

INTRODUCTION TO CYBEX TRAZER® PERFORMANCE TESTING & TRAINING SIMULATOR

Important Cautions about Setup and Use

Make sure no obstacles are in any possible movement path and keep activity area clear. Please refer to your Operator's Manual for specifications on space requirements for Trazer. Use TRAZER only on floor surface appropriate for rapid starts and stops and jumping movements.

TRAZER activities challenge balance, agility, coordination and cardiovascular fitness. Insure appropriate warm-up and supervision. Instruct users to maintain movement control and to not over-exert. Users attempting new activities should have qualified supervision.

Basic Operation

The following information is provided on the HELP page for the Main Menu screen.

- Use touchpad to select desired category on left – then select activity. Note that when an activity has been selected, the HELP button provides more specific information for activities in that section.
- Functions in Administration & Reports section require authorized personnel LOG IN. For initial LOG IN, use name “Admin” and PIN “Trazer”. NOTE: It is case sensitive and don't include the “ ” symbols! Please see Administration & Reports below to setup system with a secret Admin name and PIN for functions that should be restricted to facility personnel.
- Each client must LOG IN to have to have individual performance scores and measurements saved on the system. To LOG IN, client must be registered by an authorized TRAZER Administrator using the “Add Client” function in the Administration & Reports section (see below). To LOG IN, a client must use his or her name and PIN *exactly* as registered.
- Each client must LOG IN to use Cardio Control & Calorie Burn activities because TRAZER needs age, sex and bodyweight to make required calculations. For Cardio Control activities, client must wear a Polar® compatible heart rate monitor to allow the TRAZER beacon to read and telemeter heart rate to the system for training and game control.
- Most activities have an options setup screen that allows varying degrees of control or customization of the activity. Default settings for each activity remain in force until these options are changed. These defaults settings have been optimized to cover the broadest possible population and to provide the widest possible range of activities with just two clicks to start. Changes made for every activity for each individual client are saved in that client's personal database. See Performance Training Drills section below for more information.
- To get a Performance Analysis Report (PAR) for any specific activity, you must select (click box) “Show reports & Save data.” This will also save the data from this specific activity in the client's database. It is recommended that data is saved only for supervised activities to insure quality of data which can be negatively affected if client misunderstands requirements of activity, and also by client effort. A “Score Card” of basic performance data is provided when “Show reports & Save data” is not selected. Basic data such as game scores are saved for all activities performed. The reports function is always on automatically for activities in the TESTING section.

TRAZER Performance Analysis

When you select “Show reports & Save data” for a specific activity, TRAZER precisely measures and compares the following data for each specified movement vector (specific direction – right, left, forward, backward, up, down)...

... *Reaction Time* – Thousandths of seconds from instant target cue appears until acceleration in correct direction occurs. This measures how quickly an individual perceives, interprets and develops muscle forces required to respond to objects, obstacles and sports situations.

... *Power* – In watts per kg of bodyweight. Multiply by bodyweight to get actual power in watts (1 kg = 2.2 lbs). In a sports block, check, or collision – more power keeps moving, less power is moved aside. Note the real-time power meter screen-left.

... *Speed* – Average feet or meters per second over all movements in each specified vector (right, left, forward, back, up, down). Rapid acceleration and deceleration while controlling body center of gravity are the keys to achieving higher speeds while reacting, cutting and dodging.

... *CG Height* – Average CG height (exclusive of jumping movements) shown as \pm from calibrated height when standing straight as required at start of each activity. This data and the CG height control function available on setup screens can be used to identify and train optimal CG height for power, speed and stability. Note the real-time CG height meter which is screen-right during activities.

... In addition to direction-specific results, the system compares left versus right performance, and calculates overall averages for the measurements above. TRAZER Performance Analysis also includes *Calories* burned during activity, *Total Time* to complete activity, *Total Distance* traveled, *Max/Avg Jump Height* if a jump activity, *Max/Avg Heart Rate* when a Polar[®] compatible heart rate monitor is worn, and individual *Rank* versus other users to date in on each TRAZER system.

TRAZER Testing Operations & Movement Cues for all Activities

TRAZER testing provides a group of standardized activities designed to challenge and assess specific movement skills and functional performance. The data described above is reported as applicable to each activity. To run any test activity:

- Select Test Repetitions appropriate for individual fitness level. Note that a repetition is a complete cycle of all movement directions included in a test or activity pattern – an individual directional movement is not a repetition. For optimal data comparison reliability, use the same number of repetitions in future tests. Click “OK” to start test. The client should be instructed as follows:
- Move to center calibration position and stand straight at full height to allow system to calibrate and assign CG height. The first target cue will appear after a brief countdown.
- React and move quickly left, right, forward and backward to strike orange bumpers. Toe raise to strike white ball or jump in jump test or activities. Squat to strike yellow ring. Movements may be just shifting of hips or multiple steps depending on activity.
- If Polar[®] compatible heart rate monitor is worn, TRAZER beacon telemeters heart rate to track & report CV response.
- Press “Esc” on keyboard at any time to stop test or activity which can be immediately started over.
- Performance Analysis report will appear at completion of test or if “Show reports & Save data” has been selected for other activities. After reviewing Score Card or PAR, Click “OK” to return to start screen. Click “BACK” to return to Main Menu.

Reaction 1 tests very short hip-shifting, toe raise and squat movements emphasizing reaction time and movement quickness.

Mini “T” tests forward and backward movement speed, right-left reaction / direction change quickness & movement speed.

Lateral Speed tests right versus left movement speed with emphasis on acceleration & deceleration of direction change.

Jump Fatigue tests maximal muscle power and power endurance – do as many jumps as possible as fast and high as possible for selected duration.

Note that Lateral Speed and Jump Fatigue tests are particularly demanding and will cause significant oxygen debt.

Performance Training Drills

TRAZER Performance Training Drills provide extensive variations & combinations of challenges to dynamic balance, agility, coordination, functional power, muscular and cardiovascular endurance, and sports-specific reactions and responses. Drills can also provide accurate, objective data for sports performance & injury prevention screening and proof of performance enhancement in personal training programs.

Note that default settings have been extensively tested to offer a wide variety of performance challenges applicable to the broadest possible population. Using the defaults as much as possible increases the reliability of comparing test-retest data and data among different individuals. The exceptions to this recommendation are the Shift & Bump and Lunge drills which are designed to be totally customized to each individual's current performance status. Note that all changes made to options settings for any activity are saved in each individual's database until these settings are changed again or until "Restore defaults" is selected.

To run a typical drill (note that available options vary among activities):

- Select the general type of movement pattern and/or physical activity by choosing a specific drill.
- Select from available movement Directions – left, right, forward, back, diagonal (adds 4 movement directions), up, down, vertical, lateral.
- Select Duration (time limit) *OR* Volume (specific number of repetitions, sets and rest period). A repetition is a complete cycle of all movement directions included in drill, *not* an individual directional movement. For optimal data comparison reliability over repeated trials, use the standard default settings for each drill which are equilibrated and randomized sets.
- Select Sequence – *Group* (all reps run one direction at a time), *Sequential* (all directions run in repeated cycle), or *Random* (all reps for all directions intermixed). Ideally, compare data from only like sequence selections. For most testing applications, unless default is otherwise set, *Random* is the best choice.
- Set Movement Scales – The distance of each selected directional movement, from simple weight-shifting to multiple steps, and from toe raise and squat variances from erect height to maximal vertical jump and lateral bounding height.
- Enable CG Control if you want to enforce a specific stance during activity from low squat to toe raise. CG feedback and reinforcement can be used to test and train optimal CG height to maximize speed, power, direction change & stability.
- Set PAUSE for a delay between repetitions which is desirable for most reliable reaction time measurement.
- Click Show Reports & Save Data for Performance Analysis if desired for supervised activities.
- "Restore defaults" if unsure how to set up drill or if it appears that settings may have been changed inappropriately.
- Click "OK" to start drill. Instruct client to move to center CG calibration position and stand straight at full height. Wait for countdown and target cue.
- React and move quickly to strike orange bumpers. Toe raise or jump to strike ball. Squat to strike yellow ring. Blue diamonds indicate requirement to lower CG in a lunge movement. Spring indicates extra hip/knee flexion to train proper landing technique.
- If Polar® compatible heart rate monitor is worn, TRAZER beacon telemeters heart rate to track & report CV response.
- Score card appears at completion of drill. Press "Enter" on keyboard to repeat drill or view Performance Analysis and save data if selected. Click "OK" to return to drill options screen to repeat drill or click "BACK" to return to Main Menu.
- Press "Esc" on keyboard at any time to stop drill which can be immediately started over.

Performance Training Games

TRAZER® Performance Training Games provide the ultimate mix of fun, competition, fitness challenge and serious physical training – a flight simulator for reaction time, quickness, speed, agility, power, and endurance.

TRAP ATTACK – Move to red disks as they appear. React and change direction as quickly as possible while maintaining body control. Jump over or go around any trap doors that open when playing at higher levels.

JUMP EXPLOSION – Move left and right to get under balls as they begin to drop off conveyor. Jump to push balls back onto conveyor or block them from hitting floor. Jump fast, high and accurately for highest scores.

SPIKE DODGE – Move, jump and stoop to intercept balls at different heights and angles. To retrieve balls that hit floor, get behind them and dip low to bump them back before they turn into point-stealing red spikes.

GOALIE WARS – Move left and right to keep hands between the AI goalie and your goal to block his shots. When you have possession of the ball, move quickly left or right to fake out the AI Goalie. To shoot, lunge or thrust hips forward.

FUN FUSION – Play a series of performance training games run sequentially for equal times split over the duration selected.

To run a game, defaults can be used or options settings may be changed:

- Click Duration and set desired time period for play. Note that play can also be limited by “faults” rather than by time only.
- If desired, click game-specific “fault” (Trap Door falls, Ball Explosions, etc.) and set number of faults to end game.
- Set Level for starting difficulty of play. Click Fixed to stay at this level or Progressive for game to get harder as based on score achieved.
- Click CG Control and set CG target height if desired for coaching and training optimal stance for quickness, speed and power.
- Note: To play for Top Ten, client must be registered and LOG IN.
- Click Show Reports & Save Data for Performance Analysis if desired, LOG IN is required to use this function.
- Click “OK” to start drill. Instruct client to move to center CG calibration position and stand straight at full height. Wait for countdown and target cue.
- If Polar[®] compatible heart rate monitor is worn, TRAZER beacon telemeters heart rate to track & report CV response.
- Score card appears at completion of game. Press “Enter” on keyboard to play again or to view Performance Analysis and save data if selected. Click “OK” to return to game options screen to play again or click “BACK” to return to Main Menu.
- Press “Esc” on keyboard at any time to stop game which can be immediately started over.

Game Scoring

+1 point X difficulty Level for each disc or ball contact, or goal. -1 point X difficulty Level for each game-specific “fault.”

Cardio Control & Calorie Burn Activities

TRAZER Cardio Control & Calorie Burn activities provide the ultimate mix of fun, fitness challenge and serious physical training in games that automatically keep your heart rate in a specified training range, or that allow setting a calorie goal rather than time for controlling the exercise period. Though these activities can be as intense as performance status allows, the perceived exertion is much lower than other types of activities. Engaging the mind and often more than a little competitive spirit makes these activities seem more like play than training. Compare your own perceived exertion level and sense of exercise time on TRAZER to other fitness and training programs.

Note that an individual must be a registered client and LOG IN to use Cardio Control & Calorie Burn activities because TRAZER needs age, sex and bodyweight information to make required calculations. For Cardio Control activities, a Polar[®] compatible heart rate monitor must be worn to allow the TRAZER beacon to read and telemeter heart rate to the system for game control.

For Cardio Control Games:

- Click Duration and set desired time period for play. Set starting Level for difficulty of play.
- Select a standard Cardio Control range, or set a Custom Cyclical range to match CV demands experienced in a favorite sport or activity. Do not set or exceed heart rate that client has not safely performed in recent work or training.
- TRAZER will automatically modulate game and even temporarily halt play to keep within the specified training range.
- For Calorie Burn activity, just select desired number of calories to burn. TRAZER will divide calories over a series of different games.
- Click “OK” to start activity.
- Score card appears at completion of each game. Press “Enter” on keyboard to play again or to continue series.
- At end of game or series, press “Enter” to view Performance Analysis and save data if selected. Click “OK” to return to game options screen to repeat activity or click “BACK” to return to Main Menu.
- Press “Esc” on keyboard at any time to stop activity which can be immediately started over.

Digital displays at top of screen show accumulated score, time remaining, difficulty level, calorie burn, and heart rate *when a compatible monitor is worn*. Real-time power meter is screen-left. Real-time CG height meter is screen-right.

Administration & Reports Functions

TRAZER Administration & Reports functions, except Top Ten, require LOG IN by authorized facility personnel.

Reports – To view all saved activity data for any specific client, LOG IN exactly as client is registered using their PIN. The TRAZER Administrator must keep a separate record of all client registrations with exact names used and client-selected PINs. An Excel spreadsheet template is provided for this purpose. Select any listed activity to view report. Click “Print” if system is connected to a printer meeting Cybex’s specification.

Top Ten – To see current Top Ten listings, click on each game.

Add Client – Clients benefit from registration because they will have access to Performance Analysis reports, will be able to have their activity data permanently saved for future Progress Reports, and will be able to use Cardio Control & Calorie Burn activities.

To register a client, tab and/or click to access fields to fill in first & last names and middle initial if any to reduce chance of duplicate names. Click to select Gender. Enter birth date with 4-digit year. Enter weight and height. The leg length measurement (from greater trochanter to floor) is optional for future analysis use. Enter actual resting heart rate. Ask client to provide an alphanumeric PIN of their choosing and fill in the PIN field. Click Save Client Data. TRAZER will assign a unique Member I.D. and calculate maximum projected heart rate based on the Karvonen formula. This will be used for Cardio Control activities.

Click “OK” to confirm all entries and send client record to disk.

NOTE: TRAZER Administrator must keep a separate record of all client registrations with exact names used and client-selected PINs.

Edit Client – To edit a client record, for example to change bodyweight, enter their full name and PIN exactly as originally registered. Then proceed as above making sure to click on Save Client Data and click “OK” to store new information.

Meter Setup – The full-scale values of the real-time power and CG height meters can be altered for special populations like kids or professional athletes. Default settings are scaled for typical population. Meters can also be clicked off if desired.

TRAZER Setup – After using Administrative LOG IN name and PIN provided by factory, you can change name and PIN if desired. Enter your facility name so that it will show and be printed on reports. You can set TRAZER to require LOG IN so that only registered clients will be able to access games and activities. You can also turn music off or on.

Copy/Backup Database – This function will copy all client and facility database information to a USB drive (data stick) inserted in the system's USB port. The current software overwrites all data on the USB drive with the latest TRAZER system data each time this function is used.

Customer Support – Contact information for Cybex sales and service. Call: 888.462.8239