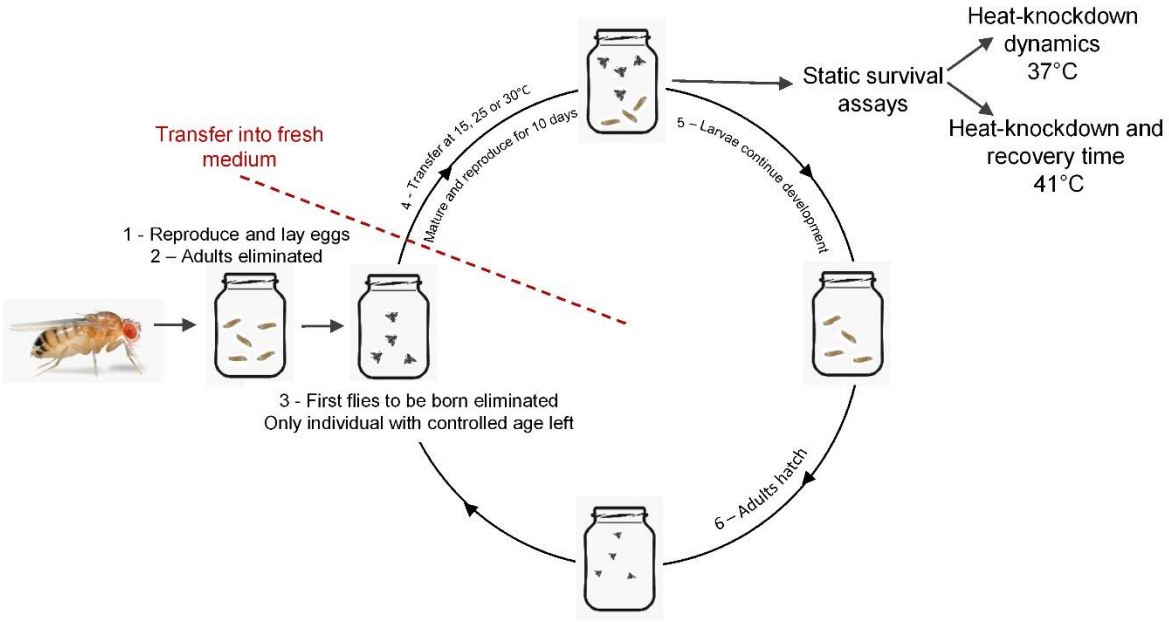

Fig. S1. Overview of the rearing and acclimation process performed for the full-factorial analysis. Batches of flies reared at either 15, 25 or 30°C (developmental acclimation) and hatched within 24 hours were transferred again on either 15, 25 or 30°C for 10 days to mature and lay eggs (adult acclimation), creating 9 thermal history conditions. After this 10-day acclimation period, adult flies were removed and use in static knockdown assays experiments aimed at assessing the impact of their thermal histories on heat-knockdown dynamics and recovery times, and a new generation was allowed to grow to start the cycle over.

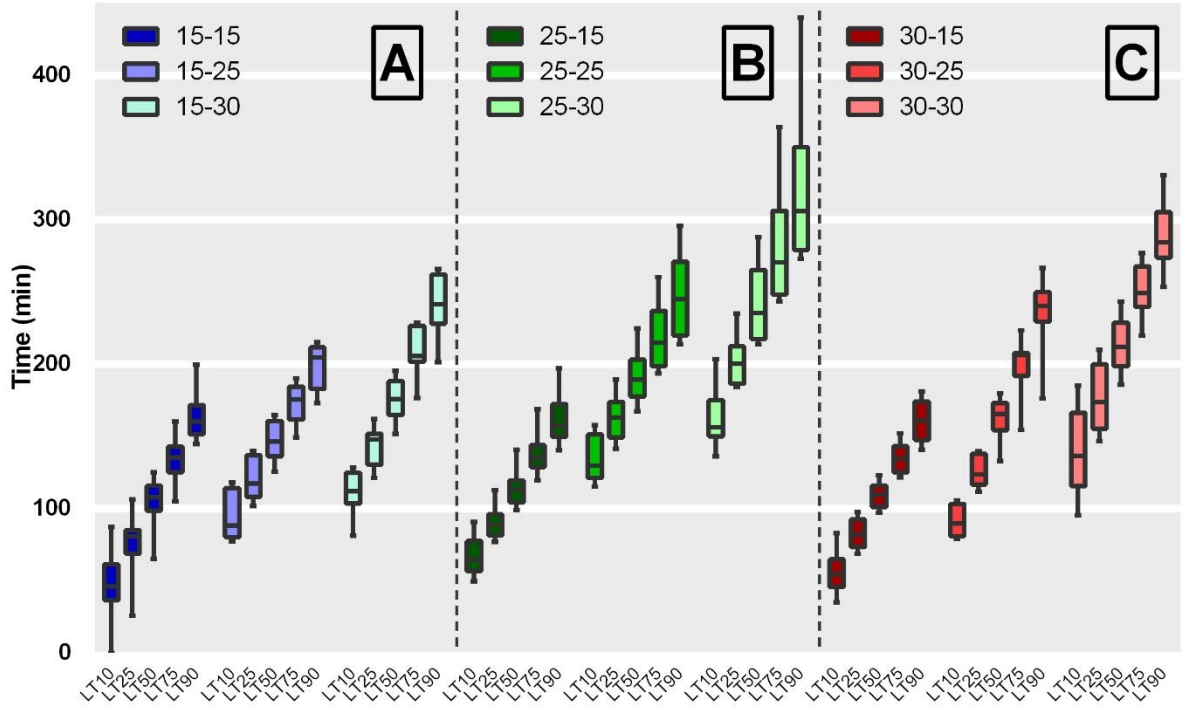

Fig. S2. Extracted percentiles from HKD curves of flies exposed to a constant 37°C, as a function of their thermal history (N=172±32 flies over 7-12 replicate per condition; mean ± s.d). Lethal time (LT) refers to the time needed to reach a set percentage of mortality, namely 10% (LT10), 25% (LT25), 50% (LT50), 75% (LT75), and 90% (LT90) respectively. Fig **S1.A**: percentiles for flies developmentally acclimated at 15°C, and acclimated as adult at either 15, 25 or 30°C. **Fig S1.B**: percentiles for flies developmentally acclimated at 25°C, and acclimated as adult at either 15, 25 or 30°C**. Fig S1.C**: percentiles for flies developmentally acclimated at 30°C, and acclimated as adult at either 15, 25 or 30°C.

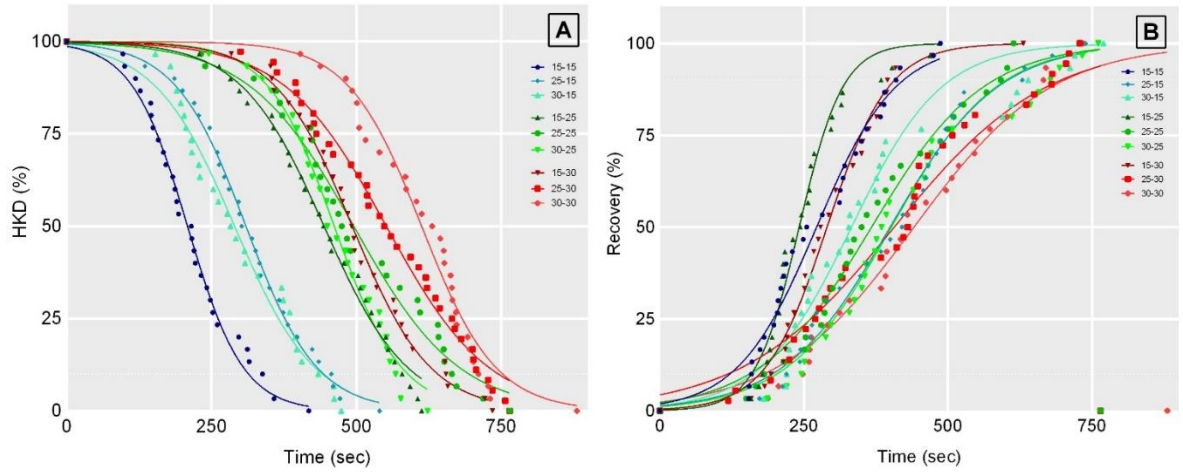

Fig. S3. Polynomial curve fitted on time to HKD at 41°C and on times to recovery for each thermal condition (N=30 per condition). **A**: polynomial curve fitted on time to HKD data. **B**: polynomial curve fitted on time to recovery data.

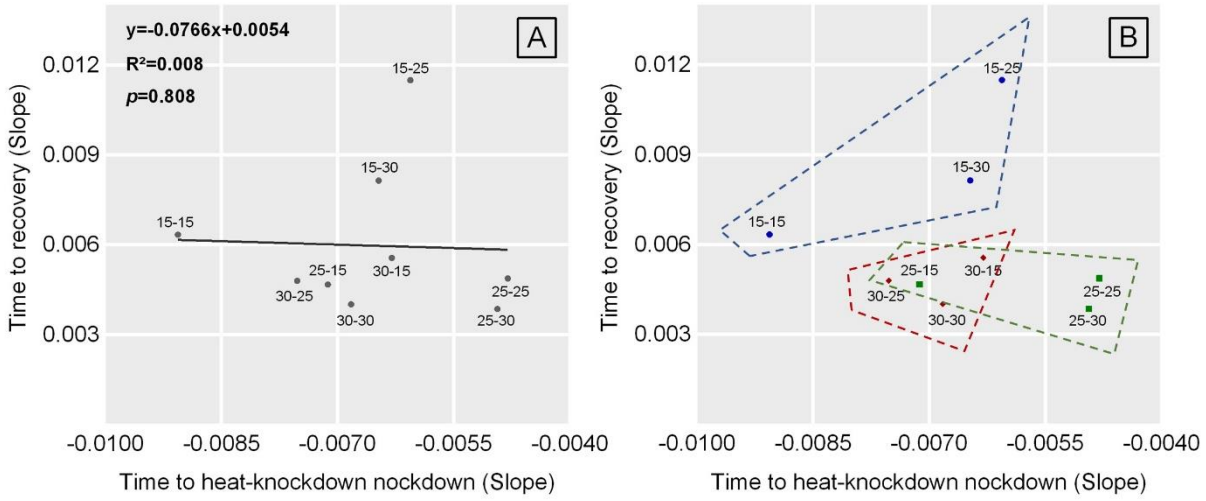

Fig. S4: Slopes of time to recovery plotted against slopes of time to heat-knockdown (N=30 per condition). **A**: Linear regression between slopes of time to recovery and slopes of time to heat-knockdown, across all developmental acclimation conditions. **B**: Slopes of time to recovery against slopes of time to heat-knockdown for flies developmentally acclimated at 15°C (blue), 25°C (green) and 30°C (red).

Table S1. Details of the linear regressions calculated for time to recovery as a function of time to HKD at 41°C in individual flies. No significant relationship was detected as a function of thermal histories of individuals with exception of flies reared at 25°C and adult acclimated at 30°C. A week but significant relationship was found on the total dataset.

Thermal history (°C)	Equation	Slope	R^2	*p* value
15-15	y=0.0284x+277.5	0.028	$5*10^{-4}$	0.90
15-25	y=0.2317x+158.4	0.231	0.09	0.10
15-30	y=-0.2504x+432.3	-0.250	0.08	0.12
25-15	y=0.3921x+286.9	0.392	0.07	0.15
25-25	y=0.2919x+233.9	0.292	0.08	0.12
25-30	y=0.6319x+66.1	0.632	0.22	<0.01**
30-15	y=0.3232+286.3	0.323	0.03	0.33
30-25	y=0.5770x+165.9	0.577	0.10	0.08
30-30	y=0.4440x+179.3	0.444	0.08	0.13
Total dataset	y=0.2613x+256.3	0.261	0.07	<0.01***

Table S2. Curve slope values and general goodness of the polynomial curve fit of time to HKD at 41°C and time to recovery values as a function of thermal histories of individuals.

Thermal history (°C)	N flies	HKD Slopes	R^2	Recovery slopes	R^2
15-15	30	-0,009	0,99	0,006	0,97
15-25	30	-0,006	0,99	0,011	0,98
15-30	30	-0,006	0,99	0,008	0,99
25-15	30	-0,007	1	0,005	0,98
25-25	30	-0,005	0,98	0,005	0,99
25-30	36	-0,005	0,99	0,004	0,98
30-15	30	-0,006	0,97	0,006	0,95
30-25	30	-0,007	0,99	0,005	0,98
30-30	30	-0,007	0,97	0,004	0,99