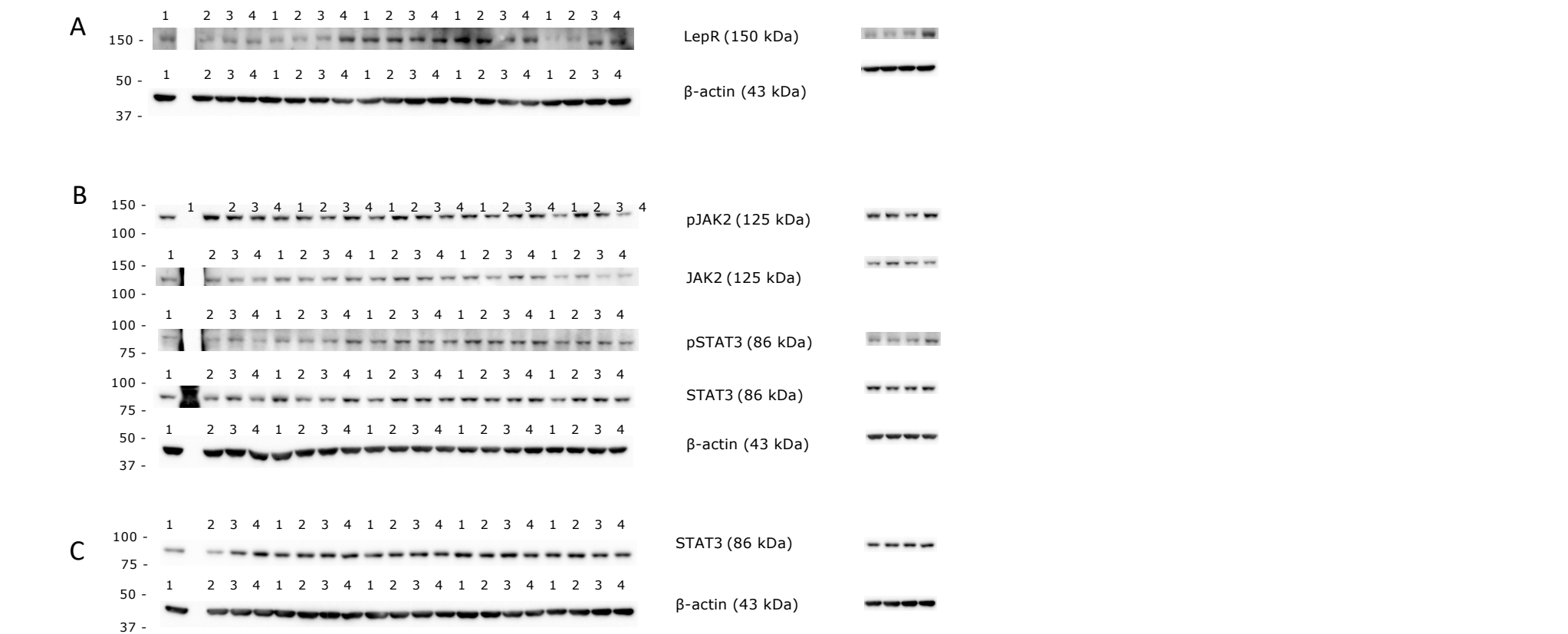
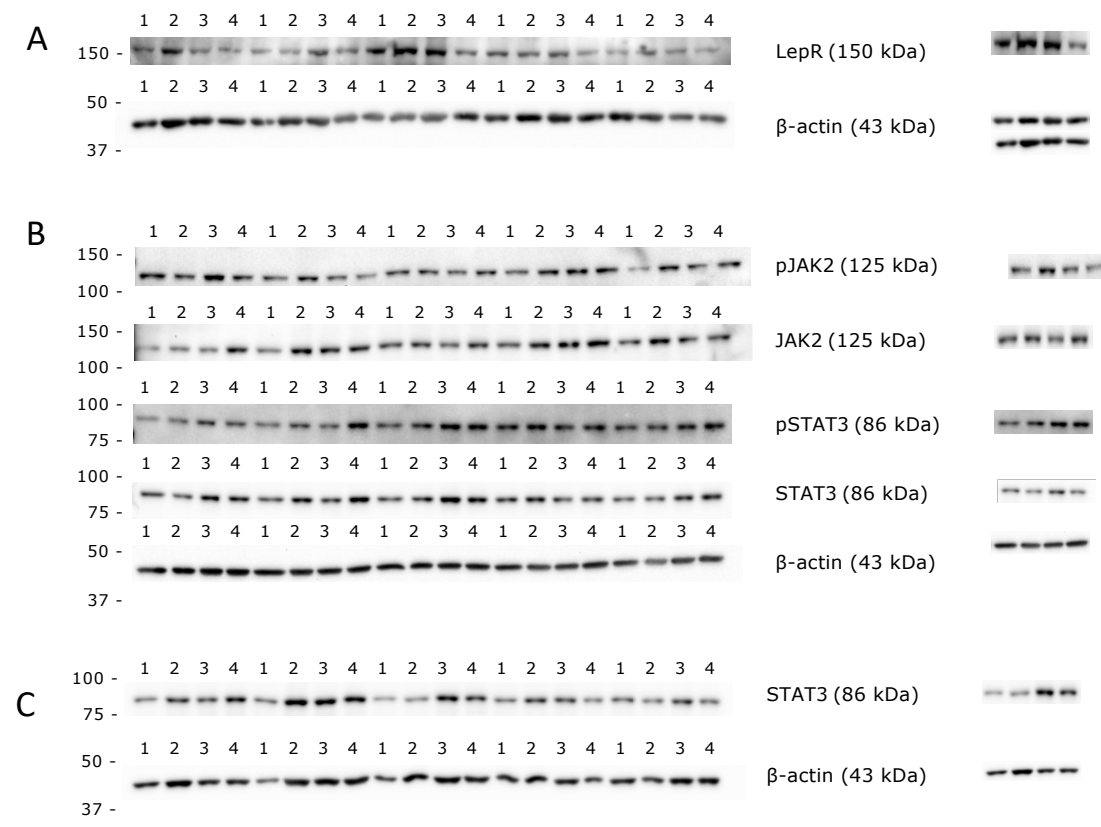


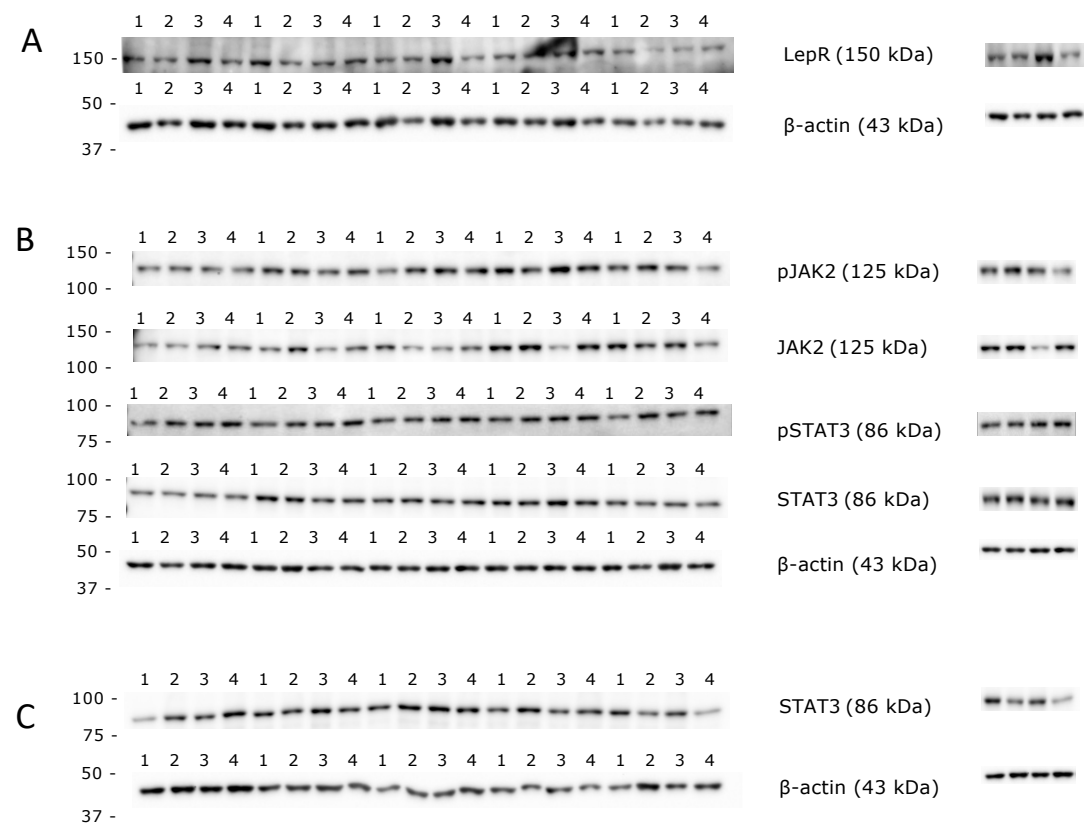
Supplementary figure S2. A Example of full-size cropped immunoblots related to the expression levels of LepR (150 kDa) and β -actin (43 kDa) measured in the whole post-synaptic density of the ventral Hippocampus of CTRL, FR, EXE and ABA rats after the recovery phase of the anorexic phenotype (PND 49); **B** Example of full-size cropped immunoblots related to the expression levels of pJAK2 (125 kDa), JAK2 (125 kDa), pSTAT3 (86 kDa), STAT3 (86 kDa) and β -actin (43 kDa) measured in the cytosolic fraction of the ventral Hippocampus of CTRL, FR, EXE and ABA rats after the recovery phase of the anorexic phenotype (PND 49); **C** Example of full-size cropped immunoblots related to the expression levels of STAT3 (86 kDa) and β -actin (43 kDa) measured in the nuclear fraction of the ventral Hippocampus of CTRL, FR, EXE and ABA rats after the recovery phase of the anorexic phenotype (PND 49). 1= controls, CTRL; 2= food restricted, FR; 3= exercise, EXE; 4= activity-based anorexia, ABA.



Supplementary figure S3. A Example of full-size cropped immunoblots related to the expression levels of LepR (150 kDa) and β -actin (43 kDa) measured in the whole post-synaptic density of the dorsal Hippocampus of CTRL, FR, EXE and ABA rats in the acute phase of the anorexic phenotype (PND 42); **B** Example of full-size cropped immunoblots related to the expression levels of pJAK2 (125 kDa), JAK2 (125 kDa), pSTAT3 (86 kDa), STAT3 (86 kDa) and β -actin (43 kDa) measured in the cytosolic fraction of the dorsal Hippocampus of CTRL, FR, EXE and ABA rats in the acute phase of the anorexic phenotype (PND42); **C** Example of full-size cropped immunoblots related to the expression levels of STAT3 (86 kDa) and β -actin (43 kDa) measured in the nuclear fraction of the dorsal Hippocampus of CTRL, FR, EXE and ABA rats in the acute phase of the anorexic phenotype (PND42). 1= controls, CTRL; 2= food restricted, FR; 3= exercise, EXE; 4= activity-based anorexia, ABA.



Supplementary figure S4. A Example of full-size cropped immunoblots related to the expression levels of LepR (150 kDa) and β -actin (43 kDa) measured in the whole post-synaptic density of the dorsal Hippocampus of CTRL, FR, EXE and ABA rats after the recovery phase of the anorexic phenotype (PND 49); **B** Example of full-size cropped immunoblots related to the expression levels of pJAK2 (125 kDa), JAK2 (125 kDa), pSTAT3 (86 kDa), STAT3 (86 kDa) and β -actin (43 kDa) measured in the cytosolic fraction of the dorsal Hippocampus of CTRL, FR, EXE and ABA rats after the recovery phase of the anorexic phenotype (PND 49); **C** Example of full-size cropped immunoblots related to the expression levels of STAT3 (86 kDa) and β -actin (43 kDa) measured in the nuclear fraction of the dorsal Hippocampus of CTRL, FR, EXE and ABA rats after the recovery phase of the anorexic phenotype (PND 49). 1= controls, CTRL; 2= food restricted, FR; 3= exercise, EXE; 4= activity-based anorexia, ABA.



Supplementary Table S1. Two-way ANOVA analysis of leptin plasma levels (pg/ml) (A) in the acute phase of the phenotype (PND42) and (B) after a 7-day recovery period (PND49)

A	Leptin plasma levels	Two-way ANOVA	
		(followed by Tuckey's post hoc test)	
	Acute phase	F value	p value
	Interaction	F (1, 16) = 7,716	0,0134
	Exercise	F (1, 16) = 11,31	0,0040
	Food restriction	F (1, 16) = 51,56	<0,0001
B	Leptin plasma levels	Two-way ANOVA	
		(followed by Tuckey's post hoc test)	
	After recovery	F value	p value
	Interaction	F (1, 16) = 6,448	0,0219
	Food restriction	F (1, 16) = 28,47	<0,0001

Supplementary Table S2. Table 1 Expression and phosphorylation levels of JAK2/STAT3 measured in the cytosolic (A) and (B) nuclear fraction of the ventral Hippocampus of CTRL, FR, EXE and ABA rats in the acute phase of the phenotype induction (left) and after a period of body weight recovery (right). Data are presented as the mean \pm SEM.

*p<0.05, **p<0.01. ***p<0.001 vs. CTRL, #p<0.05, ##p<0.01, ###p<0.001 vs. FR, \$p<0.05, \$\$p<0.01 vs. EXE. (Two-way ANOVA followed by Tukey’s multiple comparisons test).

CTRL: controls (n=5/time point); FR: food restricted (n=5/time point); EXE: exercise (n=5/time point); ABA: activity-based anorexia (n=5/time point)

A	Cytosolic fraction	Acute phase				After weight recovery			
		CTRL	FR	EXE	ABA	CTRL	FR	EXE	ABA
	pJAK2	100 \pm 1	106 \pm 9	117 \pm 3	96 \pm 4 ^{\$}	100 \pm 3	135 \pm 8	133 \pm 7	142 \pm 16
	JAK2	100 \pm 2	94 \pm 10	92 \pm 4	131 \pm 10 ^{*/##/\$\$}	100 \pm 3	121 \pm 4*	117 \pm 3	94 \pm 7 ^{##/\$\$}
	pSTAT3	100 \pm 2	59 \pm 5 ^{***}	61 \pm 3 ^{***}	75 \pm 4 ^{**/#}	100 \pm 7	91 \pm 9	94 \pm 4	124 \pm 8 ^{#/5}
	STAT3	100 \pm 5	83 \pm 3	90 \pm 8	115 \pm 10 [#]	100 \pm 5	103 \pm 4	103 \pm 8	99 \pm 5

B	Nuclear fraction	Acute phase				After weight recovery			
		CTRL	FR	EXE	ABA	CTRL	FR	EXE	ABA
	STAT3	100 \pm 6	81 \pm 5	80 \pm 3	71 \pm 8	100 \pm 5	105 \pm 6	110 \pm 4	137 \pm 4 ^{***/###/\$\$}

Supplementary Table S3. Expression and phosphorylation levels of JAK2/STAT3 measured in the cytosolic (A) and nuclear (B) fraction of the dorsal Hippocampus of CTRL, FR, EXE and ABA rats in the acute phase of the phenotype induction (left) and after a period of body weight recovery (right). Data are presented as the mean± SEM.

*p<0.05, **p<0.01 vs. CTRL, #p<0.05, ##p<0.01 vs. FR, \$p<0.05, \$\$p<0.01 vs. EXE, @p<0.01 vs. ABA. (Two-way ANOVA followed by Tukey’s multiple comparisons test).

CTRL: controls (n=5/time point); FR: food restricted (n=5/time point); EXE: exercise (n=5/time point); ABA: activity-based anorexia (n=5/time point).

A	Cytosolic fraction	Acute phase				After weight recovery			
		CTRL	FR	EXE	ABA	CTRL	FR	EXE	ABA
	pJAK2	100 ± 7	119 ± 4	116 ± 5	84 ± 7 ^{##/\$\$}	100 ± 5	112 ± 8	106 ± 8	77 ± 3 ^{##/\$}
	JAK2	100 ± 9	113 ± 9	103 ± 12	132 ± 8	100 ± 9	105 ± 8	79 ± 11	101 ± 3
	pSTAT3	100 ± 7	116 ± 6	111 ± 2	126 ± 3 ^{**/###/\$\$}	100 ± 2	109 ± 5	104 ± 5	107 ± 5
	STAT3	100 ± 1	120 ± 4	109 ± 5	124 ± 4	100 ± 5	97 ± 6	100 ± 5	98 ± 5

B	Nuclear fraction	Acute phase				After weight recovery			
		CTRL	FR	EXE	ABA	CTRL	FR	EXE	ABA
	STAT3	100 ± 9	97 ± 7	136 ± 7 ^{**/@@}	99 ± 2	100 ± 5	103 ± 5	98 ± 2	79 ± 5 ^{*/\$\$}

Supplementary Table S4. Detailed F values, degrees of freedom and p values relative to two-way ANOVA analysis of protein levels evaluated in the ventral Hippocampus of CTRL, FR, EXE and ABA rats in the acute phase of the phenotype (A) and after a 7-day recovery period (B) and presented in figure 2 and 3 and table 1.

CTRL: controls; FR: food restricted; EXE: exercise; ABA: activity-based anorexia.

A

Ventral Hippocampus Acute phase		Two-way ANOVA (followed by Tuckey's post hoc test)	
<i>Post-synaptic density</i>		F value	p value
Leptin Receptor	Interaction	F (1, 16) = 31,08	<0,0001
	Exercise	F (1, 16) = 21,37	0,0003
	Food restriction	F (1, 16) = 8,452	0,0103
<i>Cytosolic fraction</i>			
pJAK2 (Tyr1007/1008)	Interaction	F (1, 16) = 6,817	0,0189
JAK2	Interaction	F (1, 16) = 9,453	0,0073
	Food restriction	F (1, 16) = 5,053	0,0390
pJAK2/JAK2	Interaction	F (1, 16) = 62,91	<0,0001
	Food restriction	F (1, 16) = 21,19	0,0003
pSTAT3 (Tyr705)	Interaction	F (1, 16) = 54,38	<0,0001
	Exercise	F (1, 16) = 9,258	0,0078
	Food restriction	F (1, 16) = 13,10	0,0023
STAT3	Interaction	F (1, 16) = 8,933	0,0087
<i>Nuclear fraction</i>			
STAT3	Exercise	F (1, 16) = 6,813	0,0189
	Food restriction	F (1, 16) = 5,480	0,0325
<i>Cytosol to Nucleus translocation</i>			
STAT3	Interaction	F (1, 16) = 8,158	0,0114
	Exercise	F (1, 16) = 27,26	<0,0001
	Food restriction	F (1, 16) = 11,87	0,0033

B

After recovery			
<i>Post-synaptic density</i>			
Leptin Receptor	Interaction	F (1, 16) = 5,825	0,0282
	Exercise	F (1, 16) = 5,572	0,0313
	Food restriction	F (1, 16) = 6,321	0,0230
<i>Cytosolic fraction</i>			
pJAK2 (Tyr1007/1008)	Food restriction	F (1, 16) = 5,070	0,0387
JAK2	Interaction	F (1, 16) = 24,75	0,0001
	Interaction	F (1, 16) = 4,667	0,0463
pJAK2/JAK2	Exercise	F (1, 16) = 19,17	0,0005
	Food restriction	F (1, 16) = 15,71	0,0011
pSTAT3 (Tyr705)	Interaction	F (1, 16) = 7,102	0,0169
pSTAT3/STAT3	Interaction	F (1, 16) = 9,109	0,0082
<i>Nuclear fraction</i>			
STAT3	Interaction	F (1, 16) = 5,375	0,0340
	Exercise	F (1, 16) = 20,12	0,0004
	Food restriction	F (1, 16) = 12,08	0,0031
<i>Cytosol to Nucleus translocation</i>			
STAT3	Interaction	F (1, 16) = 5,375	0,0340
	Exercise	F (1, 16) = 20,12	0,0004
	Food restriction	F (1, 16) = 12,08	0,0031

Supplementary Table S5. Detailed F values, degrees of freedom and p values relative to two-way ANOVA analysis of mRNA levels evaluated in the ventral Hippocampus of CTRL, FR, EXE and ABA rats in the acute phase of the phenotype (A) and after a 7-day recovery period (B) and presented in figure 3.

CTRL: controls; FR: food restricted; EXE: exercise; ABA: activity-based anorexia.

A	Ventral Hippocampus		Two-way ANOVA	
	Acute phase		(followed by Tuckey's post hoc test)	
<i>mRNA levels</i>			F value	p value
Socs3	Interaction		F (1, 16) = 34,09	<0,0001
Dnmt1	Interaction		F (1, 16) = 6,684	0,0199
	Food restriction		F (1, 16) =7,130	0,0168

B	Ventral Hippocampus		Two-way ANOVA	
	After recovery		(followed by Tuckey's post hoc test)	
<i>mRNA levels</i>			F value	p value
Socs3	Interaction		F (1, 15) = 8,868	0,0094
	Exercise		F (1, 15) = 7,637	0,0145
	Food restriction		F (1, 15) =9,230	0,0083
Dnmt1	Interaction		F (1, 16) = 15,65	0,0011
	Exercise		F (1, 16) = 61,23	<0,0001
	Food restriction		F (1, 16) = 32,03	<0,0001

Supplementary Table S6. Detailed F values, degrees of freedom and p values relative to two-way ANOVA analysis of protein levels evaluated in the dorsal Hippocampus of CTRL, FR, EXE and ABA rats in the acute phase of the phenotype (A) and after a 7-day recovery period (B) and presented in figure 4 and 5 and table 2.

CTRL: controls; FR: food restricted; EXE: exercise; ABA: activity-based anorexia.

A

Dorsal Hippocampus		Two-way ANOVA	
Acute phase		(followed by Tuckey's post hoc test)	
<i>Post-synaptic density</i>		F value	p value
Leptin Receptor	Interaction	F (1, 16) = 17,83	0,0006
	Food restriction	F (1, 16) = 11,76	0,0034
<i>Cytosolic fraction</i>			
pJAK2 (Tyr1007/1008)	Interaction	F (1, 16) = 19,39	0,0004
JAK2	Food restriction	F (1, 16) = 4,753	0,0445
pJAK2/JAK2	Interaction	F (1, 16) = 4,621	0,0472
pSTAT3 (Tyr705)	Interaction	F (1, 16) = 5,169	0,0371
	Exercise	F (1, 16) = 9,348	0,0075
	Food restriction	F (1, 16) = 8,837	0,0090
STAT3	Exercise	F (1, 16) = 12,36	0,0029
	Food restriction	F (1, 16) = 7,951	0,0123
<i>Nuclear fraction</i>			
STAT3	Interaction	F (1, 16) = 6,689	0,0199
	Exercise	F (1, 16) = 8,556	0,0099
	Food restriction	F (1, 16) = 9,928	0,0062
<i>Cytosol to Nucleus translocation</i>			
STAT3	Interaction	F (1, 16) = 11,10	0,0042
	Food restriction	F (1, 16) = 32,11	<0,0001

B

After recovery			
<i>Post-synaptic density</i>			
Leptin Receptor	Interaction	F (1, 16) = 17,28	0,0007
	Exercise	F (1, 16) = 12,85	0,0025
	Food restriction	F (1, 16) = 62,88	<0,0001
<i>Cytosolic fraction</i>			
pJAK2 (Tyr1007/1008)	Interaction	F (1, 16) = 10,13	0,0058
	Exercise	F (1, 16) = 4,919	0,0414
pJAK2/JAK2	Interaction	F (1, 16) = 31,00	<0,0001
	Food restriction	F (1, 16) = 23,10	0,0002
<i>Nuclear fraction</i>			
STAT3	Interaction	F (1, 16) = 8,651	0,0096
	Food restriction	F (1, 16) = 13,00	0,0024
<i>Cytosol to Nucleus translocation</i>			
STAT3	Interaction	F (1, 16) = 20,55	0,0003
	Food restriction	F (1, 16) = 19,82	0,0004

Supplementary Table S7. Detailed F values, degrees of freedom and p values relative to two-way ANOVA analysis of mRNA levels evaluated in the dorsal Hippocampus of CTRL, FR, EXE and ABA rats in the acute phase of the phenotype (A) and after a 7-day recovery period (B) and presented in figure 5.

CTRL: controls; FR: food restricted; EXE: exercise; ABA: activity-based anorexia.

A	Dorsal Hippocampus		Two-way ANOVA	
	Acute phase		(followed by Tuckey's post hoc test)	
	<i>mRNA levels</i>		F value	p value
	<i>Socs3</i>	Exercise	F (1, 16) = 8,331	0,0507
	<i>Dnmt1</i>	Interaction	F (1, 16) = 23,28	0,0002
		Exercise	F (1, 16) = 6,126	0,0249

B	Dorsal Hippocampus		Two-way ANOVA	
	After recovery		(followed by Tuckey's post hoc test)	
	<i>mRNA levels</i>		F value	p value
	<i>Socs3</i>	Exercise	F (1, 16) = 42,43	<0,0001
	<i>Dnmt1</i>	Interaction	F (1, 16) = 14,34	0,0016
		Exercise	F (1, 16) = 15,92	0,0011
		Food restriction	F (1, 16) = 23,36	0,0002