**Supplementary material**



**Figure S1**. The wooden platform with objects of interest and plastic covering.

**Equation S1**  Equations illustrating adjustments for diet, cohort, and sex, and interaction between sex with diet and cohort. The males from the Standard diet were the reference group.

$$a = a_\mu + S_a * Sex + ca_{13} * Cohort2013 + ca_{14} * Cohort2014 + da_{HFHP} * HFHP$$
$$+ ca_{13}Xf * Cohort2013xf + ca_{14}Xf * Cohort2014xf + da_{HFHP}Xf$$
$$* HFHPxf + ind$$

$$k = k_\mu + S_k * Sex + ck_{13} * Cohort2013 + ck_{14} * Cohort2014 + dk_{HFHP} * HFHP$$
$$+ ck_{13}Xf * Cohort2013xf + ck_{14}Xf * Cohort2014xf + dk_{HFHP}Xf$$
$$* HFHPxf + ind$$

$$t_0 = t_{0_\mu} + S_t * Sex + ct_{13} * Cohort2013 + ct_{14} * Cohort2014 + dt_{HFHP} * HFHP$$

$$+ ct_{13}Xf * Cohort2013xf + ct_{14}Xf * Cohort2014xf + dt_{HFHP}Xf$$

$$* HFHPxf + ind$$

**Table S1**. Model output for the von Bertalanffy growth curve function. Male juveniles on the standard diet constituted the reference group.

| | *Mean* | SE. | *L95%* | *U95%* |
|---|---|---|---|---|
| *a* | 1.76 | 0.04 | 1.69 | 1.84 |
| *k* | 1.47 | 0.04 | 1.39 | 1.54 |
| $t_0$ | 0.28 | 0.01 | 0.26 | 0.3 |
| *Sex X a* | -0.08 | 0.05 | -0.19 | 0.03 |
| *Sex X k* | -0.09 | 0.05 | -0.19 | 0.02 |
| *Sex X $t_0$* | 0.02 | 0.02 | -0.02 | 0.05 |
| *Wild Cohort (2013) X a* | -0.43 | 0.07 | -0.57 | -0.31 |
| *Wild Cohort (2013) X k* | -0.02 | 0.08 | -0.17 | 0.15 |
| *Wild Cohort (2013) X $t_0$* | -0.18 | 0.02 | -0.23 | -0.14 |
| *Wild Cohort (2014) X a* | -0.63 | 0.07 | -0.77 | -0.49 |
| *Wild Cohort (2014) X k* | 0.24 | 0.12 | -0.01 | 0.48 |
| *Wild Cohort (2014) X $t_0$* | -0.21 | 0.03 | -0.25 | -0.15 |
| *Captive (Intervention) X a* | 0.39 | 0.08 | 0.24 | 0.54 |
| *Captive (Intervention) X k* | -0.27 | 0.07 | -0.41 | -0.12 |
| *Captive (Intervention) X $t_0$* | 0.07 | 0.02 | 0.03 | 0.12 |

| | | | | |
|---|---|---|---|---|
| *Cohort (2013) female X a* | 0.03 | 0.1 | -0.16 | 0.22 |
| *Cohort (2013) female X k* | -0.01 | 0.12 | -0.23 | 0.23 |
| *Wild Cohort (2013) female X $t_0$* | 0 | 0.03 | -0.07 | 0.07 |
| *Wild Cohort (2014) female X a* | 0.17 | 0.11 | -0.04 | 0.38 |
| *Wild Cohort (2014) female X k* | -0.42 | 0.2 | -0.79 | -0.04 |
| *Wild Cohort (2014) female X $t_0$* | -0.12 | 0.05 | -0.22 | -0.04 |
| *Captive (Intervention) female X a* | -0.04 | 0.11 | -0.27 | 0.17 |
| *Captive (Intervention) female X k* | 0.03 | 0.1 | -0.19 | 0.22 |
| *Captive (Intervention) female X $t_0$* | 0 | 0.03 | -0.06 | 0.07 |
| *sigma* | 0.04 | 0 | 0.03 | 0.04 |

**Table S2**. Posterior distributions of weight at 800 days for each specified group in the between-population model.

| *Group* | *Mean* | *SE.* | *L95%* | *U95%* |
|---|---|---|---|---|
| *Standard Male* | 2.62 | 0.04 | 2.55 | 2.70 |
| *Standard Female* | 2.45 | 0.04 | 2.36 | 2.52 |
| *Intervention Male* | 2.97 | 0.05 | 2.88 | 3.06 |
| *Intervention Female* | 2.73 | 0.04 | 2.64 | 2.81 |
| *2013 Male* | 2.03 | 0.08 | 1.88 | 2.17 |
| *2013 Female* | 1.91 | 0.08 | 1.74 | 2.04 |
| *2014 Males* | 1.79 | 0.08 | 1.64 | 1.95 |
| *2014 Female* | 1.81 | 0.08 | 1.63 | 1.95 |

**Equation S2**  Equations illustrating adjustments for sex and cohort, interaction between sex and cohort, and fixed effect of NDVI gestation and parity. The males from the 2013 cohort were the reference group.

$$a = a\_\mu + S\_a * Sex + [\![ca]\!]\_14 * Cohort2014 + [\![ca]\!]\_14\,Xf * Cohort2014xf$$
$$+ [\![Nd]\!]\_a * NDVIgest + P\_a * Parity + ind$$

$$k = k_\mu + S_k * Sex + ck_{14} * Cohort2014 + ck_{14}Xf * Cohort2014xf + Nd_k * NDVIgest$$
$$+ P_k * Parity + ind$$

$$t\_0 = t\_(0\_\mu) + S\_t * Sex + [\![ct]\!]\_14 * Cohort2014 + [\![ct]\!]\_14\,Xf * Cohort2014xf$$
$$+ [\![Nd]\!]\_t * NDVIgest + P\_t * Parity + ind$$

**Table S3**      Comparison of the best fitting growth curve functions within the Wake Forest population

| Model | WAIC | pWAIC | dWAIC | dSE | weight |
|---|---|---|---|---|---|
| von Bertalanffy | -3826.6 | 261.3 | 0 | NA | 1 |
| Gompertz | -3667.7 | 270 | 158.9 | 10.57 | 0 |
| Logistic | -3186.1 | 265.8 | 640.5 | 32.29 | 0 |

**Table S4**      Growth parameters by each specified group in the within-population model

| *a* | *Mean* | *SE.* | *L95%* | *U95%* |
|---|---|---|---|---|
| *2013 Male* | 2.14 | 0.06 | 2.02 | 2.26 |
| *2013 Female* | 2.04 | 0.06 | 1.91 | 2.15 |
| *2014 Male* | 1.84 | 0.06 | 1.73 | 1.96 |
| *2014Female* | 1.94 | 0.08 | 1.80 | 2.10 |
| | | | | |
| *Maximum growth rate* | *Mean* | *SE.* | *L95%* | *U95%* |
| *2013 Male* | 4.98 | 0.57 | 3.93 | 6.20 |
| *2013 Female* | 4.63 | 0.50 | 3.72 | 5.64 |
| *2014 Male* | 4.92 | 0.54 | 3.89 | 5.96 |
| *2014 Female* | 3.89 | 0.57 | 2.78 | 5.03 |
| | | | | |
| $t_0$ | *Mean* | *SE.* | *L95%* | *U95%* |
| *2013 Male* | 166.61 | 12.98 | 141.89 | 192.93 |
| *2013 Female* | 186.99 | 13.05 | 160.24 | 211.45 |
| *2014 Male* | 137.32 | 35.45 | 68.12 | 208.47 |
| *2014Female* | 128.40 | 51.14 | 27.17 | 228.68 |