The Dyop Revolution and Acuity Measurement

VSS 2021

A **Dyop** (short for dynamic optotype) is a spinning segmented ring optotype where the acuity endpoint is the smallest angular width ring where the Dyop spinning/motion can be detected. Vision is a dynamic process requiring a constant refresh of the photoreceptors. That stimulus also creates a preference for motion detection and Resonance Acuity. https://www.dyop.info/documents/Infant_Acuity_Test_Proof-of-Concept.pdf

Complimentary Use for Vision Research https://chart2020.com/trial-research/

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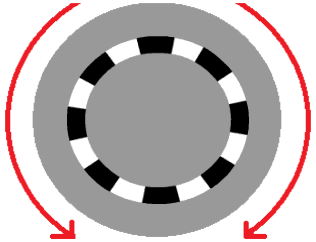
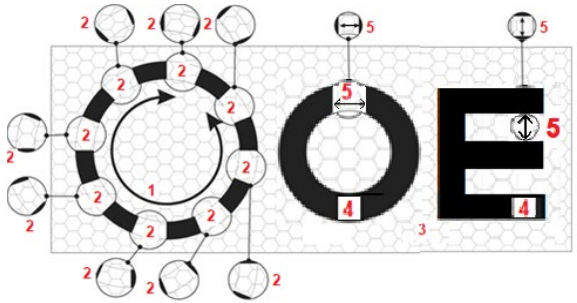
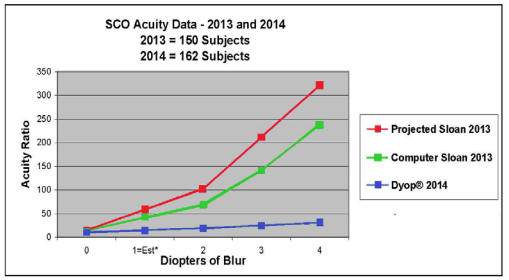
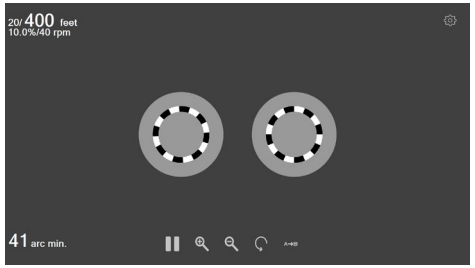




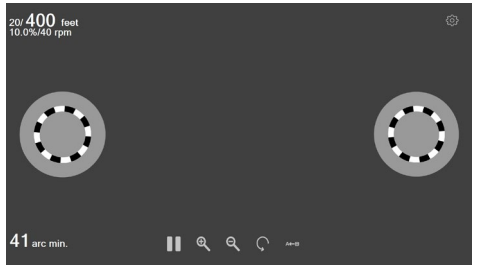
Item 1 – the visual angular movement/velocity for the strobic contrast response (40 RPM)
Item 2 – a moving segmented **0.54 arc minute squared** visual **arc/area (MAR)** for dynamically stimulating **20 retina cell clusters** with motion
Item 3 – retinal cell clusters
Item 4 – examples of static historical optotypes
Item 5 – the static minimum **1.0 arc minute squared** angle/arc/**area (MAR)** of resolution/recognition for a historical optotype for **40 retina cell clusters**



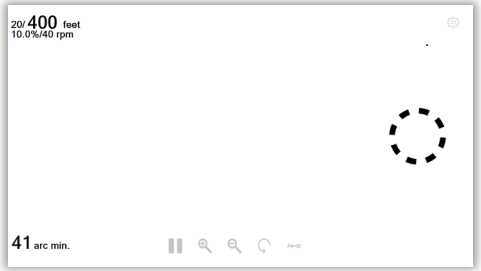
Six times as precise as Snellen



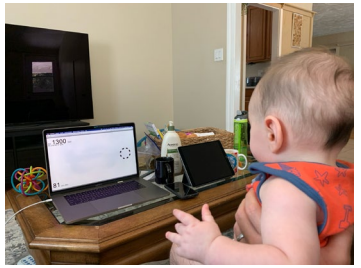
Adult Acuity Test



Children's Acuity Test



Infant Acuity Test



My nephew's son at age 14 weeks.

Reduced Dyop® Variance

Study Condition	Variance
Projected Sloan Letters (2013)	0.282
Computer Sloan Letters (2013)	0.233
Dyop - Doublet (2014)	0.035

Summary of the variance in the test conditions over the two years of the study.

Acuity Study - Dr. Paul Harris, SCO

One-sixth the variance as Snellen

Dyop	Adjusted	Diopters	Snellen Values				Screen
Arc Min	Arc Min	Sphere	Feet	Meters	LogMAR	Decimal	Diameter = mm
104	96	16	2000	600	2	0.01	185
46	38	6.5	475	145	1.4	0.04	82
41	33	5.5	400	120	1.3	0.05	73
39	31	5.125	350	100	1.2	0.06	69
35	27	4.5	300	90	1.18	0.07	62
32	24	4	250	75	1.1	0.08	57
10	2	0.375	32	9.5	0.15	0.67	18
9	1	0.125	25	7.5	0.1	0.83	16
8	0	0	20	6	0	1	14

Adult Acuity Calibration

Dyop Color Acuity	3 feet – Viewing Distance	Snellen Acuity Standard Values		Screen Diameter Viewed at 3 feet
Endpoint	Arc Min	20 / Feet	6 / Meters	Diameter = mm
	162	4400	1300	96
	140	3400	1000	82
Blue/Black	104	2000	600	62
	92	1600	500	48
Red/Gray	70	1000	300	41
Green/White	64	950	300	37
	50	550	170	30
B/W-Gray	44	440	135	27
	36	310	95	22

Infant Acuity Values Comparable to Adult Acuity