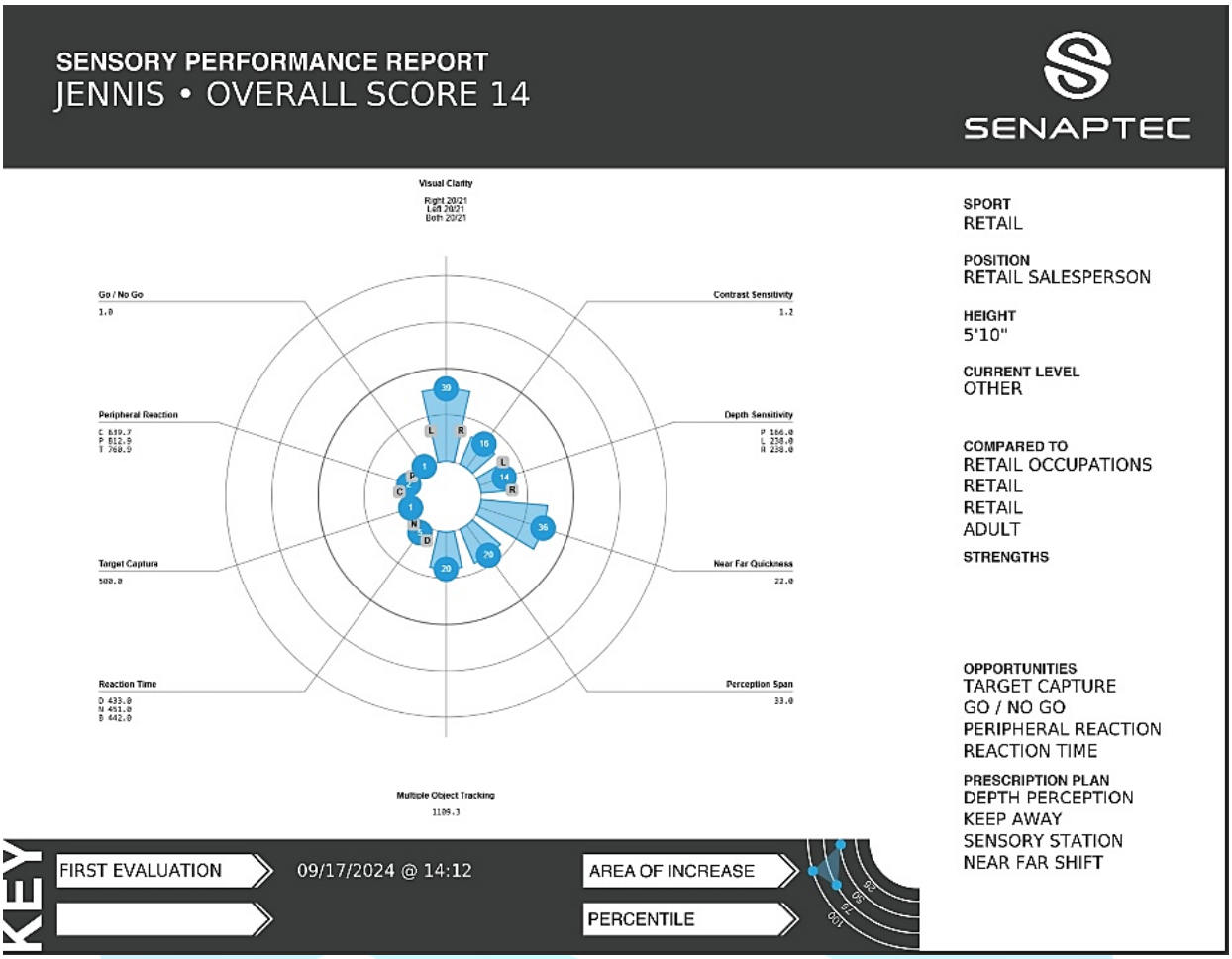
SENAPTEC SENSORY STATION

DATA KEY DESCRIPTION

GENERAL INTERPRETATION OF THE SENSORY EVALUATION RESULTS



Radial graph – the graph shows how you compare to your peers; larger the plot the better; the first third relates to how you take in information, the second third – how you process information; and the latter third – how you react to information

Percentiles – Scores above 50th percentile are considered strengths, while those under 50th percentile are areas of opportunities. For the tasks with multiple plots on a single axis (VC, DS, RT, PR) the graph is plotted to the area of the most opportunity (lowest percentile).

Strengths vs Opportunities – the graph will show the highest percentiles as strengths and lowest percentiles as opportunities; however, it is recommended to consider the visual and cognitive demands for creating a training program. Non-dynamic sports like golf do not require highly dynamic skills. Skills for highly dynamics sport like basketball may benefit by further strengthening the identified strength areas.

Raw values – clients may not understand the context of the raw values, but they can be used to show improvement with a change in the values. Remember that for some of these tasks, decreasing value is improvement while for others, increasing value is improvement.

VISUAL CLARITY

Scientific Explanation: Visual clarity is assessed using Landolt rings and recorded in units of logMAR (logarithm of the Minimum Angle of Resolution), which quantifies the smallest detail a person can discern. A lower logMAR value (e.g., -0.3) indicates superior visual acuity, while higher values (e.g., 1.0) indicates poorer acuity. It is more precise than the traditional Snellen chart as it accounts for spacing between letters and line length.
Laymen Explanation: Visual clarity measures how clearly you can see fine details. Imagine reading tiny letters on an eye (Snellen) chart; the clearer you see them, the better your visual clarity. In sports, clear vision helps a baseball player see the ball or a basketball player spot teammates for a quick pass.
Sports Example: For an athlete like a soccer player, having excellent visual clarity is crucial for seeing the ball clearly as it approaches at high speeds.
Range: Lowest value: -0.449 (20/7 Snellen equivalent) (excellent clarity), Highest value: 0.873 (20/150 Snellen equivalent) (poor clarity), 0 = 20/20 or 6m/6m (SS highest range is 20/40)
Nuggets: The Snellen eye chart was invented in 1862. Senaptec's measure of visual clarity uses staircasing of just noticeable differences to efficiently measure threshold, but an eye doctor's eye exam should override the results from the Sensory Station.

CONTRAST SENSITIVITY – LOG CS

Scientific Explanation: Contrast sensitivity, measured in logCS (logarithm of Contrast Sensitivity), evaluates the visual system's ability to distinguish objects from their background under varying levels of contrast or lighting conditions. This is critical in sports where lighting conditions change rapidly or uniforms blend with backgrounds. This task measures the smallest threshold that is able to be seen by the person being tested. A higher logCS value (e.g., 2.0) reflects better contrast detection, whereas a lower value (e.g., 0.5) indicates difficulty in discerning contrast. This test measures contrast sensitivity at 2 spatial frequencies – 6 cycles per degree (cpd) and 18 cpd.
Layman Explanation: Contrast sensitivity is how well you can see things that are not very different from their background, like a white baseball against a cloudy sky. A higher number means you can spot it easier!
Sports Example: A basketball player needs good contrast sensitivity to see the ball against the crowd and court, especially in dim lighting.
Range: Lowest value: 0.5 (poor contrast sensitivity), Highest value: 2.2 (excellent contrast sensitivity)
Nuggets: For those with "normal" vision should max out the test at 6 cycles per degree, therefore the sensory performance profile chart is based on the measurement from 18 cpd.

DEPTH SENSITIVITY – ARCSECONDS

Scientific Explanation: Depth sensitivity, measured in arcseconds, assesses binocular vision accuracy in perceiving depth and distance. This task measures the smallest threshold that a person can detect depth information. It's vital for judging the spatial relationships between objects, particularly in dynamic sports environments. Lower arcsecond values (e.g., 20 arcseconds) indicate superior depth perception, essential for judging distances.
Laymen Explanation: Depth sensitivity is your ability to judge how far away things are, critical for spatial awareness. Like catching a football—you need to know when it will reach you. Better depth sensitivity means you can judge distances more accurately.
Sports Example: A golfer uses depth sensitivity to accurately judge the distance to the hole, improving their putting accuracy.
Range: Lowest value: 20 arcseconds (great depth perception), Highest value: 235 arcseconds (poor depth perception)
Nuggets: There are many monocular cues for depth, but this binocular cue for depth, also called stereopsis, is the most important for perceiving depth of objects in motion.

NEAR FAR QUICKNESS – CYCLES

Scientific Explanation: Near far quickness, measured in cycles, assesses how rapidly the visual system can shift focus between near and distant objects. Higher cycle counts per minute indicate a faster and more flexible accommodative response, essential for athletes transitioning gaze between plays or targets. This task measures how many times you can make this shift in 30 seconds.
Layman Explanation: Near far quickness is how fast your eyes can switch between looking at something close and something far away. Like when a quarterback looks from the football to a receiver downfield and back again. More cycles mean quicker shifts!
Sports Example: A tennis player constantly shifts focus between the ball in play and their opponent’s position.
Range: Lowest value: 1 cycle per minute (extremely slow switching), Highest value: 60+ cycles per minute (rapid switching)

TARGET CAPTURE – MILLISECONDS

Scientific Explanation: This is a measure of dynamic visual acuity. Dynamic visual acuity can be defined in various ways, but this task measures the ability for the eyes to make a quick saccadic eye movement to capture details of a dynamic object. This task measures the shortest time it takes to locate and fixate on a quickly moving target and still detect the detail. Lower times indicate a more efficient visual system, which is essential in high-speed sports.
Layman Explanation: Target capture is how fast your eyes can locate and focus on something important, like a ball or an opponent. A shorter time means quicker focus!
Sports Example: A hockey player tracking a fast-moving puck and seeing the spin of the puck to be able to anticipate its path and behavior.
Range: Lowest value: 50 milliseconds (fastest), Highest value: 500 milliseconds (slowest)

PERCEPTION SPAN – SCORE

Scientific Explanation: Perception Span refers to the amount of visual information an individual can process in a brief glance. It is measured by seeing how many items a person can identify within a certain visual field in milliseconds.
Layman Explanation (8th Grade): Perception Span is how much and how quickly you can see and understand in one quick look. It is like quickly spotting a group of players on the field to decide your next move.
Sports Example: In soccer, players must process the positioning of teammates and opponents quickly to make split-second decisions.
Range: Lowest Value: 3-4 items in a couple of layers (poor span), Highest Value: 7-10 items in 3 layers (excellent span)

MULTIPLE OBJECT TRACKING - COMPOSITE SCORE

Scientific Explanation: This measures an individual's ability to visually track multiple moving objects simultaneously. This task requires **visual cognitive skills under sustained attention.** A higher score indicates better tracking ability, which is essential in sports requiring quick decision-making in dynamic environments. This task measures both the speed and quantity of information an individual can track.
Layman Explanation: Multiple object tracking is how well you can follow multiple moving things at once, like keeping track of several players in a game. A higher score means better tracking!
Sports Example: A hockey player needs this skill to track the puck while also keeping an eye on teammates and opponents.
Range: Lowest: 3 targets to track at slower speeds (poor tracking), Highest value: 6 to 8 targets to track at higher speeds (excellent tracking)

REACTION TIME – MILLISECONDS

Scientific Explanation: Reaction time, measured in milliseconds, determines how quickly an individual can perceive and respond to a stimulus. Faster reaction times are crucial in sports where split-second decisions are required. This task measures choice reaction time, which requires a cognitive choice to react with either the left or right hand.
Layman Explanation: Reaction time is how fast you can see something happen and then react. A lower number means a quicker reaction!
Sports Example: A sprinter reacts to the starting gun as quickly as possible to get a good start.
Range: Lowest value: 250 ms (very fast), Highest value: 500+ ms (slow)

PERIPHERAL REACTION – MILLISECONDS

Scientific Explanation: Peripheral Reaction measures the ability to detect a target in the periphery and make a quick and accurate hand-guided response to hit the target. This task measures the time it takes to hit all targets that appear in 80 locations that appear in pseudo-random order. **Layman Explanation (8th Grade)**: This is about how fast you can react to something happening on the side of your vision, like noticing a car coming from your peripheral vision while walking down the street.
Sports Example: In soccer, players must react quickly to defenders or the ball coming from the side of their visual field.
Range: Lowest Value: 250-300 milliseconds (excellent), Highest Value: 500+ milliseconds (slow)

GO NO GO – SCORE

Scientific Explanation: Go/No Go measures the ability to make rapid decisions based on visual cues, often involving inhibiting a response to certain stimuli (e.g. red dots) while reacting to others (e.g. blue dots). This test assesses reaction speed, response inhibition and attention. This task also provides time pressure as the targets do not wait for a response.
Layman Explanation (8th Grade): This is about how fast you need to make a quick decision to react to something happening in your peripheral vision, like noticing a car coming from your peripheral vision while walking down the street.
Sports Example: In basketball, Go/No Go is crucial for making split-second decisions, such as whether to take a shot or pass depending on the defender's position.
Range: Lowest Value: <50% (slower decision-making), Highest Value: 100% (excellent decision-making)