



## Reliability of the ODG Screening Box

### The OneDollarGlasses Screening Box (SB)

It is a screening device. You will know within a minute if you get a benefit from wearing plus or minus lenses. It gives a rough idea of what is going to help. It does not replace best spherical refraction (bsr).

How to do:

Hold SB close to your head, look with one eye into all 3 holes and decide where you can see best.

If it is the + hole, this eye needs bsr for plus-lenses

If it is the minus hole, this eye needs bsr for minus lenses

If it is the central hole and you can read small numbers no stronger lenses are needed. If you cannot read small numbers *while central hole is best* than you will need special treatment because of astigmatism and/or eye-disease

If you cannot read small numbers in the minus hole you will need reading glasses.

Then cheque the other eye. Finished. Now go for best spherical refraction to get the most helpful spherical glasses.

So we examined 100 eyes with SB and measured subjective refraction to check sensitivity and specificity.

Sensitivity: which percentage of all results of the SB had been correct – so by choosing plus we really detected hyperopia, choosing minus we detected myopia, choosing “o” and number were seen no (stronger) glasses were needed. Which percentage was found where bsr had to be done or sent to specialist.

Specificity: of all chosen specific decisions – either plus or “o” or minus which percentage turned out to be true. Which percentage of those who seemed to not need bsr had subjective refraction higher than +/- 1,0sph.

### Theoretically, what are we expecting:

given that the SB-length is 25 cm, the middle lens is +4,0 the top lens is +5,5 and the bottom lens is -2,0 and the screening threshold is 6/12 eyes with different ability to accommodate will be tested.

Assuming full accommodation ability we will find in a range from +10 to -10:

Subjective refraction	chosen hole	found to need bsr
+10 till -0,5	0 or plus	only those who chose plus or cannot read numbers
-1,0 till -10,0	minus	all

Hole “o” will be chosen if SR is between +0,75 and -0,75. Depending accommodation-ability it also can be chosen if SR is more than +0,75.



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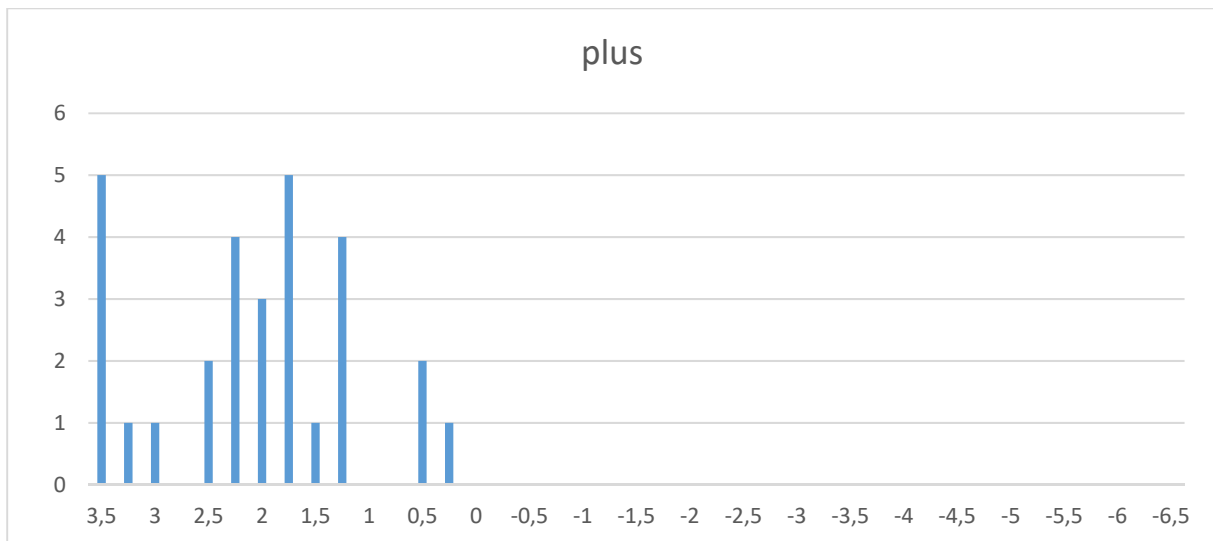
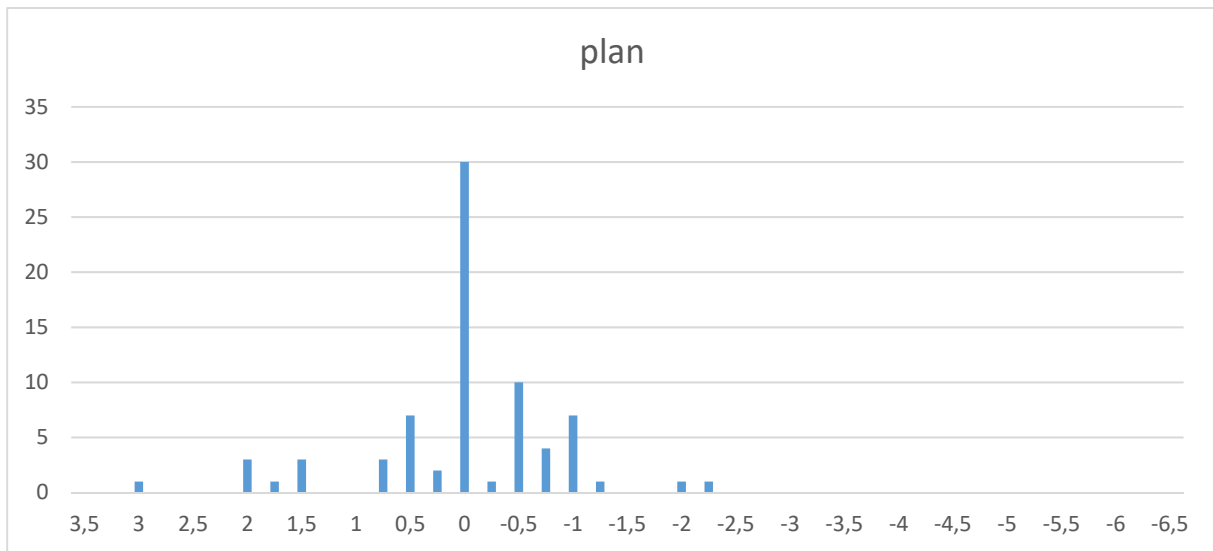
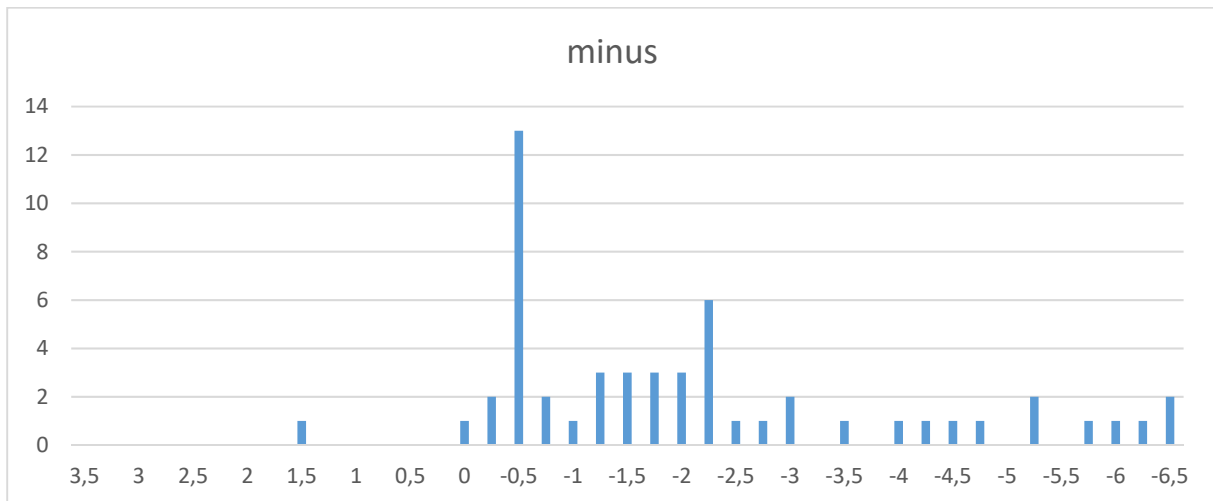
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#### Spenden

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**Our results:**





BSR	minus	plan	plus
3,5	0		5
3,25	0		1
3	0	1	1
2,75	0		
2,5	0		2
2,25	0		4
2	0	3	3
1,75	0	1	5
1,5	1	3	1
1,25	0		4
1	0		
0,75	0	3	
0,5	0	7	2
0,25	0	2	1
0	1	30	
0,25	2	1	
-0,5	13	10	
-0,75	2	4	
-1	1	7	
-1,25	3	1	
-1,5	3		
-1,75	3		
-2	3	1	
-2,25	6	1	
-2,5	1		
-2,75	1		
-3	2		
-3,25	0		
-3,5	1		
-3,75	0		
-4	1		
-4,25	1		
-4,5	1		
-4,75	1		
-5	0		
-5,25	2		
-5,5	0		
-5,75	1		
-6	1		
-6,25	1		
-6,5	2		
-7	1		

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159 eyes had been tested altogether

**Plus-hole:** SR of 35 eyes had been +1,0 and more

29 eyes chose the plus hole

All 29 were correct, so specificity is 100%.

Only 29 of 35 had been detected, so sensitivity is about 83%.

**“o”-hole:** SR of 78 eyes had been between +0,75 and -0,75

75 eyes chose the “o” hole

Out of these 57 were correct so specificity is 76 %

Only 57 of 78 had been detected, so sensitivity is 73%

**Minus-hole:** SR of 56 eyes had been -1,0 and more

55 chose the minus hole

Out of these 46 were correct so specificity is 84%

Only 46 of 56 had been detected, so sensitivity is 82%

### Comments:

looking at the results: from plus-hole we find, that 25% of hyperopia (>+1,0) had not been found and 24% of eyes with higher refractive errors were not found because they preferred “o”-hole and 18% of myopia (< -1,0) had not been found they also preferred the “o” hole.

11% of higher refractive errors in 159 eyes (total) had chosen “o” hole. All the 10 minus cases would have been identified by not being able to read numbers in “o”. The 8 hyperopics (6%) show us that screening for hyperopia still might be mandatory.

### Observations where I had to interfere:

Some people had a tendency to not put the box right in front of the eye, so distance was too large.

Some thought I was talking about the letters, when I asked for reading the numbers

Some did not direct the SB towards the sky, so darkness may have influenced

Some tested the same eye twice, because they had difficulties to look with the other eye.

Some confused the holes.



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