2.3 Accuracy and precision with large gaze angles

The binocular and monocular accuracy and precision results at large gaze angles are presented in table 3, as well as in diagram 3 and 4. All participants met the track requirements (N=20). The average value for each metric is specified along with the standard deviation (Std).

			Accuracy		Precision	
		N	Binocular	Monocular	Binocular	Monocular
25° Gaze angle	Average	20	0.4	0.5	0.26	0.37
	Std		0.2	0.2	0.13	0.21
30° Gaze angle	Average	20	0.4	0.5	0.25	0.37
	Std		0.2	0.3	0.12	0.22

Table 3, Accuracy and precision at 25 and 30 degrees gaze angle. Binocular and monocular accuracy and precision values are presented for both angles of measurements. The average values are presented along with the standard deviation (Std). All participants met the tracking requirements (N=20).

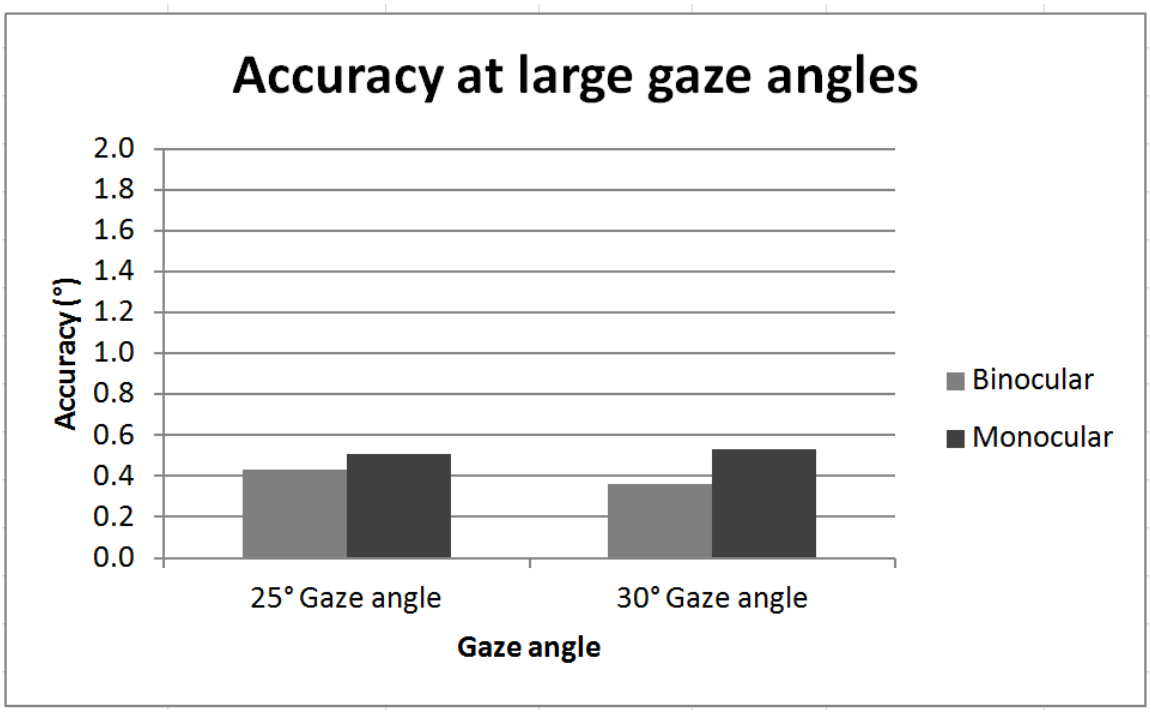

Diagram 3: Accuracy at large gaze angles. The average binocular and monocular accuracy is presented for both measured gaze angles.

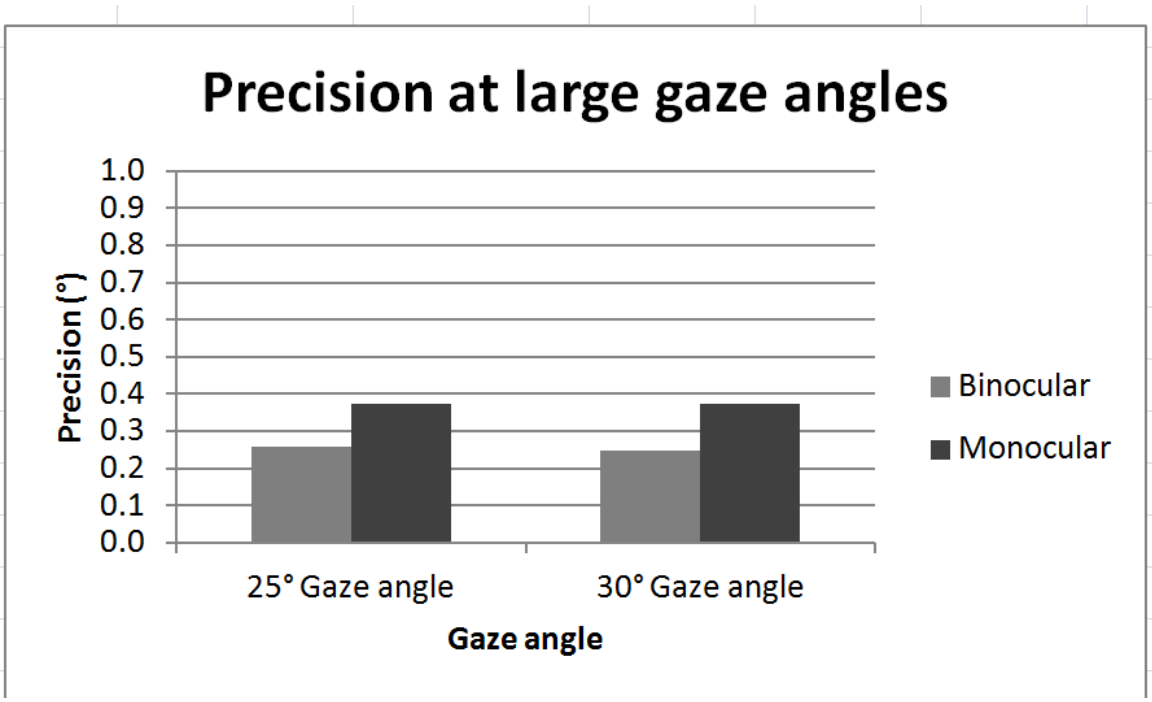

Diagram 4: Precision at large gaze angles. The average binocular and monocular accuracy is presented along with both measured gaze angles.

2.4 Accuracy and precision with varying illumination

Binocular and monocular accuracy and precision results for the illumination test are presented in table 4, as well as in diagram 3 and 4. The average value for each metric is specified along with the standard deviation (Std).

Table 4, Accuracy and precision under varying illumination and stimuli background. The number of participants who met the tracking requirements is presented along with the binocular and monocular accuracy and precision data for each test condition.

			Accuracy		Precision	
		N	Binocular	Monocular	Binocular	Monocular
1 lux (darkness)	Average	17	1.2	1.9	0.66	0.82
300 lux	Average	20	0.4	0.4	0.34	0.45
600 lux	Average	20	0.4	0.6	0.42	0.55
1000 lux	Average	20	0.6	0.9	0.65	0.81
White background	Average	17	1.2	1.9	0.66	0.82

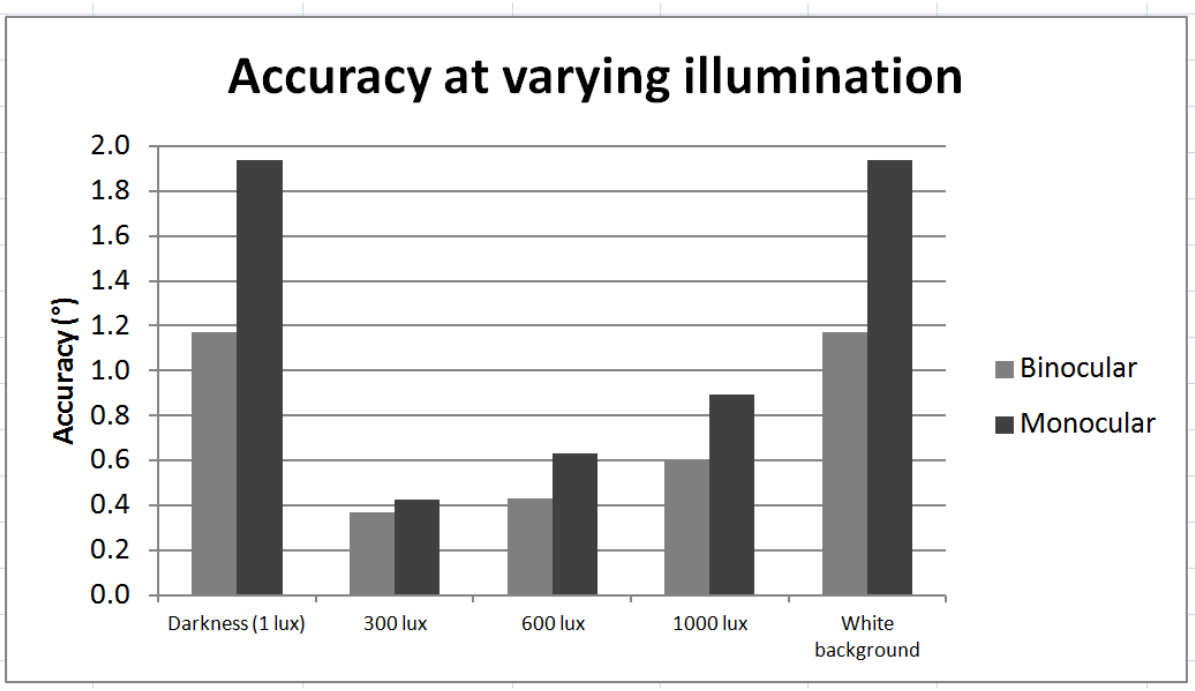

Diagram 5: Accuracy under varying illumination. Binocular and monocular accuracy data is presented for each illumination condition.

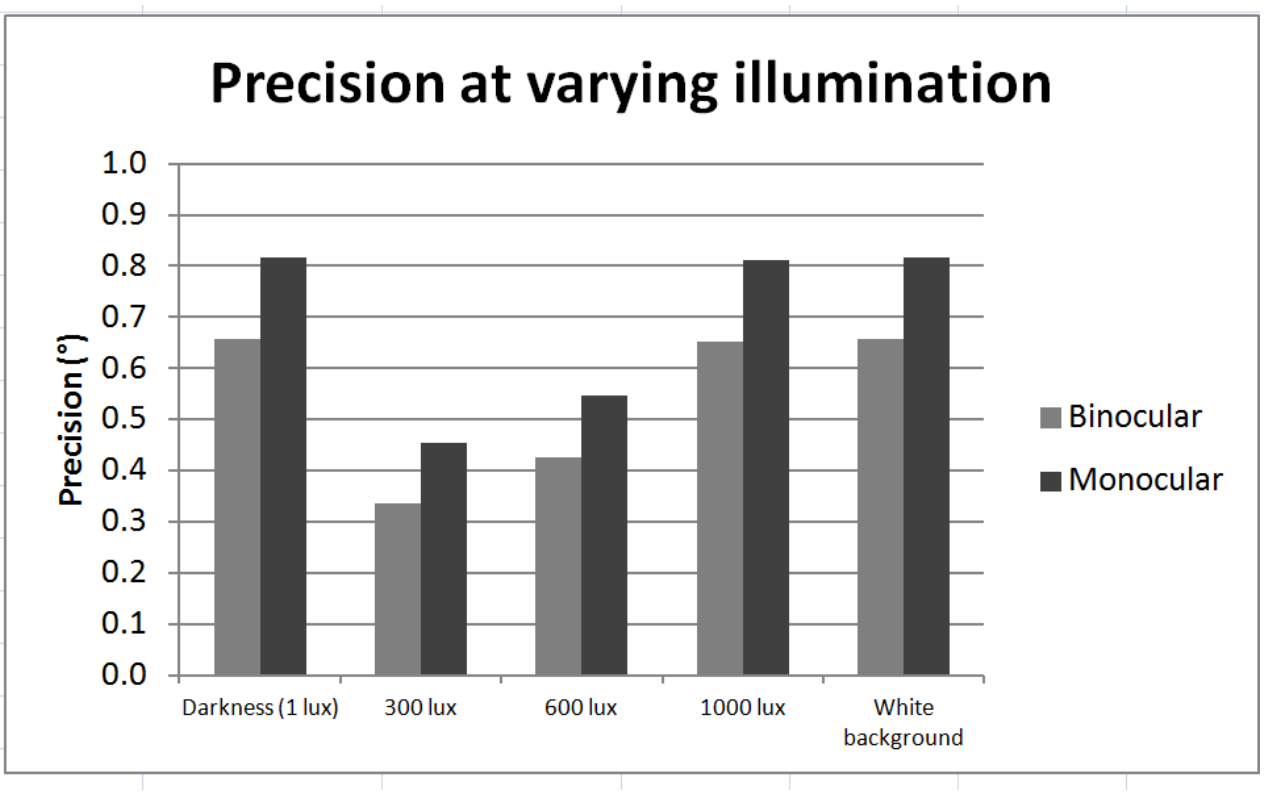

Diagram 6: Precision under varying illumination. Binocular and monocular precision data is presented for each illumination condition.

2.4.1 Distance from eye tracker, Z axis

The accuracy and precision measured at varying distances from the eye tracker (X=0, Y=0) are presented in table 5 and diagram 5 and 6. In these diagrams the average value is presented with a line and the distribution (max, min and SD from mean) is illustrated with boxes and vertical lines.
The average value for each metric is specified along with the standard deviation (Std).

Table 5, Accuracy and precision at varying distances from the eye tracker. The binocular and monocular accuracy and precision are presented in average values along with the standard deviation (Std) and the number of participants who met the tracking requirements (N) for each distance.

			Accuracy (°)		Precision (°)	
Distance		N	Binocular	Monocular	Binocular	Monocular
40 cm	**Average**	11	1.0	1.4	0.74	1.04
	Std		0.3	0.6	0.26	0.37
45 cm	**Average**	20	0.5	0.7	0.45	0.60
	Std		0.1	0.2	0.19	0.26
50 cm	**Average**	20	0.4	0.5	0.38	0.49
	Std		0.1	0.2	0.16	0.20
55 cm	**Average**	20	0.4	0.6	0.39	0.55
	Std		0.1	0.2	0.16	0.24
60 cm	**Average**	21	0.4	0.4	0.34	0.45
	Std		0.1	0.1	0.10	0.18
65 cm	**Average**	20	0.4	0.4	0.34	0.45
	Std		0.1	0.1	0.10	0.18
70 cm	**Average**	20	0.5	0.6	0.46	0.60
	Std		0.2	0.2	0.10	0.14
75 cm	**Average**	20	0.6	0.7	0.54	0.68
	Std		0.3	0.3	0.15	0.21
80 cm	**Average**	20	0.6	0.7	0.74	1.00
	Std		0.3	0.3	0.17	0.29
85 cm	**Average**	13	0.7	0.8	1.07	1.41
	Std		0.3	0.3	0.18	0.24
90 cm	**Average**	7	0.7	0.9	1.22	1.61
	Std		0.1	0.2	0.18	0.16

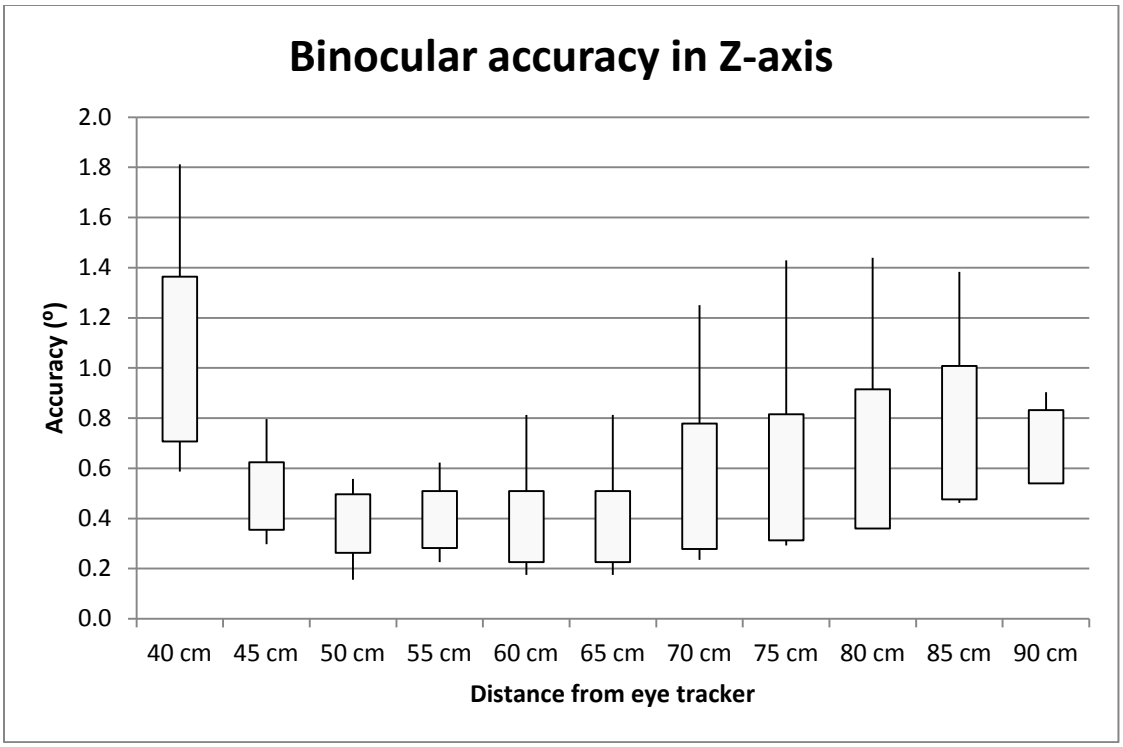

Diagram 7: Binocular accuracy at varying positions in Z axis. The average accuracy is illustrated with a line, and the max/min and standard deviation from mean is presented with boxes and vertical lines.

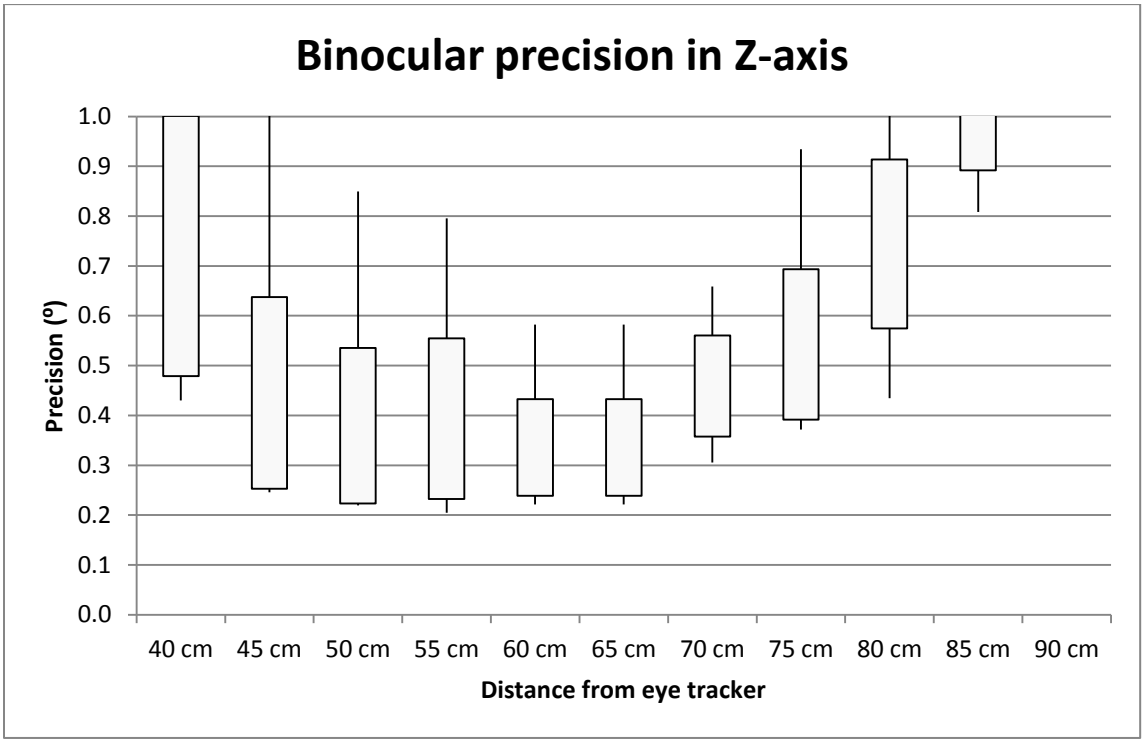

Diagram8: Binocular precision at varying positions in Z axis. The average precision is illustrated with a line, and the max/min and standard deviation from mean is presented with boxes and vertical lines

2.4.2 Horizontal, X axis

Binocular accuracy and precision

The binocular and monocular accuracy and precision measured at varying distances from center of track box (Z=60 cm, Y=0) are presented in table 6 and diagram 7 and 8. In these diagrams the average value is presented with a line and the distribution (max, min and SD from mean) is illustrated with boxes and vertical lines.

Table 6, Accuracy and precision at varying positions in X axis. The average value for each metric is specified along with the standard deviation (Std). The number of participants who met the tracking requirements (N) is presented for each test.

			Accuracy (°)		**Precision (°)**	
Distance		N	Binocular	Monocular	Binocular	Monocular
15 cm	**Average**	20	0.5	0.6	0.38	0.52
	Std		0.2	0.2	0.17	0.23
10 cm	**Average**	20	0.5	0.5	0.43	0.60
	Std		0.1	0.2	0.24	0.36
5 cm	**Average**	20	0.4	0.5	0.40	0.54
	Std		0.1	0.2	0.18	0.25
0 cm	**Average**	20	0.4	0.4	0.34	0.45
	Std		0.1	0.1	0.10	0.18
-5 cm	**Average**	20	0.4	0.5	0.40	0.51
	Std		0.1	0.2	0.19	0.22
-10 cm	**Average**	20	0.4	0.6	0.38	0.50
	Std		0.1	0.2	0.16	0.21
-15 cm	**Average**	20	0.4	0.6	0.42	0.57
	Std		0.2	0.3	0.22	0.33

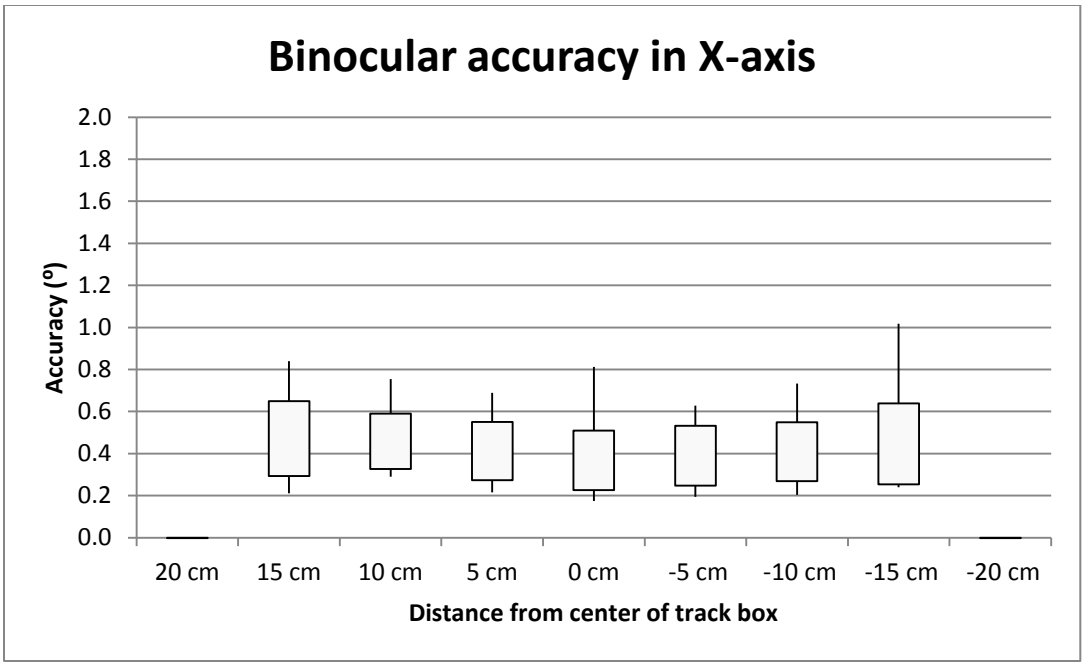

Diagram 97: Binocular accuracy at varying positions in X axis. The average accuracy is illustrated with a line, and the max/min and standard deviation from mean is presented with boxes and vertical lines.

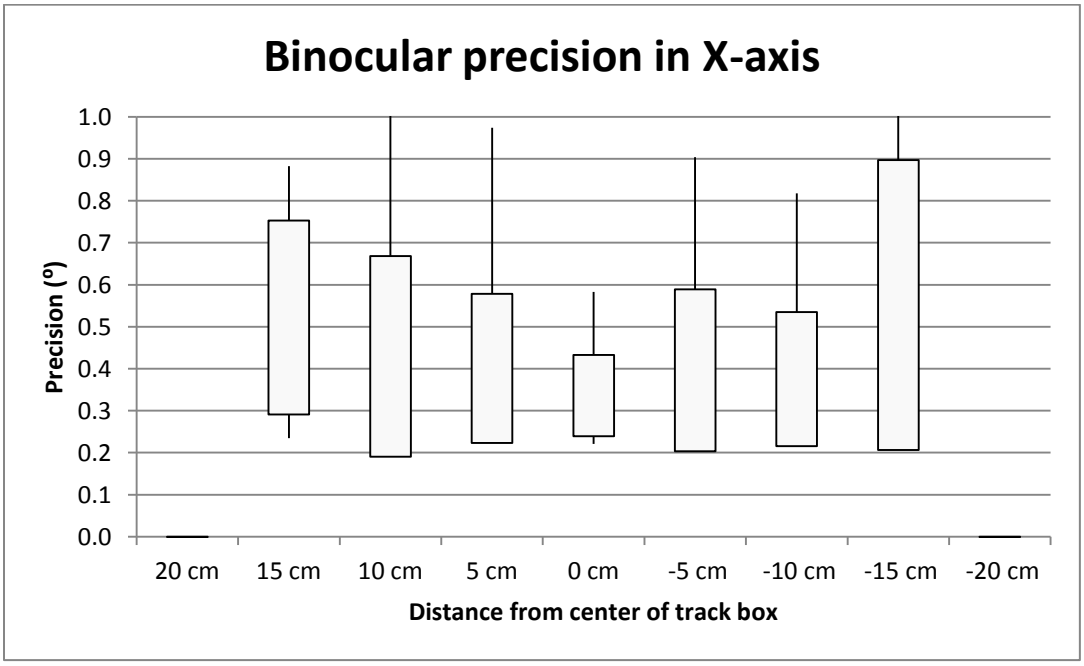

Diagram 10: Binocular precision at varying positions in X axis. The average precision is illustrated with a line, and the max/min and standard deviation from mean is presented with boxes and vertical lines

2.4.3 *Vertical, Y axis*

The accuracy and precision measured at varying distances from center of track box (Z=60 cm. X=0) are presented in table 8 and diagram 11 and 12. In these diagrams the average value is presented with a line and the distribution (max. min and SD from mean) is illustrated with boxes and vertical lines.

Table 7, Accuracy and precision at varying positions in Y axis. The binocular and monocular accuracy and precision are presented as the average values along with the standard deviation (Std) and the number of participants who met the requirements (N) for each test trial.

			Accuracy (°)		**Precision (°)**	
Distance		N	Binocular	Monocular	Binocular	Monocular
10 cm	**Average**	20	0.4	0.6	0.38	0.52
	Std		0.1	0.2	0.12	0.18
5 cm	**Average**	20	0.4	0.5	0.37	0.46
	Std		0.1	0.1	0.19	0.17
0 cm	**Average**	20	0.4	0.4	0.34	0.45
	Std		0.1	0.1	0.10	0.18
-5 cm	**Average**	20	0.4	0.5	0.42	0.56
	Std		0.2	0.2	0.21	0.24
-10 cm	**Average**	20	0.5	0.6	0.37	0.45
	Std		0.2	0.2	0.10	0.11

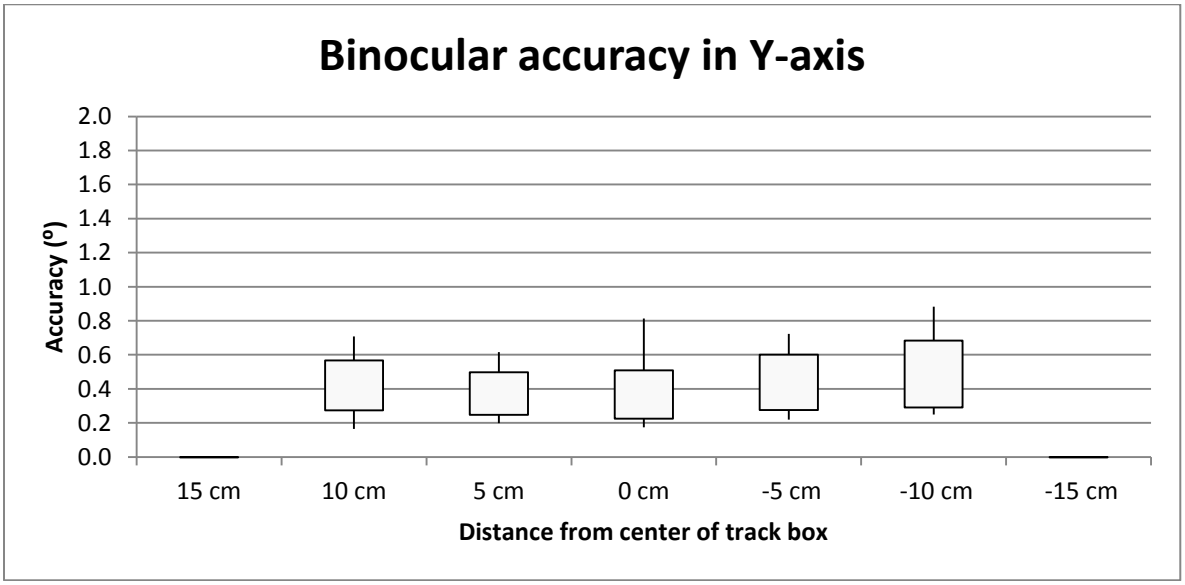

Diagram 8: Binocular accuracy at varying positions in Y axis. The average accuracy is illustrated with a line, and the max/min and standard deviation from mean is presented with boxes and vertical lines.

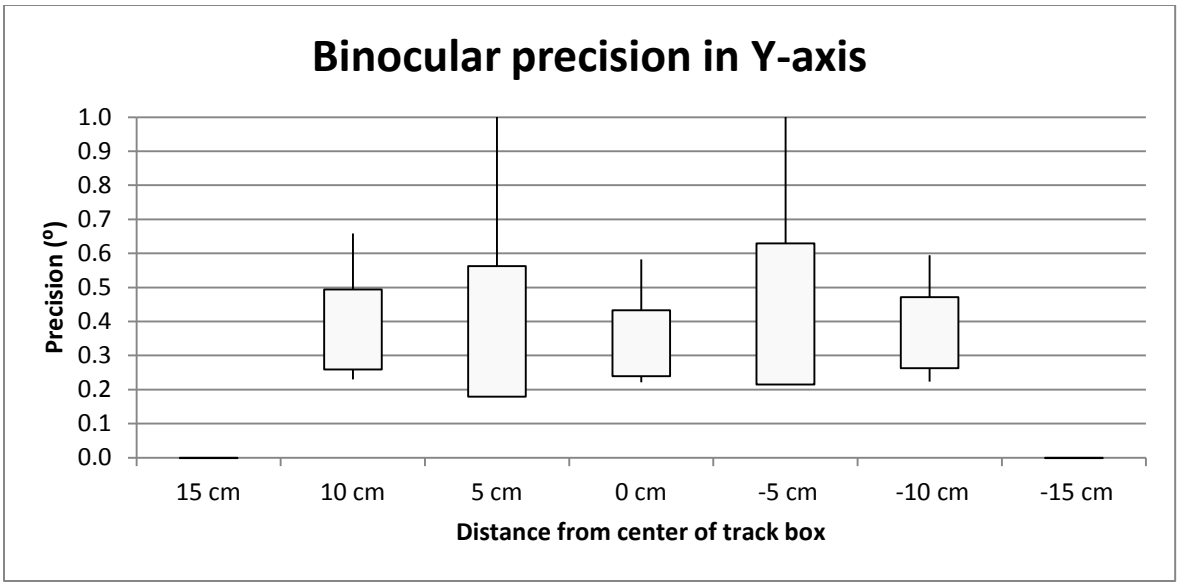

Diagram 9: Binocular precision at varying positions in Y axis. The average accuracy is illustrated with a line, and the max/min and standard deviation from mean is presented with boxes and vertical lines.