

Light stimulates swimming behavior of larval eastern oysters *Crassostrea virginica* in turbulent flow

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Table S1: Experimental design: Light treatments were randomized and turbulence orders were assigned by Latin square in an attempt to minimize the effects of time.

Trial	Treatment	Turbulence level (cm ² s ⁻³)	Number of 45-second datasets	Number of larvae tracked
1	dark	0	5	69
1	dark	0.002	4	133
1	dark	0.027	4	464
1	dark	0.064	3	409
1	dark	0.373	3	379
1	light	0	5	91
1	light	0.002	4	191
1	light	0.027	4	450
1	light	0.064	3	566
1	light	0.373	3	510
2	light	0	5	298
2	light	0.373	3	896
2	light	0.064	3	967
2	light	0.027	4	767
2	light	0.002	4	323
2	dark	0	5	91
2	dark	0.373	3	376
2	dark	0.064	3	330
2	dark	0.027	4	424
2	dark	0.002	4	237
3	light	0	5	220
3	light	0.064	3	604
3	light	0.002	4	215
3	light	0.373	3	343
3	light	0.027	4	382
3	dark	0	5	68
3	dark	0.064	3	430
3	dark	0.002	4	210
3	dark	0.373	3	301
3	dark	0.027	4	398
4	dark	0	5	168
4	dark	0.027	4	512
4	dark	0.373	3	368
4	dark	0.002	4	207
4	dark	0.064	3	390
4	light	0	5	307
4	light	0.027	4	465
4	light	0.373	3	737
4	light	0.002	4	230
4	light	0.064	3	487

Table S2: Post-hoc Tukey's HSD test of differences in mean proportion of upward swimming larvae in flow, with respect to turbulence level, using least squares means and $df = 12$. Significant results are bolded, with a significance level $\alpha = 0.05$.

Turbulence levels ($\text{cm}^2 \text{s}^{-3}$)	Difference	p-value	95% CIS
0.002 vs 0.027	-0.11	0.002	[-0.17, -0.04]
0.002 vs 0.064	-0.12	0.001	[-0.18, -0.05]
0.002 vs 0.373	-0.04	0.35	[-0.10, 0.02]
0.027 vs 0.064	-0.01	0.97	[-0.08, 0.06]
0.027 vs 0.373	0.07	0.04	[0.001, 0.133]
0.064 vs 0.373	0.08	0.02	[0.01, 0.14]

Table S3: Post-hoc Tukey's HSD test of differences in mean proportion of upward swimming larvae in flow, with respect to time within a trial, using least squares means and $df = 12$. Significant results are bolded, with a significance level $\alpha = 0.05$. The time comparisons here, i vs j , refer to the i^{th} and j^{th} times of four possible times in the treatment order.

Times	Difference	p-value	95% CIS
1 vs 2	0.05	0.19	[-0.02, 0.11]
1 vs 3	0.15	<0.001	[0.08, 0.22]
1 vs 4	0.23	<0.001	[0.17, 0.30]
2 vs 3	0.10	0.003	[0.04, 0.16]
2 vs 4	0.18	<0.001	[0.12, 0.25]
3 vs 4	0.08	0.01	[0.02, 0.15]

Table S4: Post-hoc Tukey's HSD test of differences in mean proportion of upward swimming larvae in unforced flow, with respect to video sequence number, using least squares means and $df = 18$. Significant results are bolded, with a significance level $\alpha = 0.05$.

Video Sequences	Difference	p-value	95% CIS
1 vs 2	0.08	0.81	[-0.16, 0.32]
1 vs 3	-0.12	0.47	[-0.37, 0.11]
1 vs 4	-0.16	0.30	[-0.40, 0.09]
2 vs 3	-0.20	0.12	[-0.45, 0.04]
2 vs 4	-0.23	0.07	[-0.48, 0.01]
3 vs 4	-0.02	0.99	[-0.27, 0.22]

Table S5: Post-hoc Tukey's HSD test of differences in mean dive proportion in flow, with respect to turbulence level, using least squares means and $df = 12$. Significant results are bolded, with a significance level $\alpha = 0.05$.

Turbulence levels ($\text{cm}^2 \text{s}^{-3}$)	Difference	p-value	95% CIS
0.002 vs 0.027	0.12	<0.001	[0.07, 0.16]
0.002 vs 0.064	0.16	<0.001	[0.11, 0.21]
0.002 vs 0.373	0.17	<0.001	[0.12, 0.22]
0.027 vs 0.064	0.04	0.06	[-0.002, 0.09]
0.027 vs 0.373	0.05	0.02	[0.008, 0.10]
0.064 vs 0.373	0.01	0.92	[-0.03, 0.05]

Table S6: Post-hoc Tukey’s HSD test of differences in mean dive proportion in flow, with respect to interactive light and time within a trial, using least squares means and $df = 12$. Significant results are bolded, with a significance level $\alpha = 0.05$. The time comparisons here, i vs j , refer to the i^{th} and j^{th} times of four possible times in the treatment order, while ‘L’ and ‘D’ refer to the light and dark treatments, respectively.

Light x Time	Difference	p-value	95% CIS
Dark Only			
D1 vs D2	0.02	0.95	[-0.06, 0.10]
D1 vs D3	-0.02	0.98	[-0.10, 0.06]
D1 vs D4	0.04	0.54	[-0.04, 0.12]
D2 vs D3	-0.04	0.55	[-0.12, 0.04]
D2 vs D4	0.02	0.98	[-0.06, 0.10]
D3 vs D4	0.06	0.17	[-0.02, 0.14]
Light Only			
L1 vs L2	0.01	0.99	[-0.07, 0.09]
L1 vs L3	-0.007	0.99	[-0.09, 0.07]
L1 vs L4	-0.04	0.56	[-0.12, 0.04]
L2 vs L3	-0.02	0.98	[-0.10, 0.06]
L2 vs L4	-0.05	0.31	[-0.13, 0.03]
L3 vs L4	-0.04	0.73	[-0.11, 0.04]
Dark vs Light			
D1 vs L1	-0.02	0.97	[-0.10, 0.06]
D1 vs L2	-0.01	0.99	[-0.09, 0.07]
D1 vs L3	-0.03	0.89	[-0.11, 0.05]
D1 vs L4	-0.06	0.15	[-0.14, 0.02]
D2 vs L1	-0.05	0.49	[-0.12, 0.03]
D2 vs L2	-0.03	0.77	[-0.11, 0.05]
D2 vs L3	-0.05	0.34	[-0.13, 0.03]
D2 vs L4	-0.09	0.03	[-0.17, -0.008]
D3 vs L1	-0.003	1.00	[-0.08, 0.07]
D3 vs L2	0.009	0.99	[-0.07, 0.08]
D3 vs L3	-0.01	0.99	[-0.09, 0.07]
D3 vs L4	-0.04	0.50	[-0.12, 0.03]
D4 vs L1	-0.06	0.14	[-0.14, 0.01]
D4 vs L2	-0.05	0.30	[-0.13, 0.03]
D4 vs L3	-0.07	0.09	[-0.15, 0.01]
D4 vs L4	-0.11	0.006	[-0.17, -0.03]

Table S7: Post-hoc Tukey’s HSD test of differences in mean helix translational velocity in unforced and low forcing flow, with respect to interactive light and turbulence level, using least squares means and $df = 6$. Significant results are bolded, with a significance level $\alpha = 0.05$. The numbers associated with the turbulence levels are the reported energy dissipation rates for each flow regime (in $\text{cm}^2 \text{s}^{-3}$), while ‘L’ and ‘D’ refer to the light and dark treatments, respectively.

Turbulence level x Light	Difference	p-value	95% CIS
D0 vs D0.002	-0.09	0.01	[-0.16, -0.02]
L0 vs L0.002	-0.02	0.74	[-0.09, 0.05]
D0 vs L0	-0.06	0.07	[-0.13, 0.007]
D0 vs L0.002	-0.08	0.02	[-0.14, -0.01]
D0.002 vs L0	0.03	0.45	[-0.10, 0.04]
D0.002 vs L0.002	0.01	0.94	[-0.06, 0.08]