Original Article

# Comparison of Humphrey 24-2 SITA Standard, SITA Fast, and SITA Faster Test Strategies in Patients with Glaucoma

Seher Köksaldı[1], Gül Arıkan[2], Ömer Faruk Dadaş[3], Üzeyir Günenç[4]

[1]Ağrı İbrahim Çeçen University Faculty of Medicine, Department of Ophthalmology, Ağrı, Türkiye
[2]Dokuz Eylül University Faculty of Medicine, Department of Ophthalmology, İzmir, Türkiye
[3]Ege University Faculty of Medicine, Department of Biostatistics and Medical Informatics, İzmir, Türkiye
[4]Private Practice, İzmir, Türkiye

## Abstract

**Objectives:** To compare 24-2 Swedish Interactive Thresholding Algorithm (SITA) Standard (SS), SITA Fast (SF), and SITA Faster (SFR) tests performed with Humphrey Field Analyzer (HFA3 Model 840, Zeiss) in patients with glaucomatous visual field (VF) defect.

**Materials and Methods:** Total of 72 eyes of 72 patients with glaucomatous VF defects were included in the study. Test duration, mean deviation (MD), pattern standard deviation (PSD), visual field index (VFI), and the width and depth of glaucomatous VF defect were compared among the three tests.

**Results:** The most common diagnoses were primary open-angle glaucoma in 45 eyes (62.5%) and pseudoexfoliation glaucoma in 10 eyes (13.9%). Mean test durations for the SS, SF, and SFR tests were 420.38±53.87 s, 275.94±45.52 s, and 191.89±35.48 s, respectively. Test durations were found to be statistically significantly different in all three tests ($p<0.001$). There was no statistically significant difference between the three tests in terms of MD, width, or depth of glaucomatous VF defect ($p=0.211$, $p=0.762$, and $p=0.701$, respectively). There was a statistically significant difference among the three tests in terms of VFI and PSD values ($p=0.008$ and $p<0.001$, respectively).

**Conclusion:** Test duration was found to be shorter in the SFR test when compared to SS and SF tests. However, all three tests were similar in terms of the width and depth of the glaucomatous VF defect.

**Keywords:** Glaucoma, visual field, SITA Fast, SITA Faster, SITA Standard

**Cite this article as:** Köksaldı S, Arıkan G, Dadaş ÖF, Günenç Ü. Comparison of Humphrey 24-2 SITA Standard, SITA Fast, and SITA Faster Test Strategies in Patients with Glaucoma.
Turk J Ophthalmol. 2025;55:67-73

**The study was presented at the 57th National Congress of the Turkish Ophthalmology Association, Antalya, Türkiye, November 2023 (Oral presentation, Turkish) and the 16th European Glaucoma Society Congress, June 1-4, 2024, Dublin, Ireland (Poster presentation, English).**

**Address for Correspondence:** Seher Köksaldı, Ağrı İbrahim Çeçen University Faculty of Medicine, Department of Ophthalmology, Ağrı, Türkiye
**E-mail:** seherkoksaldi@gmail.com **ORCID-ID:** orcid.org/0000-0001-8235-4088
**Received:** 19.10.2024 **Accepted:** 06.01.2025

**DOI: 10.4274/tjo.galenos.2025.85666**

## Introduction

Automated perimetry was developed in the 1970s and has been used widely in glaucoma diagnosis and follow-up since then.[1] Suprathreshold tests were initially used, but full-threshold (FT) tests were introduced into clinical practice in the 1980s. In those years, the administration of threshold tests was notably time-consuming and required an average duration of 12-20 minutes (min) per eye.[2] The FT test strategy has now been replaced by the Swedish Interactive Thresholding Algorithm (SITA) tests, which are faster than FT tests.[3] Currently, SITA tests are the most popular and widely used test algorithms for computerized perimetry in clinical practice. There are currently three versions of the SITA test strategy. The first two are the SITA Standard (SS) and the less sensitive but faster alternative, SITA Fast (SF).[4,5] Although the SF can be performed in less than 5 min per eye, fatigue and loss of concentration are among the difficulties during the test.[5]

The SITA Faster (SFR) strategy was recently developed to further reduce the test duration.[2] The SFR test was created by making 7 modifications to the SF test. Firstly, in the SFR test, the test sequence begins at the age-corrected normal threshold level instead of 25 decibel (dB) stimuli at each of the 4 primary test points, leading to a reduction in the number of stimulus presentations in most eyes. Secondly, SFR requires only 1 staircase test reversal instead of 2 for primary test points. Moreover, SS and SF use normal threshold values obtained in FT tests, whereas SFR uses the distribution of SF normal values. Furthermore,

unlike older tests, perimetrically blind spots do not undergo a second confirmation and false negative catch trials are no longer performed in the SFR test. Additionally, checking fixation by projecting stimuli into the blind spot has been replaced by the use of the Humphrey gaze tracker. Lastly, the additional 300-ms delay following unseen stimuli after the response time window, before introducing a new stimulus, has been removed in SFR.[2] A recent study conducted by Heijl et al.[2] showed that SFR and SF yielded nearly identical results, with the average test duration for SFR being 30.4% shorter than for SF.

The present study aimed to compare test durations, global indices, and width and depth of glaucomatous visual field (VF) defects in the 24/2 SS, SF, and SFR tests of the Humphrey Field Analyzer (HFA, model 840, Carl Zeiss, Meditec, Dublin, CA) in patients with glaucomatous VF defects.

## Materials and Methods

Adult glaucoma patients followed in the Glaucoma Unit of Dokuz Eylül University Department of Ophthalmology were included. Written informed consent was obtained from each patient following comprehensive information. Approval for the study was obtained from the Non-Interventional Research Ethics Committee of Dokuz Eylül University (decision no: 2020/29-35, date: 07/12/2020).

The prospective, cross-sectional study was performed between December 2020 and January 2023 with a total of 72 eyes of 72 glaucoma patients who had VF defect (the presence of a cluster of at least 3 points depressed below 5% with at least one of them below 1% on the pattern deviation map) and had previous experience with performing standard automated perimetry. All patients underwent a comprehensive ophthalmological examination.

Patients with glaucoma were diagnosed according to the latest glaucoma guidelines.[6,7] All patients exhibited at least one glaucomatous optic disc head change (e.g., increase in cupping, increase in cup/disc ratio, an inter-eye asymmetry of the cup/disc ratio >0.2, changes in the lamina cribrosa, peripapillary atrophy, focal or diffuse loss of neuroretinal rim, notching, retinal nerve fiber layer defects attributable to glaucoma, presence of splinter hemorrhage). The inclusion criteria required a best corrected visual acuity of 20/40 or better, with a distance refractive error within ±5 diopters (D) mean sphere and ±3 D cylinder. Patients with neurological or ocular diseases that could affect VF testing, a history of systemic medication use that could affect VF, inadequate compliance with the VF test, a history of ocular trauma, or retinal pathology were not included in the study. If both eyes of a patient were eligible, one eye was randomly selected and included in the study.

VF tests were performed prospectively with the HFA using the central 24-2 program. A total of three tests (SS, SF, SFR) were performed on the same day, with the same device and in the same order (SS, SF, and SFR, respectively). A break of at least 30 min was taken between the tests to minimize the effect of fatigue. All VF tests were performed by highly skilled operators, and all patients had prior experience with perimetric testing. Test results were considered reliable if false positive and false negative rates were below 33% and fixation loss was under 20%. Only reliable tests were included in the study.

The study aimed to compare three SITA test strategies in terms of test duration, mean deviation (MD), pattern standard deviation (PSD), visual field index (VFI), and the width and depth of the glaucomatous VF defects. One half of the VF (superior or inferior) was taken into consideration when calculating the width and depth of the glaucomatous VF defect. If both halves of the VF were eligible for the study, one was randomly selected and included in the study.

The width of the glaucomatous VF defect was calculated by counting the points on the pattern deviation map in a single hemifield (superior or inferior) that made a cluster of 3 or more non-edge points depressed below 5% with at least one of them below 1%. The points at the edge of the 24-2 VF test (excluding those just below and above the extreme nasal region of the horizontal meridian) were not included in the calculation due to high variability (Figure 1). The depth of the glaucomatous VF defect was found by summing the dB threshold values of the points marked while determining the width.

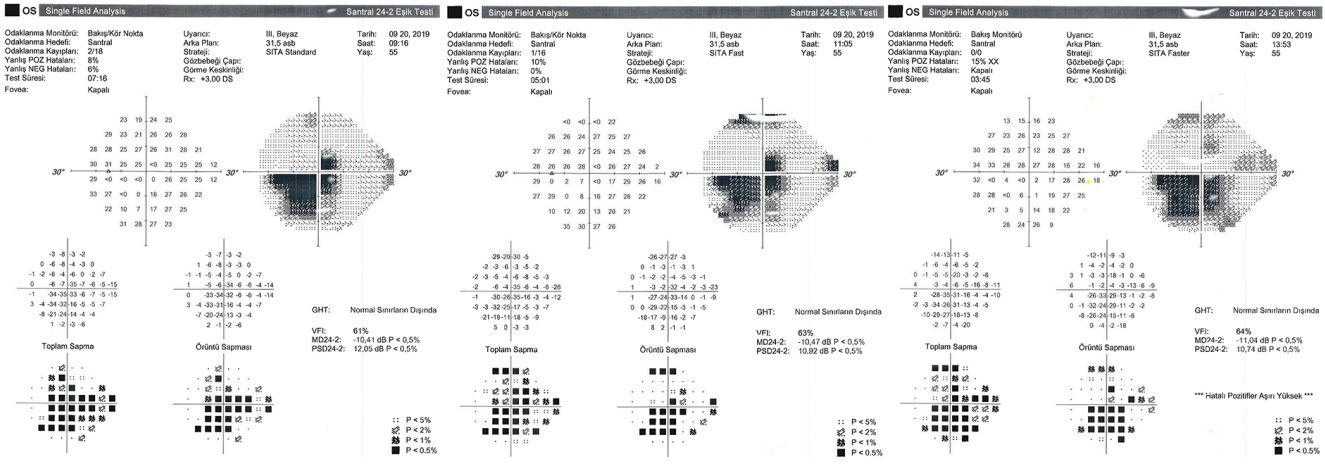


**Figure 1.** The SITA Standard (left), SITA Fast (middle), and SITA Faster (right) visual field analyses of the left eye of a 55-year-old male patient
*SITA: Swedish Interactive Thresholding Algorithm*

### Statistical Analysis

Descriptive statistics of the data were given as mean, standard deviation, minimum, maximum, frequency, and percentage values. The normality assumption for quantitative data was assessed using the Shapiro-Wilk test. Differences between tests (SS, SF, and SFR) in terms of the study variables (test duration, MD, PSD, VFI, and the width and depth of the glaucomatous VF defect) were identified using repeated measures ANOVA method (Bonferroni corrected t-test for pairwise comparisons) for variables that met the assumption of normal distribution, and Friedman method (Dunn test for pairwise comparisons) for variables that were not normally distributed. Spearman's correlation analysis between the three tests was conducted for MD, PSD, VFI, and defect width and depth. The correlation strength was categorized based on the following ranges: a correlation coefficient (r) value from 0.00 to 0.25 indicated very low correlation, 0.26 to 0.49 indicated low correlation, 0.50 to 0.69 indicated moderate correlation, 0.70 to 0.89 indicated high correlation, and 0.90 to 1.00 indicated very high correlation. Bland-Altman plots were utilized to evaluate the limits of agreement among the SS, SF, and SFR strategies for the VF parameters.[8]

Statistical analysis was performed using the IBM SPSS Statistics 25.0 software package (IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.) and MedCalc Statistical Software version 14.8.1 (MedCalc Software bv, Ostend, Belgium). A p value <0.05 was considered statistically significant.

**Table 1. The glaucoma diagnoses of the patients (n=72)**

| Diagnosis | n (%) |
|---|---|
| Primary open-angle glaucoma | 45 (62.5) |
| Pseudoexfoliation glaucoma | 10 (13.9) |
| Normal tension glaucoma | 7 (9.7) |
| Chronic angle-closure glaucoma | 6 (8.3) |
| Pigmentary glaucoma | 2 (2.8) |
| Uveitic glaucoma | 1 (1.4) |
| Juvenile glaucoma | 1 (1.4) |

## Results

A total of 72 eyes of 72 adult patients were enrolled in the study. The male to female ratio was 1:1 and the mean age was 66.01±10.22 years (range, 31-88 years). Most of the cases (62.5%) had primary open-angle glaucoma. The diagnoses of the patients included in the study are shown in Table 1.

The mean test durations, MD, PSD, and VFI values, and mean VF defect width and depth for the SS, SF, and SFR tests are presented in Table 2. Pairwise comparisons of the groups revealed that test duration differed statistically between all groups (Bonferroni-corrected t-test, p<0.001). The mean test duration for the SFR test was 54.3% shorter than for the SS test and 30.4% shorter than for the SF test.

There was no statistically significant difference in MD values among the three groups (Friedman test, p=0.211). In pairwise comparisons of PSD, it was noted that the mean PSD value was statistically significantly higher in the SS group compared to both the SF and SFR groups (Bonferroni corrected t-test, p<0.001 and p=0.004, respectively). When the groups were compared pairwise in terms of VFI values, only the SF group had statistically significantly higher VFI values than the SS group (Dunn's test, p=0.012). Additionally, there were no statistically significant differences among the three groups in the mean width (Friedman test, p=0.762) or mean depth (Friedman test, p=0.701) of the glaucomatous VF defects (Table 2).

In correlation analyses between the tests, there was statistically significant highly positive correlation for MD, PSD, VFI, and defect depth, and moderately positive correlation for defect width between SS and SF, SFR and SS, and SFR and SF (Table 3).

Bland-Altman plots of MD, PSD, and VFI are illustrated in Figure 2. There was a mean difference of -0.65±2.50 dB (SS-SF), -0.75±3.30 dB (SS-SFR), and -0.11±2.39 dB (SF-SFR) for

**Table 2. Comparison of test durations, global indices, and width and depth of the visual field defects in different test strategies**

| | SS | SF | SFR | p value |
|---|---|---|---|---|
| | Mean ± SD (min-max) | Mean ± SD (min-max) | Mean ± SD (min-max) | |
| **Test duration (s)** | 420.38±53.87 (303-568) | 275.94±45.52 (190-396) | 191.89±35.48 (142-273) | <0.001* |
| **MD (dB)** | -11.32±4.21 (-19.07 - -2.97) | -10.68±4.55 (-19.79 - -1.98) | -10.57±4.59 (-18.47 - -1.61) | 0.211 |
| **PSD (dB)** | 9.82±2.91 (2.81-15.34) | 8.83±3.07 (2.26-15.21) | 8.89±3.30 (3.13-15.36) | <0.001* |
| **VFI (%)** | 70.10±12.59 (45-95) | 73.22±13.90 (42-96) | 73.19±13.64 (45-94) | 0.008* |
| **Width** | 12.36±3.38 (6-17) | 11.57±3.9 (2-18) | 11.89±3.93 (3-18) | 0.762 |
| **Depth (dB)** | 230.72±109.46 (42-457) | 204.94±118.63 (16-462) | 217.81±124.21 (26-486) | 0.701 |

*Statistically significant difference (p<0.05). SS: SITA Standard, SF: SITA Fast, SFR: SITA Faster, SD: Standard deviation, Min: Minimum, Max: Maximum, MD: Mean deviation, dB: Decibel, PSD: Pattern standard deviation, VFI: Visual field index

MD; a mean difference of 1.00±1.70 dB (SS-SF), 0.92±2.36 dB (SS-SFR), and -0.07±1.76 dB (SF-SFR) for PSD; and a mean difference of -3.13±7.94% (SS-SF), -3.10±10.07% (SS-SFR), and 0.03±7.70% (SF-SFR) for VFI. For MD, the analysis suggested good agreement between SS and SFR and between SF and SFR. There was also good agreement between SF and SFR for PSD and VFI (Table 4).

Figure 3 illustrates Bland-Altman plots of the width and the depth of the VF defects. There was a mean difference of 0.80±3.11 (SS-SF), 0.47±3.32 (SS-SFR), and -0.32±3.13 (SF-SFR) for the width and a mean difference of 25.80±73.28 dB (SS-SF), 12.92±82.68 dB (SS-SFR), and -12.88±60.93 dB (SF-SFR) for the depth of the VF defects. The analysis suggested good agreement between SS and SFR and between SF and SFR for the width and depth of the VF defects (Table 4).

**Table 3. Spearman's correlation analysis of MD, PSD, VFI, and visual field defect width and depth between the SS, SF, and SFR tests**

| | | MD | PSD | VFI | Width | Depth |
|---|---|---|---|---|---|---|
| **SF vs. SS** | **r**<br>**p** | 0.843<br><0.001 | 0.831<br><0.001 | 0.834<br><0.001 | 0.634<br><0.001 | 0.791<br><0.001 |
| **SFR vs. SS** | **r**<br>**p** | 0.719<br><0.001 | 0.738<br><0.001 | 0.724<br><0.001 | 0.603<br><0.001 | 0.749<br><0.001 |
| **SFR vs. SF** | **r**<br>**p** | 0.868<br><0.001 | 0.881<br><0.001 | 0.870<br><0.001 | 0.692<br><0.001 | 0.869<br><0.001 |

SS: SITA Standard, SF: SITA Fast, SFR: SITA Faster, SD: Standard deviation, Min: Minimum, Max: Maximum, MD: Mean deviation, PSD: Pattern standard deviation, VFI: Visual field index

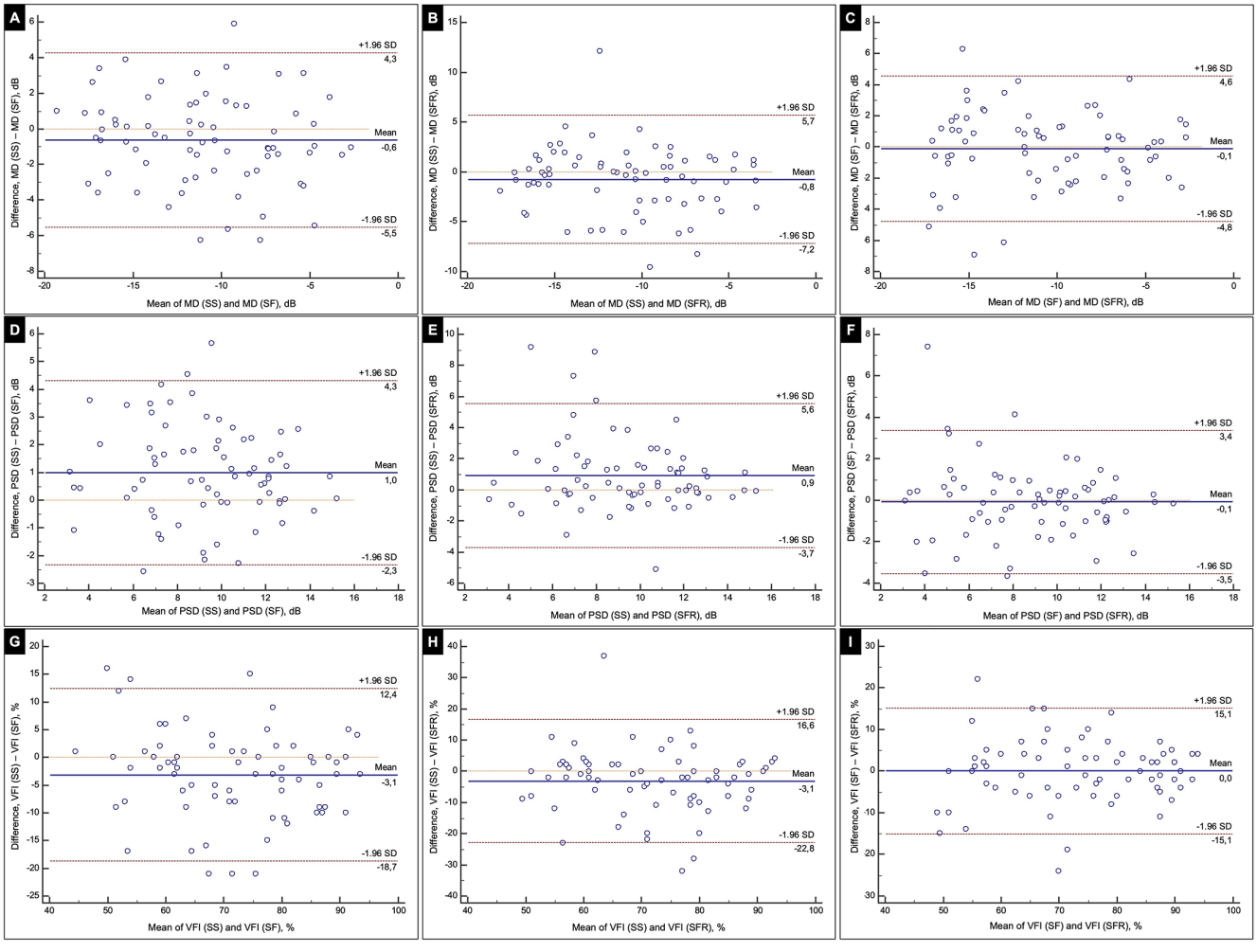


**Figure 2.** Bland-Altman plots for MD, PSD, and VFI. Good agreement is observed between SS and SFR (B) and between SF and SFR (C) for MD, between SF and SFR for PSD (F), and between SF and SFR for VFI (I)

*MD: Mean deviation, PSD: Pattern standard deviation, VFI: Visual field index, SS: SITA Standard, SF: SITA Fast, SFR: SITA Faster*

**Table 4. The p values from the Bland-Altman analysis of agreement of MD, PSD, VFI, and visual field defect width and depth between the SS, SF, and SFR tests**

| | MD | PSD | VFI | Width | Depth |
|---|---|---|---|---|---|
| **SS-SF** | 0.031 | <0.001 | 0.001 | 0.034 | 0.004 |
| **SS-SFR** | 0.056* | 0.001 | 0.011 | 0.232* | 0.189* |
| **SF-SFR** | 0.705* | 0.741* | 0.976* | 0.389* | 0.077* |

MD: Mean deviation, PSD: Pattern standard deviation, VFI: Visual field index, SS: SITA Standard, SF: SITA Fast, SFR: SITA Faster

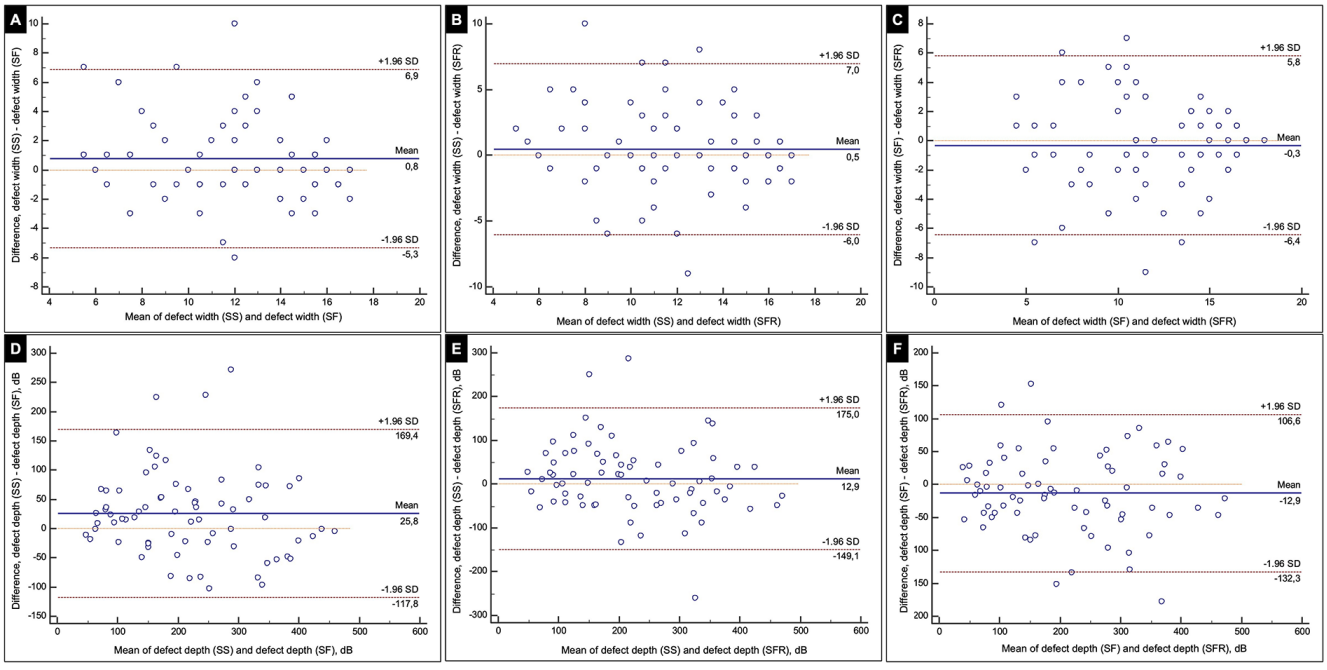


**Figure 3.** Bland-Altman plots for the width and depth of the VF defects. Good agreement is observed between SS and SFR (B) and between SF and SFR (C) for the width of the VF defects and between SS and SFR (E) and between SF and SFR (F) for the depth of the VF defects

*VF: Visual field, SS: SITA Standard, SF: SITA Fast, SFR: SITA Faster*

## Discussion

In the present study, we compared a recently developed SITA program called SFR with the two conventional SITA test strategies commonly used in clinical practice, SF and SS. According to the results of this study, the mean test duration in the SFR test was significantly shorter than that in the SS and SF tests. The shortening of the test duration allows patients to perform a more reliable VF test without fatigue and also allows more patients to be tested on the same day. When global indices were analyzed, MD values were found to be similar in all three tests in our study. When the tests were compared in terms of PSD values, it was noted that the mean PSD value was statistically significantly higher (worse) in the SS test than both the SF and SFR tests, but the SF and SFR tests were similar. VFI values in the SFR test were similar to those in the SS and SF tests. When VF defects were compared in terms of width and depth, all three tests were found to be similar.

In their prospective multicenter study, Heijl et al.[2] compared SS, SF, and SFR tests in 126 eyes of 126 patients with glaucoma and glaucoma suspects. The mean test duration was 369.5±64.5 s, 247.0±56.7 s, and 171.9±45.3 s, respectively (p<0.001). It was found that the test duration in the SFR test was 30.4% shorter than the SF test and 53.5% shorter than the SS test. MD values were similar in all 3 tests. Median MD values were -6.44 dB, -6.11 dB, and -6.42 dB in the SS, SF, and SFR tests, respectively. The median VFI values were 83.3%, 84.3%, and 84.3% in the SS, SF, and SFR tests, respectively. While the VFI value in the SS test was 1.2% lower than in the other two tests, it was similar in the SF and SFR tests. Similarly, the number of significantly depressed points in the VF was slightly higher in the SS test than in the SF and SFR tests. They pointed out that the SF and SFR tests yielded very similar results and that the SFR test significantly reduced time compared to other SITA tests.[2]

Thulasidas and Patyal[9] compared the SFR, SF, and SS testing strategies in a study of 70 eyes of 70 patients with glaucoma or glaucoma suspects and observed that the test duration for SFR was 36.1% and 60.7% shorter than for SF and SS, respectively (p<0.001). They also reported that the MD value

was statistically significantly lower in the SFR test than in the SF and SS tests (p<0.001). However, they found no statistically significant differences in mean PSD and VFI values among the three test strategies. The number of points depressed at p<0.5% was lower in the SFR test than in both SF and SS tests (p=0.002). The authors noted that while the SFR test provided an advantage in terms of test duration, it might pose challenges in diagnosing early glaucoma cases. They also highlighted that the test algorithms are quite different from each other and cannot be used interchangeably in the same patient on different test sessions.[9]

In another study, Phu et al.[10] compared SFR and SS tests in 364 eyes of 364 patients (77 normal subjects, 178 glaucoma suspects, and 109 patients with glaucoma). In their study, SFR had a greater rate of unreliable test results compared to SS (29.3% and 7.7%, respectively, p<0.001). They also reported that the SFR test was shorter than the SS test (the median difference was 182 s). The authors emphasized that the sensitivity of the SFR test was higher than the SS test in eyes with glaucoma and that this is especially evident in eyes with greater VF loss. They concluded that these tests cannot be used interchangeably in eyes with severe VF loss.[10]

Previous studies comparing the SFR test with the SS and SF tests also showed that test durations were significantly shortened in SFR but the tests displayed similar characteristics.[2,5,9,11] Lavanya et al.[5] compared the global indices and test durations of the SS and SFR tests prospectively in 97 eyes of 97 subjects (63 glaucoma, 26 glaucoma suspects, and 8 normal eyes). The median test durations were 374 s for the SS test and 169 s for the SFR test (55% shorter, p<0.001). The authors reported similar median MD values (-7.3 dB vs. -7.6 dB, p=0.73) and median VFI values (88% vs. 88%, p=0.32) with both test strategies, while the median PSD value was higher (worse) in the SS test strategy (4.8 dB vs. 4.7 dB, p=0.01). They also examined and compared the overall average and the sector-wise threshold sensitivities in both tests. They found that the average general threshold sensitivity was similar in both tests, but when evaluated sectorally, the nasal threshold sensitivity was lower in the SS test than in the SFR test. They stated that the lower threshold sensitivity in the SS test may be related to the longer test duration, but they emphasized that the difference in sensitivity between these two tests is not clinically significant.[5] They also determined the test-retest variability of the VF parameters was low in the SFR strategy. The authors concluded that VF parameters measured by SFR showed good agreement with values obtained with the SS strategy, and SFR could be considered for glaucoma diagnosis and monitoring.

Qian et al.[12] compared SFR and SF tests in 93 eyes of 93 cases (60 glaucoma patients, 33 healthy subjects). The mean test duration was found to be 246.0±60.9 s and 156.3±46.3 s in SF and SFR tests, respectively. The test duration of SFR was found to be 36.5% shorter than the SF test. MD, VFI values, and numbers of depressed points at p<5%, <2%, <1%, and <0.5% in probability plots were found to be similar in both tests.[12]

Mendieta et al.[11] compared the SS and SFR tests by performing them consecutively in random order on one eye of each patient. They found that the test duration was significantly shorter (56%) in the SFR test. Additionally, the tests were found to be quite similar in terms of MD and VFI values and the number of points in the VF showing significant depression. The authors stated that the SFR test could replace the SS test in the diagnosis of glaucoma.[11] Rodríguez-Agirretxe et al.[13] compared SFR and SS tests in 118 eyes (72 glaucoma and 46 normal eyes) and found the test duration to be significantly shorter in the SFR test. While MD and VFI values were similar in mild and moderate glaucoma, they differed between the tests in eyes with severe glaucoma.[13] Pham et al.[14] retrospectively evaluated 766 eyes of 421 patients with glaucoma or suspect glaucoma who had been previously followed up with the SS test and subsequently underwent the SFR test. While MD values from SS and SFR tests were similar in patients with mild glaucoma, the SFR yielded better MD values in eyes with moderate and advanced glaucoma. The authors stated that progression may be missed when switching from the SS test to the SF test in moderate to advanced glaucoma cases.[14]

Although the results of the present study demonstrated positive correlation between SFR and both SS and SF tests in terms of MD, PSD, VFI, and the width and depth of the VF defects, Bland-Altman analysis revealed poor agreement between SS and SF or between SS and SFR in terms of PSD and VFI. This indicates that although the SFR test may be useful for evaluating glaucoma patients, it cannot precisely replace the SS and SF tests. However, irrespective of the diagnosis, the SFR test can serve as a cost-effective alternative for screening and assessing progression of glaucoma in busy clinical settings with time constraints.

### Study Limitations

The present study has several limitations. Firstly, the test strategies were performed in the same order in all patients instead of in random order. However, to mitigate the potential systematic fatigue effect on the data, tests were conducted after waiting at least 30 minutes. In the literature, a 5-minute interval between tests was utilized in a study to mitigate the effects of fatigue, and it was determined that this duration was adequate.[13] Additionally, patients were not classified based on the severity of glaucoma in this study. Further studies involving a larger group of subjects with varying degrees of glaucoma are needed to conclusively determine whether SFR could completely replace SS or SF.

## Conclusion

In the present study, the SFR test was found to be significantly shorter than the SS and SF tests. There was no statistically significant difference between the SS, SF, and SFR tests in terms of the depth and width of the glaucomatous VF defects. Therefore, the SFR test may be an effective and reliable alternative to the SS and SF tests in the evaluation of VF in glaucoma patients. However, further studies with a larger number of patients are needed to determine whether the SFR test can be used safely instead of other tests to take advantage of its time-saving characteristics.

### Ethics

**Ethics Committee Approval:** Approval for the study was obtained from the Non-Interventional Research Ethics Committee of Dokuz Eylül University (decision no: 2020/29-35, date: 07/12/2020).

**Informed Consent:** Informed consent was obtained from the patients.

This article is derived from the first author's (Seher Köksaldı) graduate thesis entitled "Comparison of Humphrey 24-2 SITA Standard, SITA Fast, and SITA Faster Test Strategies in Patients with Glaucoma", supervised by Prof. Gül Arıkan (Graduate Thesis, Dokuz Eylül University, İzmir, Türkiye, 2023).

### Declarations

**Authorship Contributions**

Concept: G.A., Ü.G., Design: G.A., Ü.G., Data Collection or Processing: S.K., G.A., Ö.F.D., Analysis or Interpretation: Ö.F.D., G.A., Literature Search: S.K., Writing: S.K., G.A.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** The authors declared that this study received no financial support.

## References

1. Nouri-Mahdavi K. Selecting visual field tests and assessing visual field deterioration in glaucoma. Can J Ophthalmol. 2014;49:497-505.
2. Heijl A, Patella VM, Chong LX, Iwase A, Leung CK, Tuulonen A, Lee GC, Callan T, Bengtsson B. A new SITA perimetric threshold testing algorithm: construction and a multicenter clinical study. Am J Ophthalmol. 2019;198:154-165.
3. Bengtsson B, Olsson J, Heijl A, Rootzén H. A new generation of algorithms for computerized threshold perimetry, SITA. Acta Ophthalmol Scand. 1997;75:368-375.
4. Bengtsson B, Heijl A. SITA Fast, a new rapid perimetric threshold test. Description of methods and evaluation in patients with manifest and suspect glaucoma. Acta Ophthalmol Scand. 1998;76:431-437.
5. Lavanya R, Riyazuddin M, Dasari S, Puttaiah NK, Venugopal JP, Pradhan ZS, Devi S, Sreenivasaiah S, Ganeshrao SB, Rao HL. A comparison of the visual field parameters of SITA faster and SITA standard strategies in glaucoma. J Glaucoma. 2020;29:783-788.
6. Casson RJ, Chidlow G, Wood JP, Crowston JG, Goldberg I. Definition of glaucoma: clinical and experimental concepts. Clin Exp Ophthalmol. 2012;40:341-349.
7. Prum BE Jr, Rosenberg LF, Gedde SJ, Mansberger SL, Stein JD, Moroi SE, Herndon LW Jr, Lim MC, Williams RD. Primary Open-Angle Glaucoma Preferred Practice Pattern(®) Guidelines. Ophthalmology. 2016;123:41-111.
8. Bland JM, Altman DG. Measuring agreement in method comparison studies. Stat Methods Med Res. 1999;8:135-160.
9. Thulasidas M, Patyal S. Comparison of 24-2 faster, fast, and standard programs of swedish interactive threshold algorithm of humphrey field analyzer for perimetry in patients with manifest and suspect glaucoma. J Glaucoma. 2020;29:1070-1076.
10. Phu J, Khuu SK, Agar A, Kalloniatis M. Clinical evaluation of Swedish interactive thresholding algorithm-faster compared with swedish interactive thresholding algorithm-standard in normal subjects, glaucoma suspects, and patients with glaucoma. Am J Ophthalmol. 2019;208:251-264.
11. Mendieta N, Suárez J, Blasco C, Muñiz R, Pueyo C. A comparative study between Swedish interactive thresholding algorithm faster and Swedish interactive thresholding algorithm standard in glaucoma patients. J Curr Ophthalmol. 2021;33:247-252.
12. Qian CX, Chen Q, Cun Q, Tao YJ, Yang WY, Yang Y, Hu ZY, Zhu YT, Zhong H. Comparison of the SITA faster-a new visual field strategy with SITA fast strategy. Int J Ophthalmol. 2021;14:1185-1191.
13. Rodríguez-Agirretxe I, Loizate E, Astorkiza B, Onaindia A, Galdos-Olasagasti L, Basasoro A. Validation of the SITA faster strategy for the management of glaucoma. Int Ophthalmol. 2022;42:2347-2354.
14. Pham AT, Ramulu PY, Boland MV, Yohannan J. The effect of transitioning from SITA standard to SITA faster on visual field performance. Ophthalmology. 2021;128:1417-1425.