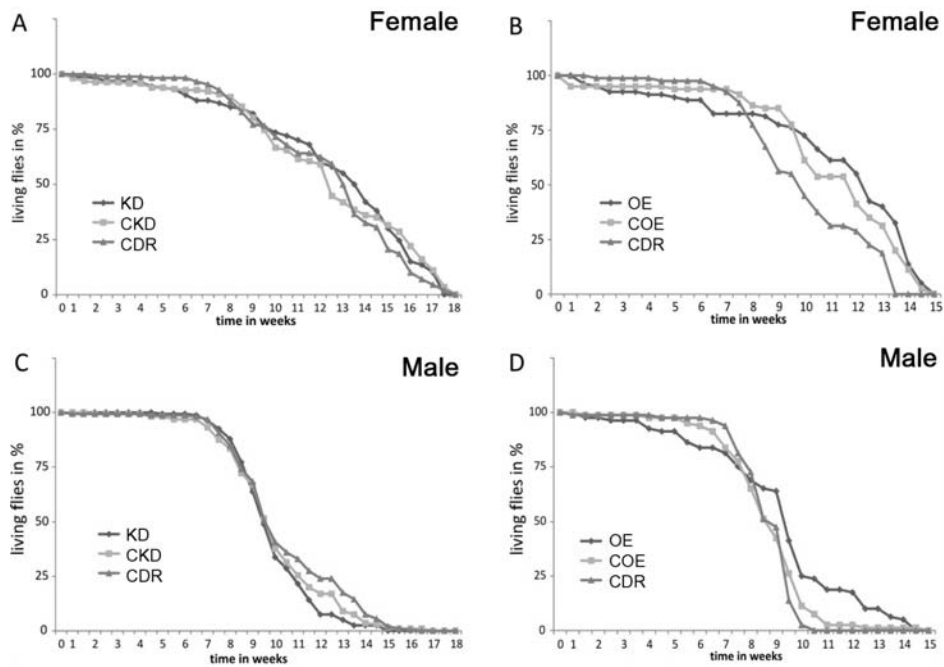
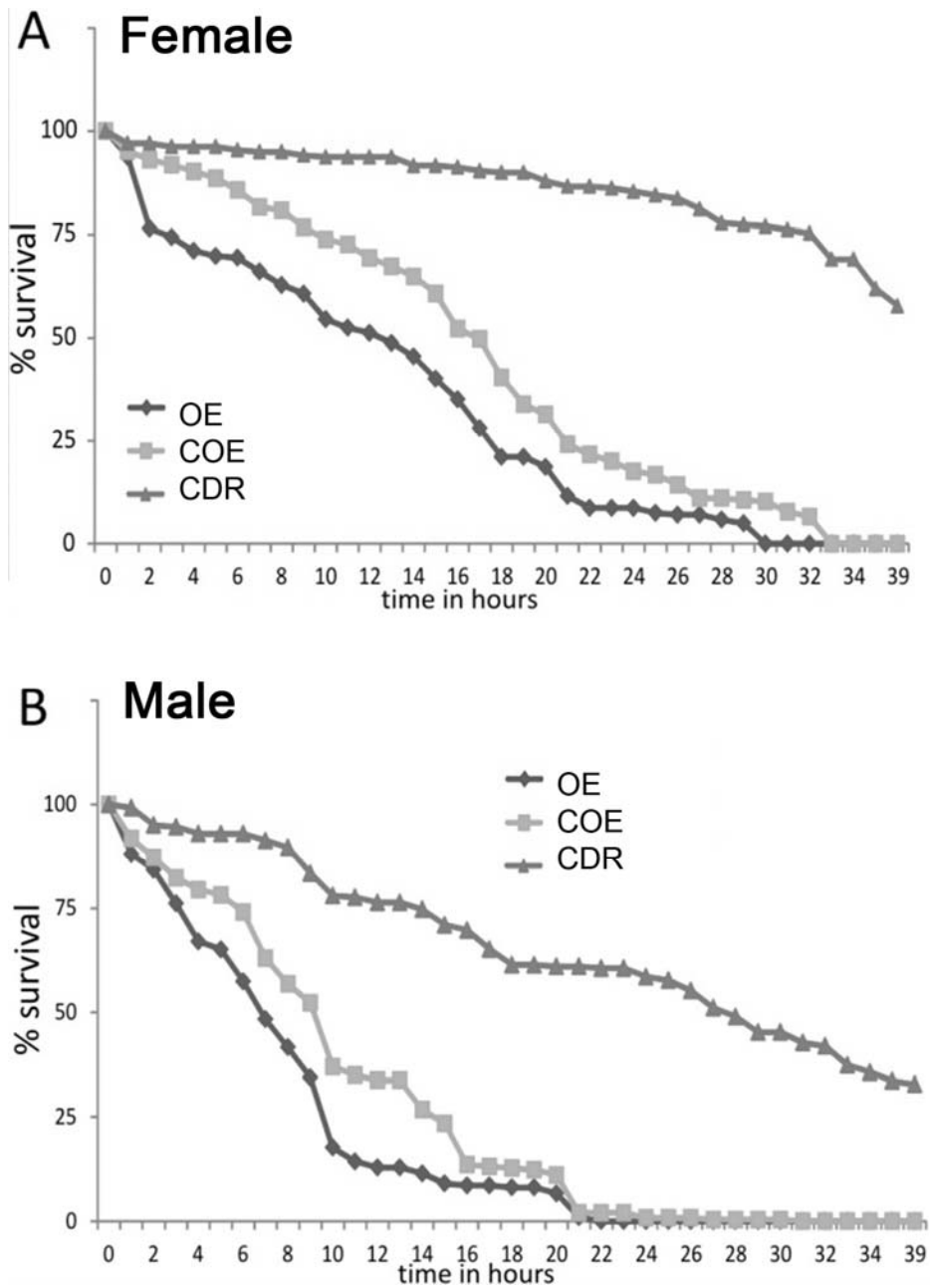


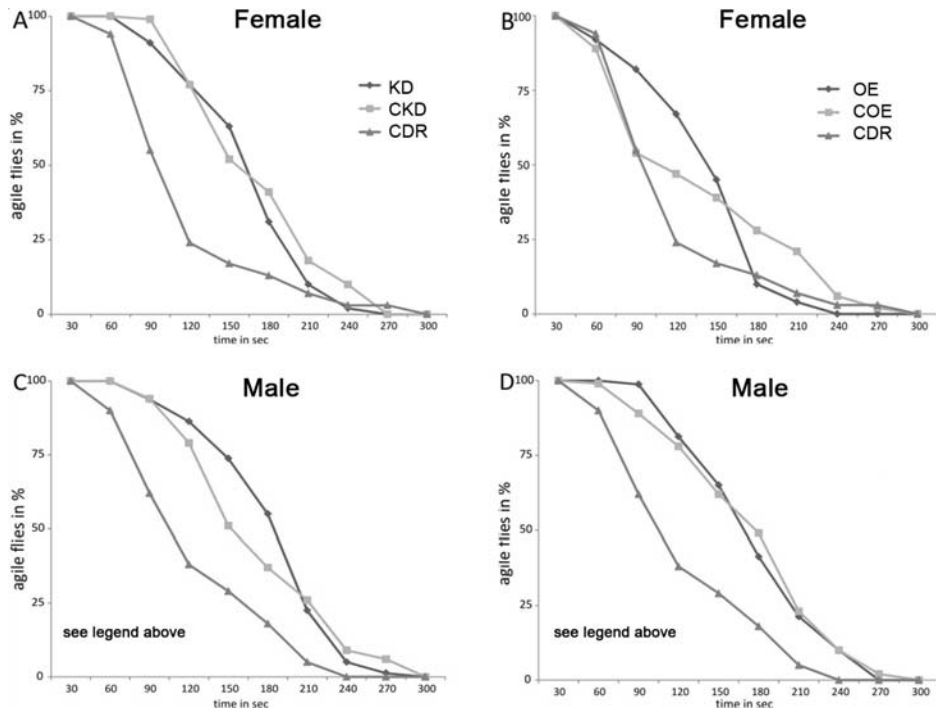
**Supplementary Fig. S1.** Verification of modulated *glob1* expression in embryos and pupae. (A) Quantification of *glob1* mRNA levels in embryos. *glob1* knockdown (KD) were compared with respective controls (CDR and CKD). mRNA levels (bars) are shown relative to *glob1* expression of CDR. Error bars represent standard deviations; \* =  $p < 0.05$ . (B) Modification of *glob1* expression in pupae confirmed on protein level by Western Blot: *glob1* over-expression (OE) and knockdown (KD) compared to respective controls stained with anti-*glob1* antibodies (upper panels) and anti-actin antibodies (lower panels) as loading control.



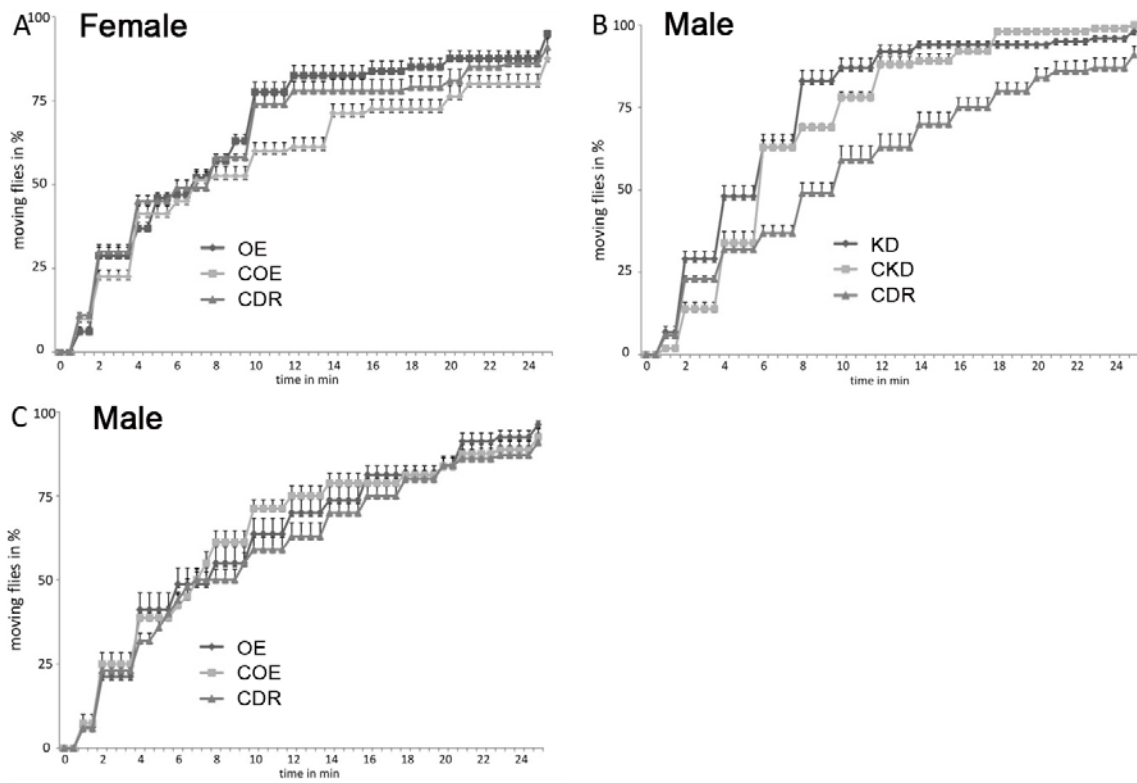
**Supplementary Fig. S2.** Lifespan of adult flies with modulated *glob1* expression under normoxia. No differences in lifespan of female flies with *glob1* knockdown (KD) (A) and over-expression (OE) (B) compared to corresponding controls. No differences in lifespan of male flies with *glob1* knockdown (C) and over-expression (D) and the respective controls.



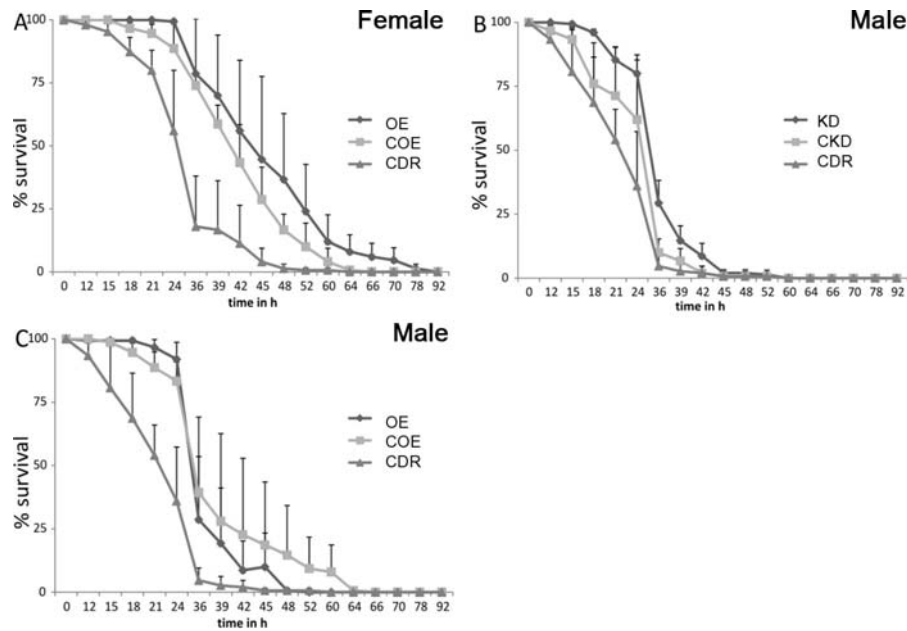
**Supplementary Fig. S3.** Survival of *glob1* over-expressing flies under long-term hypoxia (5% O<sub>2</sub>). No differences were seen in survival rates of female (A) and male (B) flies with *glob1* over-expression (OE) and the COE control.



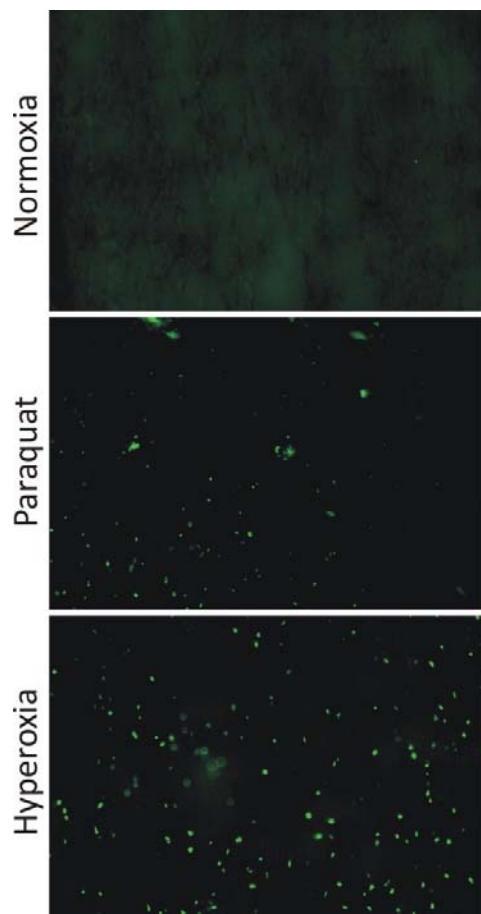
**Supplementary Fig. S4.** Reaction to anoxia of adult flies with modulated *glob1* expression. No differences in reaction to anoxia of female (A and B) and male (C and D) flies with *glob1* knockdown (KD), over-expression (OE) and the respective controls.



**Supplementary Fig. S5.** Recovery from severe hypoxia ( $O_2 < 1\%$ ) of adult flies with modulated *glob1* expression. No differences in recovery time of female flies with *glob1* over-expression (OE) (A) and male flies with *glob1*-knockdown (KD) (B) and over-expression (C) and the respective controls. Error bars represent standard deviations.



**Supplementary Fig. S6.** Survival of adult flies with modulated *glob1* expression after paraquat (20 mM) treatment. No differences in survival of Paraquat-induced ROS-stress of female (A) and male (B) flies with *glob1* over-expression (OE) and male flies with *glob1* knockdown (KD) (C) and the respective controls.



**Supplementary Fig. S7.** TUNEL staining of apoptotic nuclei in cryo-sections of adult flight muscles. TUNEL staining of flight muscles obtained from flies kept in normoxia (upper panel), after Paraquat-treatment (middle panel) and after hyperoxic treatment (lower panel). An increase in TUNEL-positive nuclei after oxidative stress induced by paraquat and hyperoxia was observed.