Supplementary Table S1. Repeated measures two-way ANOVA analysis of data presented in Figures 1 and 2

Two-way ANOVA	Body weight (%)		Food intake (g)		Distance travelled (m)	
	F (DFn, DFd)	*P value*	*F (DFn, DFd)*	*P value*	*F (DFn, DFd)*	*P value*
Time x treatment	F (54, 360) = 10,54	P<0,0001	F (39, 260) = 32,63	P<0,0001	F (6, 174) = 6,852	P<0,0001
Time	F (18, 360) = 475,5	P<0,0001	F (5,399, 108,0) = 130,2	P<0,0001	F (6, 174) = 41,91	P<0,0001
Food restriction	F (3, 20) = 9,131	P=0,0005	F (3, 20) = 5,316	P=0,0074	F (1, 29) = 20,13	P=0,0001
Exercise	F (20, 360) = 18,35	P<0,0001	F (20, 260) = 5,568	P<0,0001	F (29, 174) = 2,615	P<0,0001

	Mean speed (m/min)		Max speed (m/min)		Long-exercise sequence	
	F (DFn, DFd)	*P value*	*F (DFn, DFd)*	*P value*	*F (DFn, DFd)*	*P value*
Time x treatment	F (6, 126) = 3,113	P=0,0071	F (6, 126) = 10,93	P<0,0001	F (6, 126) = 4,681	P=0,0002
Time	F (6, 126) = 39,90	P<0,0001	F (6, 126) = 21,27	P<0,0001	F (6, 126) = 12,05	P<0,0001
Food restriction	F (1, 21) = 4,334	P=0,0498	F (1, 21) = 4,948	P=0,0372	F (1, 21) = 4,113	P=0,0554
Exercise	F (21, 126) = 5,767	P<0,0001	F (21, 126) = 10,90	P<0,0001	F (21, 126) = 2,932	P=0,0001

Supplementary Table S2. Detailed statistical values of data presented in Figure 1. Mean differences and adjusted *p* values relative to Bonferroni's multiple comparisons test are presented for the analysis of body weight (Figure 1b) and food intake (Figure 1c)

Body weight	Bonferroni's multiple comparisons test	
	Mean difference (g)	Adjusted p value
pnd39		
Control vs. Food restriction	18,92	0,0066
Control vs. Activity-based anorexia	22,67	0,0002
Exercise vs. Activity-based anorexia	16,60	0,0461
pnd40		
Control vs. Food restriction	30,25	<0,0001
Control vs. Activity-based anorexia	35,29	<0,0001
Food restriction vs. Exercise	-23,37	<0,0001
Exercise vs. Activity-based anorexia	28,42	<0,0001
pnd41		
Control vs. Food restriction	36,52	<0,0001
Control vs. Activity-based anorexia	44,28	<0,0001
Food restriction vs. Exercise	-30,54	<0,0001
Exercise vs. Activity-based anorexia	38,30	<0,0001
pnd42		
Control vs. Food restriction	37,03	<0,0001
Control vs. Activity-based anorexia	54,81	<0,0001
Food restriction vs. Exercise	-31,43	<0,0001
Food restriction vs. Activity-based anorexia	17,79	0,0174
Exercise vs. Activity-based anorexia	49,22	<0,0001
pnd43		
Control vs. Food restriction	17,62	0,0199
Control vs. Exercise	1,663	>0,9999
Control vs. Activity-based anorexia	22,90	0,0001
Food restriction vs. Activity-based anorexia	5,280	>0,9999
Exercise vs. Activity-based anorexia	21,24	0,0008
pnd44		
Control vs. Exercise	2,224	>0,9999
Control vs. Activity-based anorexia	19,86	0,0028
Food restriction vs. Exercise	-11,96	>0,9999
Food restriction vs. Activity-based anorexia	5,681	>0,9999
Exercise vs. Activity-based anorexia	17,64	0,0197
pnd45		
Control vs. Exercise	0,7040	>0,9999
Control vs. Activity-based anorexia	16,76	0,0405

Food intake	Bonferroni's multiple comparisons test	
	Mean difference (g)	Adjusted p value
pnd36		
Control vs. Exercise	3,583	0,0358
pnd39		
Control vs. Food restriction	15,06	<0,0001
Control vs. Activity-based anorexia	14,88	<0,0001
Food restriction vs. Exercise	-15,14	<0,0001
Exercise vs. Activity-based anorexia	14,96	<0,0001
pnd40		
Control vs. Food restriction	13,36	<0,0001
Control vs. Activity-based anorexia	12,33	<0,0001
Food restriction vs. Exercise	-13,15	<0,0001
Exercise vs. Activity-based anorexia	12,13	<0,0001
pnd41		
Control vs. Food restriction	11,52	<0,0001
Control vs. Activity-based anorexia	10,40	<0,0001
Food restriction vs. Exercise	-13,83	<0,0001
Exercise vs. Activity-based anorexia	12,71	<0,0001
pnd42		
Control vs. Food restriction	10,77	<0,0001
Control vs. Activity-based anorexia	10,19	0,0003
Food restriction vs. Exercise	-12,63	<0,0001
Exercise vs. Activity-based anorexia	12,04	<0,0001
pnd43		
Control vs. Food restriction	-6,167	0,0095
pnd45		
Control vs. Food restriction	-4,667	0,0083
pnd46		
Control vs. Activity-based anorexia	-6,083	0,0222
pnd47		
Control vs. Activity-based anorexia	-7,917	0,0073
Exercise vs. Activity-based anorexia	-6,333	0,0038
pnd48		
Control vs. Activity-based anorexia	-4,250	0,0271

Supplementary Table S3. Detailed statistical values of data presented in Figure 2. Mean differences and adjusted *p* values relative to Bonferroni's multiple comparisons test are presented for the analysis of distance travelled (Figure 2a), mean speed (Figure 2b), maximum speed (Figure 2c) and long-exercise sequence (Figure 2e)

Distance travelled	Bonferroni's multiple comparisons test	
	Mean difference (m)	Adjusted p value
Exercise - Activity-based anorexia		
pnd40	-3877	<0,0001
pnd41	-4510	<0,0001
pnd42	-4351	<0,0001

Long-exercise sequences	Bonferroni's multiple comparisons test
	Adjusted p value
Exercise - Activity-based anorexia	
pnd41	0,0241
pnd42	0,0001

Mean velocity	Bonferroni's multiple comparisons test
	Adjusted p value
Exercise - Activity-based anorexia	
pnd41	0,0031
pnd42	0,0201

Max velocity	Bonferroni's multiple comparisons test
	Adjusted p value
Exercise - Activity-based anorexia	
pnd41	0,0333
pnd42	<0,0001

Supplementary Table S4. Two-way ANOVA analysis of protein expression data measured in the whole homogenate of the NAc in the acute phase of the pathology (right) and after a 7-days recovery period (left) presented in Figures 3–8

	Two-way ANOVA	Whole homogenate – Acute phase	
		F (DFn, DFd)	P value
NR2A	Interaction	F (1, 19) = 1,431	P=0,2464
	Exercise	F (1, 19) = 12,25	P=0,0024
	Food-restriction	F (1, 19) = 0,2040	P=0,6567
NR2B	Interaction	F (1, 19) = 1,377	P=0,2552
	Exercise	F (1, 19) = 8,237	P=0,0098
	Food-restriction	F (1, 19) = 1,014	P=0,3266
GRIP	Interaction	F (1, 19) = 5,600	P=0,0287
	Exercise	F (1, 19) = 5,535	P=0,0296
	Food-restriction	F (1, 19) = 1,602	P=0,2209
GluA1	Interaction	F (1, 19) = 0,6317	P=0,4365
	Exercise	F (1, 19) = 0,9214	P=0,3492
	Food-restriction	F (1, 19) = 0,006563	P=0,9363
GluA2	Interaction	F (1, 19) = 2,761	P=0,1130
	Exercise	F (1, 19) = 5,560	P=0,0292
	Food-restriction	F (1, 19) = 0,002572	P=0,9601
SAP102	Interaction	F (1, 19) = 1,004	P=0,3289
	Exercise	F (1, 19) = 7,228	P=0,0145
	Food-restriction	F (1, 19) = 0,0005493	P=0,9815
SAP97	Interaction	F (1, 19) = 4,999	P=0,0376
	Exercise	F (1, 19) = 7,629	P=0,0124
	Food-restriction	F (1, 19) = 1,096	P=0,3083
PSD95	Interaction	F (1, 19) = 0,3133	P=0,5822
	Exercise	F (1, 19) = 0,08531	P=0,7734
	Food-restriction	F (1, 19) = 4,535	P=0,0465

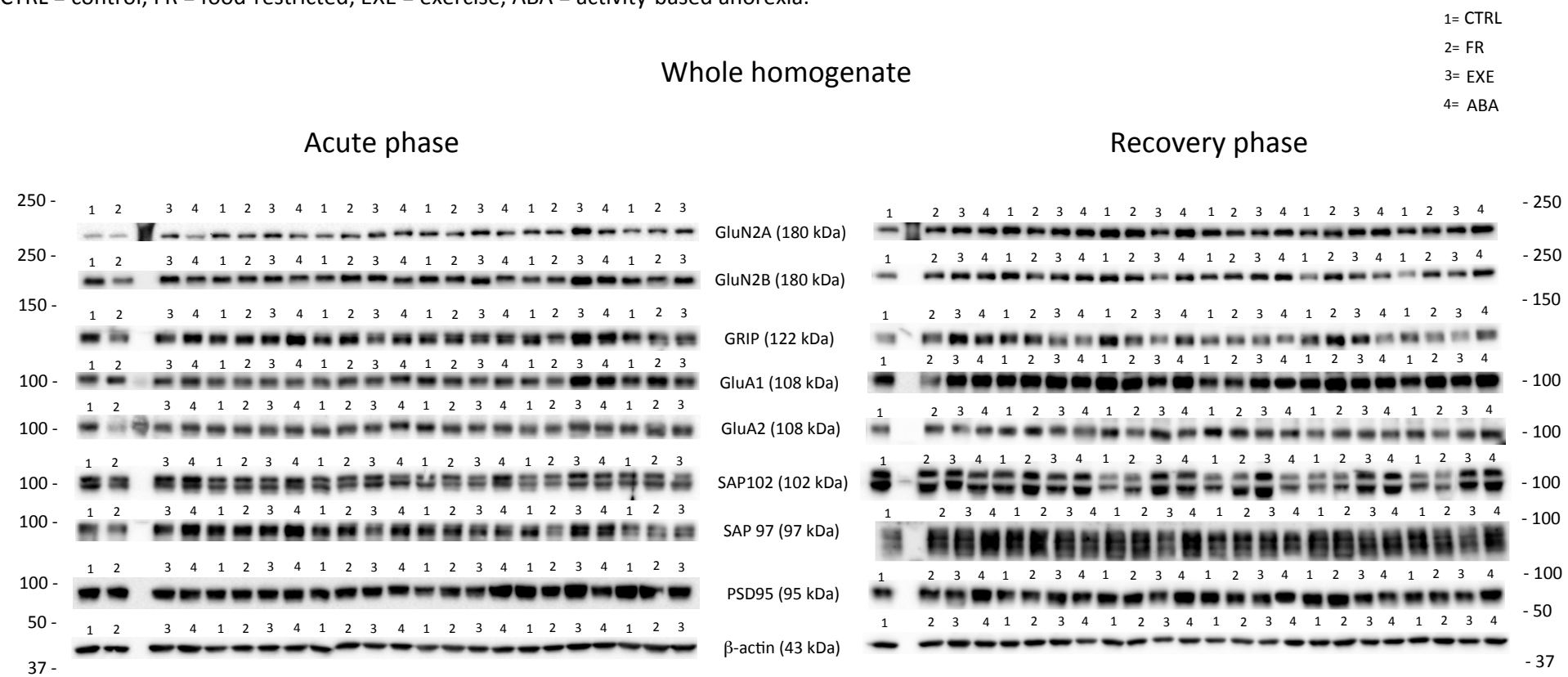
	Two-way ANOVA	Whole homogenate – Recovery phase	
		F (DFn, DFd)	P value
NR2A	Interaction	F (1, 20) = 22,44	P=0,0001
	Exercise	F (1, 20) = 11,66	P=0,0027
	Food-restriction	F (1, 20) = 9,209	P=0,0065
NR2B	Interaction	F (1, 20) = 28,01	P<0,0001
	Exercise	F (1, 20) = 30,03	P<0,0001
	Food-restriction	F (1, 20) = 27,06	P<0,0001
GRIP	Interaction	F (1, 20) = 0,9104	P=0,3514
	Exercise	F (1, 20) = 3,692	P=0,0690
	Food-restriction	F (1, 20) = 0,5258	P=0,4768
GluA1	Interaction	F (1, 20) = 20,19	P=0,0002
	Exercise	F (1, 20) = 0,3298	P=0,5722
	Food-restriction	F (1, 20) = 3,079	P=0,0946
GluA2	Interaction	F (1, 20) = 1,697	P=0,2074
	Exercise	F (1, 20) = 0,6153	P=0,4420
	Food-restriction	F (1, 20) = 7,024	P=0,0154
SAP102	Interaction	F (1, 20) = 0,003614	P=0,9527
	Exercise	F (1, 20) = 6,177	P=0,0219
	Food-restriction	F (1, 20) = 0,07693	P=0,7843
SAP97	Interaction	F (1, 20) = 0,008498	P=0,9275
	Exercise	F (1, 20) = 4,665	P=0,0431
	Food-restriction	F (1, 20) = 1,885	P=0,1849
PSD95	Interaction	F (1, 20) = 12,40	P=0,0021
	Exercise	F (1, 20) = 3,846	P=0,0640
	Food-restriction	F (1, 20) = 6,445	P=0,0195

Supplementary Table S5. Two-way ANOVA analysis of protein expression data measured in the crude synaptosomal fraction of the NAc in the acute phase of the pathology (right) and after a 7-days recovery period (left) presented in Figures 3–8

	Two-way ANOVA	Crude membrane fraction – Acute phase	
		F (DFn, DFd)	P value
NR2A	Interaction	F (1, 17) = 17,12	P=0,0007
	Exercise	F (1, 17) = 26,07	P<0,0001
	Food-restriction	F (1, 17) = 32,25	P<0,0001
NR2B	Interaction	F (1, 18) = 15,78	P=0,0009
	Exercise	F (1, 18) = 2,986	P=0,1011
	Food-restriction	F (1, 18) = 0,5549	P=0,4659
GRIP	Interaction	F (1, 19) = 3,625	P=0,0722
	Exercise	F (1, 19) = 0,1049	P=0,7495
	Food-restriction	F (1, 19) = 2,240	P=0,1509
GluA1	Interaction	F (1, 18) = 2,970	P=0,1020
	Exercise	F (1, 18) = 3,913	P=0,0634
	Food-restriction	F (1, 18) = 6,350	P=0,0214
GluA2	Interaction	F (1, 19) = 35,47	P<0,0001
	Exercise	F (1, 19) = 0,9781	P=0,3351
	Food-restriction	F (1, 19) = 0,6139	P=0,4430
SAP102	Interaction	F (1, 18) = 5,283	P=0,0337
	Exercise	F (1, 18) = 0,003415	P=0,9540
	Food-restriction	F (1, 18) = 5,000	P=0,0382
SAP97	Interaction	F (1, 18) = 10,99	P=0,0039
	Exercise	F (1, 18) = 4,814	P=0,0416
	Food-restriction	F (1, 18) = 0,7498	P=0,3979
PSD95	Interaction	F (1, 18) = 2,580	P=0,1257
	Exercise	F (1, 18) = 1,272	P=0,2741
	Food-restriction	F (1, 18) = 0,0009369	P=0,9759

	Two-way ANOVA	Crude membrane fraction – Recovery phase	
		F (DFn, DFd)	P value
NR2A	Interaction	F (1, 20) = 22,44	P=0,0001
	Exercise	F (1, 20) = 11,66	P=0,0027
	Food-restriction	F (1, 20) = 9,209	P=0,0065
NR2B	Interaction	F (1, 20) = 28,01	P<0,0001
	Exercise	F (1, 20) = 30,03	P<0,0001
	Food-restriction	F (1, 20) = 27,06	P<0,0001
GRIP	Interaction	F (1, 19) = 6,378	P=0,0206
	Exercise	F (1, 19) = 26,20	P<0,0001
	Food-restriction	F (1, 19) = 3,669	P=0,0706
GluA1	Interaction	F (1, 20) = 20,19	P=0,0002
	Exercise	F (1, 20) = 0,3298	P=0,5722
	Food-restriction	F (1, 20) = 3,079	P=0,0946
GluA2	Interaction	F (1, 20) = 1,697	P=0,2074
	Exercise	F (1, 20) = 0,6153	P=0,4420
	Food-restriction	F (1, 20) = 7,024	P=0,0154
SAP102	Interaction	F (1, 20) = 4,475	P=0,0471
	Exercise	F (1, 20) = 4,731	P=0,0418
	Food-restriction	F (1, 20) = 1,651	P=0,2135
SAP97	Interaction	F (1, 20) = 8,141	P=0,0098
	Exercise	F (1, 20) = 20,05	P=0,0002
	Food-restriction	F (1, 20) = 1,890	P=0,1844
PSD95	Interaction	F (1, 19) = 11,28	P=0,0033
	Exercise	F (1, 19) = 5,877	P=0,0255
	Food-restriction	F (1, 19) = 3,221	P=0,0886

Supplementary Figure S1. Uncropped immunoblot related to the expression levels of GluN2A (180 kDa), GluN2B (180 kDa), GRIP (122 kDa), GluA1 (108 kDa), GluA2 (108 kDa), SAP102 (102 kDa), SAP97 (97 kDa), PSD95 (95 kDa), β-actin (43 kDa) measured in the NAc in the whole homogenate of CTRL, FR, EXE and ABA rats in the acute phase of the pathology and after a 7-days recovery period, presented in Figures 3–8 .
CTRL = control; FR = food-restricted; EXE = exercise; ABA = activity-based anorexia.



Supplementary Figure S2. Uncropped immunoblot related to the expression levels of GluN2A (180 kDa), GluN2B (180 kDa), GRIP (122 kDa), GluA1 (108 kDa), GluA2 (108 kDa), SAP102 (102 kDa), SAP97 (97 kDa), PSD95 (95 kDa), β-actin (43 kDa) measured in the NAc in the crude membrane fraction of CTRL, FR, EXE and ABA rats in the acute phase of the pathology and after a 7-days recovery period, presented in Figures 3–8.
CTRL = control; FR = food-restricted; EXE = exercise; ABA = activity-based anorexia.