session reports including forms, session notes, report notes, session snapshot images, and PDF of customized data reports created in the database.