

PROGRESS MONITORING MANUAL



Shapes

Numbers

Letters







I. PREFACE

For this promise to be realized, The Psymark team worked to create the first-ever digital progress monitoring tools for occupational therapists, educators and those working with students'/clients' visual-motor development and letter & number formation.

After conducting research, talking with focus groups, and having numerous conversations with practitioners in the field, Psymark developed progress monitoring applications that are administered on an iPad. The applications are convenient, self-scoring and provide highly accurate results. The Psymark team is happy to present these applications to you now as our Shapes, Letters and Numbers Apps.



II. OVERVIEW

The Psymark apps represent an important step forward in monitoring the progress of functioning in the ability to recreate shapes, letters and numbers for children and adults. This is not a standardized assessment tool, so individual results cannot be compared with a wider group. However, with computerized scoring, Psymark eliminates the need for protractors, rulers, and “eyeballing” in the scoring of visual-motor responses.

Psymark offers three new tools to support progress monitoring in the areas of Shapes, Letters, and Numbers. Each of these digital progress monitoring assessments offers specific strengths to support occupational therapists and teachers to monitor their students and patients. All applications are administered on an iPad and give immediate feedback with easy-to-read results displayed on color-coded graphs. The results can be monitored over time and can be shared either on the iPad or in PDF format.

Application Strengths

Shapes	Letters	Numbers
Assesses the ability to draw shapes in a developmental sequence.	Assesses selected letters specifically chosen by occupational therapists.	Assesses the writing of the numbers 0 - 9
Self-scoring within minutes	Self-scoring within minutes	Self-scoring within minutes
Helps to identify strengths and needs	Helps to identify strengths and needs	Helps to identify strengths and needs
Results can be monitored over time	Informs interventions	Informs interventions
Displayed on a color-coded graph	Monitors Response to Intervention (RTI)	Monitors Response to Intervention (RTI)



III. RATIONALE

Our company's goal is to improve lives by building easy to use assessment software that instantly provides highly accurate results. The Psymark tools are technologically advanced and highly accurate, bringing visual-motor progress monitoring into the 21st Century through computerized scoring leading to greater precision in measurement and immediate data for the examiner/educator. Far exceeding the traditional pencil-and-paper or educator-made progress monitoring tools, Psymark's digital progress monitoring applications are developed to be quickly and easily administered and self-scored on an iPad.

The applications measure the dynamic performance of the individual on multiple features associated with visual-motor skills and letter and number formation. Some of the advantages of providing digital apps for progress monitoring in the areas of Shapes, Letters, and Numbers are the following:

- Quick & Easy to Administer
- Dynamic (captures performance in real time)
- Looks at Multiple Features (Sizing, Speed, Orientation, Variability)
- Self-Scoring & Objective
- Objective Data for IEP and Documentation (Baseline, Goals, Interventions)
- Provides charts and graphs
- Motivating
- Clean - iPad
- Light Weight



IV. PURPOSE AND USE

Psymark apps are digital progress monitoring tools for the iPad. The Shapes, Letters and Numbers apps objectively measure multiple areas of visual-motor / letter and number development. They are not standardized assessment tools so results cannot be compared with a wider group. They provide computer generated scores that describe the relationship between the individual's drawing and the stimulus image. They are quick to administer, self-scoring, and provide results within minutes.

In the schools, the apps give data that can provide immediate and detailed information on students' abilities to form shapes, letters, and numbers. Teachers may choose to use these apps to quickly screen and monitor their students' progress throughout the year.

Occupational therapists and special education teachers can use the apps to inform IEP baselines, goals, and objectives. They identify strengths and areas of need for targeted intervention, and objectively measure the effectiveness of interventions and treatments.

In the clinic, the Psymark Shapes, Letters and Numbers apps can benefit the occupational therapists in their choice to use the apps to quickly test and monitor their patients' progress in the functional skills of basic writing.

This chart shows how the Psymark Progress Monitoring Apps may be used:

Where	Who	What	How	Benefits
Schools	General Education Teachers	Psymark Letters	Screen students' ability to write letters and numbers.	Quick & easy to administer
		Psymark Numbers	Monitor students' progress throughout the school year.	Self-scoring Students respond positively to Psymark tests
Schools	Occupational Therapists /	Psymark Shapes	Inform IEP baselines, goals & objectives	Scores provided in multiple areas
	Special Education Teachers	Psymark Letters	Identify strengths and areas of need	Colorful graphs & charts can show student progress
		Psymark Numbers	Provide objective measurements on treatment	Students with



			interventions	disabilities respond well to Psymark tests
Clinics	Occupational Therapists	Psymark Shapes Psymark Letters Psymark Numbers	Inform therapeutic treatment baselines Monitor progress on treatment interventions	iPads easily transported & cleaned in a hospital / clinic Self-Scoring Immediate results can be shared with patients / family members



VI. SCORING DESCRIPTIONS

The Psymark Progress Monitoring Apps use two types of scoring: V-Scores and Dynamic Scores.

V-scores are not standardized like common standard scores, t-scores, or percentiles. Instead, v-scores are computer-generated scores that describe the relationship of the individual's drawing to the stimulus image. V-scores range from zero to one hundred, with zero indicating no computer-recognized relationship between the stimulus item and the drawing, and one hundred indicating an exact match between the stimulus item and the drawing.

Dynamic scores are the actual numbers, or raw scores that can be used to understand the examinee's ability to complete the progress monitoring assessment tools. Dynamic scores are composed of the Number of Lifts, Contact Time, Average Speed, Line Speed Consistency and Percent of Items Scores.

Scoring Descriptions
(Please Note That Scores Are **Not** Standardized)

Type	Meaning	Range
V-Score	Computer Generated Score that describes the relationship of Individual's drawing to stimulus image.	0 - 100 0 = No Computer Recognized Relationship 100 = Exact Match
Dynamic Score	Raw Scores	Varies



VII. GENERAL CONSIDERATIONS

Downloading the App

The Shapes, Letters, and Numbers Apps can all be downloaded through the Apple App Store. The Apps may be downloaded on one of the following iPad types:

- iPad (5th - 10th generations)
- iPad Air 2 (third - fifth generations)
- iPad Pro 9.7", 10.5", 12.9" (first - fifth generations)

Please note that the Shapes, Letters and Numbers Apps may not be downloaded on an iPad Mini.

Examiners

Examiners qualified to administer the Psymark Progress Monitoring Shapes, Letters, and Numbers tests include those individuals who have:

- A master's degree in psychology, education, occupational therapy, social work, counseling, or in a field closely related to the intended use of the assessment, and formal training in the ethical administration, scoring, and interpretation of clinical assessments.
- AND/ OR
- Certification by or full active membership in a professional organization (such as AOTA, AERA, ACA, AMA, CEC, AEA, NAEYC, NBCC) that requires training and experience in the relevant area of assessment. A degree or license to practice in the healthcare or allied healthcare field.
- AND / OR
- Formal, supervised occupational therapy, social work, counseling, and/or educational training specific to assessing children, or in infant and child development, and formal training in the ethical administration, scoring, and interpretation of clinical assessments.



Testing Time

While the time needed to test is individualized, based on numerous factors, most examinees are able to complete the test within 3 - 15 minutes.

Test Environment

The testing environment should be one in which the examinee is comfortable and able to concentrate on correctly completing the tasks.



VIII: ADMINISTRATION

Entering Demographic Data

Adding a New Examinee

There are two ways to add a new examinee:

1. From the Home Page New Examinee Tab and
 2. From the Existing Examinee List Screen “+” (accessed on vertical icon column)
- From the Home Page, select the New Examinee tab (at top of page). This will take you to the New Examinee Demographics Page. Complete all demographic information relevant to the examinee.

Required information is indicated by an “*”.


Complete information by tapping each section below:

- Name: This can be a nickname, symbol, or unique identifier
- Birthdate: Scroll to indicate month, day, and year of birthdate. Press “done”
- Gender: Scroll to indicate gender. Press “done”
- Ethnicity: Indicate ethnicity. Press “done”
- Handedness: Indicate handedness. Press “done”
- Indicate whether examinee has any known condition that could impact visual-motor ability by tapping the toggle button
- Special Education Services: If you know the examinee has received or currently receives special education services or supports, and you wish to record that information, tap the toggle button. From the dropdown menu indicate area(s) of special education eligibility by pressing on the appropriate box(es)
- Medical/Psychiatric Diagnoses: If the examinee has received any medical or psychiatric diagnosis, and you wish to record that information, tap the toggle button and indicate all areas by tapping on the box(es). If a diagnosis is not listed on the dropdown menu, tap the “Other” box. A popup will appear to add the diagnosis. You may add multiple diagnoses by tapping the “Other” box.
- Current Medications: If the examinee is currently prescribed medication and you wish to record that information, tap the toggle button and indicate medications. If a medication is not listed, tap the “Other” box. A popup will appear to add the medication. You may add multiple medications by tapping “Other” and adding each medication.
- Certification: To certify that you have consent to provide the demographic information and to administer the test, tap the toggle button.
- Press Save and all demographic information is complete.



Once examinee information is complete, a screen will appear with a “+.” Tap the “+” to begin the test


Finding an Existing Examinee

There are 2 ways to find an existing examinee, both displayed on the Home Page: The first is from the Existing Examinee Tab and the second is from the Icons Vertical Menu, Examinees Icon (on left side of screen). 

Please note that if you have added an Examinee on any of the Psymark Apps, (Shapes, Letters or Numbers), they will appear in the Existing Examinees lists for all Apps.

From Examinee Tab:

1. Choose the Existing Examinees Tab (at the top of the page).
2. Scroll down to find the examinee or use the search feature.
3. Hidden Button: If needed, toggle the hidden button to include any “hidden” examinees.
4. Once located, select the Examinee. This will take you to the Examinee Test History Screen.
5. From the Test History Screen, you will be able to view the results (and progress) of prior test administrations. You will also be able to administer another test by pressing the “+” button. Once the “+” is pressed, the test will begin.

From the Examinee Icon (listed on the left vertical menu) 

1. Choose Examinee icon.
2. Scroll down to find the Examinee or use the Search feature.
3. Hidden Button: toggle the Hidden Button to include any “Hidden” Examinees.
4. Once located, select the desired Examinee. This will take you to the Examinee Test History Screen for that particular examinee.
5. From the Test History Screen, you will be able to view the results and progress of prior test administrations. You will also be able to administer another test by pressing the “+” button. Once the “+” is pressed, the test will begin.

Editing Examinee Information

To Edit Information for an Existing Examinee:

1. From the Examinee List Screen and choose the Examinee for whom you wish to edit information. This will take you to the Examinee’s Test History Screen.
2. From the Examinee’s Test History screen, choose “Edit Demographics” located at the top of the page. This will take you to the Examinee Demographics Page.
3. Edit or update any information on this page.



4. When completed, press “save” at the bottom of the screen. The updates will be saved and you will return to the Examinee Test History Page.

Hiding An Examinee from the Examinee List Screen

There may be reasons that you no longer wish to view an Examinee on the Examinees List Screen. For example, an Examinee may no longer be active and you wish to “hide” the information from view.

You can “hide” examinee information so that it no longer displays on the Examinee List Screen by doing the following: From the Examinee List Screen, find the examinee whose information you would like to remove from visible display on the screen. You can this by scrolling down the list, or by searching for the Examinee using the Search function.

Once you have located the examinee, tap “View.” This will take you to the Examinee Test History Screen. From this screen, tap “Edit Demographics” located in the top right corner of the Examinee History Screen. This will take you to the Edit Examinee Screen.

At the top right corner of the Demographics Screen, press “Hide.” The examinee will no longer be visible on the Existing Examinee List Screen and will no longer appear using the normal search function.

Viewing Examinees Previously Hidden

You may wish to view Examinees who you have previously “hidden” from the Examinee List Screen so that they will appear in the normal search function.

To view all previously hidden Examinees, tap the “Include Hidden” toggle button. This will display all Examinees on the list who were previously hidden. You may now utilize the search function to search for a previously hidden Examinee.

By tapping the “Include Hidden” button a second time, you will again “hide” those Examinees who were previously hidden from the list

To “Unhide” an Examinee from Examinee List Screen

To “unhide” an Examinee who was previously “hidden” in order that the Examinee again appears on the Examinee List Screen and will appear using the normal search function, follow these steps: From the Examinee List Screen, tap “Include Hidden” toggle button and search for the examinee.

Once you view the examinee, tap “View”. This will take you to the Examinee’s Test History Screen.

Tap “Edit Demographics” located in the top right corner of the screen.

This will take you to the Edit Examinee Screen.


Tap “Unhide” located in the top right hand corner of the Edit Examinee Screen.

Your examinee will now be visible on the Existing Examinee List Screen.




Updating Your Examiner Profile & Changing Your PIN

In order to updating your Examiner Profile, follow these steps:

From the Home Screen select the  icon from the left column menu. This will take you to the Examiner Profile Update Screen. This page allows the examiner to update the following information: Name, Email, Password, Profession/Role, and Location of Professional or Clinical Practice (e.g., United States, California). It will also ask you to certify that you are authorized to administer the Psymark test. Input the information you wish to update and press “Update”. Your Examinee Profile will be updated.

Changing Your PIN

From the Home Screen select the  icon from the left column menu. This will take you to a list of viewing options. Select “Change PIN”. Enter your current PIN number. You will be asked to “Set Your Unlock PIN”. Enter your new desired PIN. You will be asked to “Repeat PIN”. Your PIN will now be changed to the new PIN number.

Preparing to Administer the Psymark Shapes, Letters, or Numbers Test

Preparing to Administer to a New Examinee:

After entering demographic information for a new Examinee on the New Examinee Screen, you will be able to administer the Psymark test. After “saving” demographic information, you will be taken to a blank screen (noting “no test history”) with a “+”. Tap the “+” to administer the Psymark test

Preparing to Administer the Psymark Shapes, Letters, or Numbers Test to an Existing Examinee:

From the Home Screen, select the Existing Examinee tab or Examinee icon from the left



column (see below) Select the desired Examinee and tap “View.” This will take you to the Examinee Test History screen.

Tap the “+” to administer the Psymark test. Once all items of the test have been administered, it will indicate “Test Complete.” Press “Save” to save the test.

Please note that once a new administration of the test has been saved. You will be required to enter your PIN number to view test result.

General Directions for Examiner

Administering the Psymark Progress Monitoring Apps

Note: An examinee can use either a finger or the stylus to complete the test. It is recommended that the test be administered on a non-slippery surface, or use a non-slippery iPad cover to prevent unintended movement of the iPad during test administration.

Examiner Instructions to Examinee:

When the first shape/ letter/ number appears, say something like this (or demonstrate as appropriate). You can model the first shape/ letter/ number if appropriate for examinee to understand that they need to copy in the space below):


“See this shape/ letter/ number (point). Please copy this same shape/ letter/ number using your finger (or stylus, if offered) as best you can below this line (point). Try to copy it exactly as you see it. This is not a timed test, so take your time. When you are finished, press the “next” button (or say “I will press next”) and begin to copy the next shape/ letter/ number.” You can repeat the instructions as needed.

A spoiled item or “re-do” While taking the test, If an item becomes “spoiled,” the examiner can tap the three dots at the top of the page to select one of two choices: “Clear Current Drawing” or “Stop Test.”

If “Clear Current Drawing” is selected, the drawing of the selected item will be erased and the examinee can re-do the single item and proceed with completion of the test. If “Stop Test” is selected, the entire test will be erased and the examinee will be required to retake the test from the beginning.






The Sync button () is located on the left column menu and is visible from all screens. On the Home Screen, under the Examinee tabs, you will view two displays related to Wifi status. The first display indicates the “online status” of the device. This will let you know whether or not the device is currently connected to Wifi. The second display will indicate when the test was last synced.

You may administer the test with or without WiFi. However, results can only be generated and displayed when the device is connected to Wifi and has been synced.

If you have administered the test (or multiple tests) without connection to Wifi, you will need



to connect to Wifi and tap the Sync button () in order that test results can be processed and displayed. Allow a few minutes for the results of all tests given to display.

Forced Syncing

Once an examinee completes a test and the “save” button is tapped, the test will lock and the administrator PIN will be requested to display the results. Once the PIN is entered, the Test History Screen will appear and the new test date will be displayed indicating that the test is processing. It will take a few minutes for processing to occur. If results are not displayed after 5 minutes, tap the Sync button to ensure that the test is synced to the Wifi. Test results will be displayed.

Viewing Test Results

Viewing Results from a Single Test

When you first administer a test, you will be able to view the results from the Test History Screen a few minutes following administration. (Note: if it takes more than five minutes for the scores to become visible, press the sync button). Scores will be displayed in the feature chart. Only those items that are scorable will be calculated algorithmically.

* Note: no scores will be reflected on the line graph (progress chart) until two or more tests have been administered. The Progress Monitoring Chart displays results when 2 or more tests have been given. Please note that the Progress Monitoring Chart is not to scale.

Viewing Results from Multiple Tests

You will be able to view the results of one particular test administration among multiple tests given from the examinee’s Test History Page. From the administration dates listed, choose which date you would like to view results and press on the date. The scores that



were achieved on that test date will be displayed.

IX. SCORING

V-Score Description

What are V-Scores?

Computer generated scores

Describe the relationship between the individual's drawing and a stimulus image

Range from 0 to 100

Can be compared for same individual over time

How to use V-Scores

Progress Monitoring

Initial descriptive assessment data

Screener

Baseline

Add on to gather more specific data on visual motor variables

Improvement over time with evidence based interventions

V-scores are not standardized like common standard scores, t-scores, or percentiles. Instead, v-scores are computer-generated scores that describe the relationship of the individual's drawing to the stimulus image. V-scores range from zero to one hundred, with zero indicating no computer-recognized relationship between the stimulus item and the drawing, and one hundred indicating an exact match between the stimulus item and the drawing.

V-scores may be interpreted like any criterion-related score, or like raw scores. V-scores allow for comparisons over time: if a student scores a 45 on a variable for an item at one time, and then 65 on that variable at a later time, the score on that variable has improved. Also, if one student scored a 60 and another student scored a 70, we can say that the second student's drawing was more similar to the sample on that variable.

An analogy for v-scores could be written driving test scores at the DMV. The test is not standardized, and scores are not scaled compared to other test-takers. The scores are meaningful, though, and a higher score means better performance. Increasing scores over time indicate increasing competence in knowledge of the rules of driving.



The Vismark tool may be used as a part of an assessment battery similar to a criterion-related instrument. It describes the performance of the child's drawing relative to a stimulus image at a point in time. This instrument also allows for evidence-based interventions targeting specific measured variables and reflects changes in performance over time.

Areas Scored with V-Scores

Rotation - Rotation is a measure of the rotation of the examinee's drawing as compared to the model.

Scale - Scale is a measure of the size of the examinee's drawing as compared to the model.

Line Precision - Line Precision is a measure of the lines within the expected range of the model.

Noise - Noise is a measure of the lines outside of the expected range.

Accuracy Composite - The Accuracy Composite is a score of overall performance accuracy derived from the measured features of Rotation, Scale, Line Precision and Noise.

Dynamic Scores

Dynamic scores are measured scores or counts that are ratio data, and are directly interpretable. Some are simply counts, like a count of the number of times the stylus or finger was lifted from the iPad. Others are timings, like the amount of time the finger or stylus was in contact with the iPad, or the speed of the lines drawn. Dynamic scores are direct measures of progress that can be interpreted without the need for standardization or scaling.

Areas Scored with Dynamic Scores

Number of Lifts - The Number of Lifts means the number of times that the examinee lifted their finger or stylus off of screen.

Contact Time - Contact Time is the time in that the examinee's finger or stylus was in contact with the screen.

Average Speed - Average Speed means the measure of the average speed of the lines drawn.

Line Speed Consistency - Line Speed Consistency is a measure of the overall consistency in the variation of the drawing speed. A score of zero (0) would indicate that there if no deviation in consistency.

Items to Note

**Percent of Items Scored - The Percent of Items Scored is a percentage of test items that Psymark was able to score. If this percentage is low, results may not be highly accurate.

Re-testing is recommended if this value is below 70.

***Unscorable - The entire test can be considered Unscorable If scores of negative one (-1) are received.



X. INTERPRETATION

Baseline

The Psymark Shapes, Letters, and Numbers Progress Monitoring Apps can be used as structured tools to examine different features of production. Clinical judgment should be used while interpreting the data and results from the Psymark Progress Monitoring Apps. A Baseline can be developed based on the strengths and weaknesses of the individual's scores.

Review Scores

The scores are specific to the individual who has taken the test. Scores cannot be compared to a broader group as the scores have not been standardized. This test should be used within a context of measures for any one individual.

Develop Goals

Examiners may develop goals based on the initial test scores. Goals may relate to the overall Accuracy score or any of the areas measured. These include Rotation, Scale, Line Precision, and Noise for the V-Scores or Number of Lifts, Contact Time, Average Speed or Line Speed Consistency for the Dynamic Scores. The Percent of Items Scored may also be taken into consideration in goal development.

Retest / Monitor Progress

It is recommended that Examiners retest after providing interventions based on needs. The number of retests given are dependent on the needs of the individual examinee. The graphic display at the top of the Test Results Table visually shows test results for V-Scores given on different dates. These can be used to monitor progress over time.

XI. RESEARCH



Research on the computerized assessment of visual-motor functioning has established the close similarity between pencil-and-paper assessments and assessment using a finger or stylus on a tablet (Chu & Krishnan, 2022, Fall et al, 2019).

Highlights of current research on computerized assessment of visual motor functioning include:

- Consistent findings that visual-motor input using a finger or stylus on a tablet is equivalent to traditional measures using pencil-and-paper (Fall, et al., 2019; Chu & Krishnan, 2022).
- Visual-motor deficits are associated with a wide variety of disorders, including learning disabilities, autism, Parkinson's disease, Alzheimer's disease, Traumatic Brain Injury, ADHD, and others (Fall, et al., 2019).
- Vastly more accurate scoring using our patented scoring software. Concerns regarding inter-scorer reliability with pencil-and-paper measures are eliminated with computer scoring.
- Potential for more complete visual-motor assessments to contribute to early diagnosis and interventions
- Cultural differences need to be considered in the assessment and interpretation of visual-motor functioning (Fall, et al., 2018).
- We are currently collecting data on the concurrent validity of the Psymark accuracy composite score with the Beery Developmental Test of Visual-Motor Integration standard score. An initial pilot study with a small sample indicated strong concurrent validity.
- Traditional visual-motor measures require multiple repeated measurements of each variable or element (such as a diagonal line or a bisected curve). Computerized scoring allows for assessment of multiple elements within each drawing, allowing for more measurements with fewer drawings, meaning fewer items required, and less assessment and scoring time (Fall, et al., 2018).
- Factor analysis has indicated visual-motor assessment can be characterized with a relatively small number of factors, as few as 3 or 4.

Fall, R. (2023). Modes of input for visual-motor assessment. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.

Fall, R., Silberman, K., Khudaverdyan, D., Helm-Stevens, R. (2023). Visual-motor assessment on the iPad: Comparing modes of input. Paper presented at the annual meeting of the National Association of School Psychologists, Denver, CO.



Chu, V., & Krishnan, K. (2022). Quantitative assessment of prewriting skills in children: The development and validation of a tablet assessment tool. *Perceptual and Motor Skills*, 129(3), 554–569. <https://doi.org/10.1177/00315125221087802>

Fall, R., Silberman, K., Khudaverdyan, D., Helm-Stevens, R. (2019). Using an iPad to measure visual-Motor functioning. Paper presented at the annual Conference and Expo of the American Occupational Therapy Association, Salt Lake City, UT.

Fall, R., Silberman, K., Khudaverdyan, D., Helm-Stevens, R. (2018). Visual Motor Assessment on the iPad.” Presentation at the Annual Meeting of the American Educational Research Association, New York, NY.

Fall, R., Silberman, K., Khudaverdyan, D., & Helm-Stevens, R. (2020). Contemporary research on visual-Motor assessment: What school psychologists need to know. Presentation at the Annual Convention of the National Association of School Psychologists, Baltimore, MD.

Fall, R., Silberman, K., Khudaverdyan, D., Helm-Stevens, R. (2018). Visual-Motor: Variations in Testing Modalities. Presentation at the Annual Convention of the National Association of School Psychologists, Orlando, FL.