

Supplementary Materials

x: interaction of factors; %: percentage of total variation; F: F ratio (DFn: degree of freedom numerator, DFd: degree of freedom denominator). Significant differences ($p < 0.05$) are given in bold.

Table S1. Results of three-way ANOVA testing the effects of genotype (WT vs. TRPV1^{-/-}), sex (male vs. female) and exercise (sedentary vs. trained) on body weight, absolute weights of heart and diaphragm.

Factor	Body weight			Absolute heart weight			Absolute diaphragm weight		
	%	F (1, 30)	P value	%	F (1, 28)	P value	%	F (1, 28)	P value
Exercise (E)	1.14	4.35	P=0.0455	26.4	37.3	P<0.0001	37.7	35.2	P<0.0001
Sex (S)	67.9	259	P<0.0001	48.2	68.0	P<0.0001	24.3	22.6	P<0.0001
Genotype (G)	14.2	54	P<0.0001	2.11	2.97	P=0.0956	0.36	0.34	P=0.5654
E x S	0.09	0.33	P=0.5691	0.23	0.33	P=0.5706	2.6	2.43	P=0.1304
E x G	0.55	2.09	P=0.1588	0.37	0.522	P=0.4761	1.81	1.69	P=0.2048
S x G	5.82	22.2	P<0.0001	2.33	3.28	P=0.0807	1	0.93	P=0.3428
E x S x G	0.49	1.89	P=0.1799	0.18	0.26	P=0.6162	1.36	1.27	P=0.2690

Table S2. Results of three-way ANOVA testing the effects of genotype (WT vs. TRPV1^{-/-}), sex (male vs. female) and exercise (sedentary vs. trained) on relative weights of heart and diaphragm.

Factor	Relative heart weight			Relative diaphragm weight		
	%	F (1, 28)	P value	%	F (1, 28)	P value
Exercise (E)	69.9	78.47	P<0.0001	22.8	22.34	P<0.0001
Sex (S)	0.02	0.02	P=0.8960	20.3	19.91	P=0.0001
Genotype (G)	4.60	5.16	P=0.0311	17.8	17.47	P=0.0003
E x S	0.04	0.05	P=0.8286	0.63	0.62	P=0.4391
E x G	0.61	0.68	P=0.4165	0.71	0.7	P=0.4112
S x G	<0.01	<0.01	P=0.9801	6.45	6.34	P=0.0178
E x S x G	<0.01	<0.01	P=0.9849	4.23	4.15	P=0.0511

Table S3. Results of three-way ANOVA testing the effects of genotype (WT *vs.* TRPV1^{-/-}), sex (male *vs.* female) and exercise (sedentary *vs.* trained) on absolute weights of TA, EDL and SOL muscles.

	Absolute TA weight			Absolute EDL weight			Absolute SOL weight		
Factor	%	F (1, 28)	P value	%	F (1, 29)	P value	%	F (1, 27)	P value
Exercise (E)	0.02	0.03	P=0.8616	7.03	10.3	P=0.0033	2.31	2.20	P=0.1493
Sex (S)	64.7	94.1	P<0.0001	61.0	89.3	P<0.0001	45.8	43.6	P<0.0001
Genotype (G)	12.0	17.5	P=0.0003	9.22	13.5	P=0.0010	13.1	12.5	P=0.0014
E x S	0.07	0.1	P=0.7519	0.36	0.53	P=0.4741	4.26	4.05	P=0.0538
E x G	0.07	0.1	P=0.7565	0.57	0.83	P=0.3687	1.98	1.89	P=0.1804
S x G	1.99	2.90	P=0.0997	0.34	0.5	P=0.4832	3.78	3.6	P=0.0682
E x S x G	0.25	0.36	P=0.5509	1.79	2.63	P=0.1163	1.49	1.42	P=0.2433

Table S4. Results of three-way ANOVA testing the effects of genotype (WT *vs.* TRPV1^{-/-}), sex (male *vs.* female) and exercise (sedentary *vs.* trained) on relative weights of TA, EDL and SOL muscles.

	Relative TA weight			Relative EDL weight			Relative SOL weight		
Factor	%	F (1, 28)	P value	%	F (1, 29)	P value	%	F (1, 27)	P value
Exercise (E)	2.39	0.87	P=0.3597	8.26	3.51	P=0.0713	2.65	1.134	P=0.2964
Sex (S)	13.0	4.73	P=0.0383	1.73	0.73	P=0.3984	8.61	3.688	P=0.0654
Genotype (G)	0.06	0.02	P=0.8863	1.02	0.43	P=0.5161	0.01	0.0058	P=0.9399
E x S	0.15	0.05	P=0.8171	1.02	0.43	P=0.5161	11.4	4.865	P=0.0361
E x G	1.43	0.52	P=0.4767	2.39	1.01	P=0.3223	5.27	2.256	P=0.1447
S x G	3.49	1.27	P=0.2700	5.11	2.17	P=0.1516	0.01	0.0058	P=0.9399
E x S x G	0.22	0.08	P=0.7771	12.7	5.39	P=0.0275	6.99	2.994	P=0.0950

Table S5. Results of three-way ANOVA testing the effects of genotype (WT vs. TRPV1^{-/-}), sex (male vs. female) and exercise (sedentary vs. trained) on relative two paws and four paws grip strength tests.

	Two paws			Four paws		
Factor	%	F (1, 30)	P value	%	F (1, 30)	P value
Exercise (E)	7.95	3.94	P=0.0562	21.8	15.62	P=0.0004
Sex (S)	15.3	7.57	P=0.0100	26.0	18.63	P=0.0002
Genotype (G)	9.46	4.69	P=0.0383	7.40	5.31	P=0.0283
E x S	3.32	1.65	P=0.2089	0.85	0.61	P=0.4422
E x G	3.31	1.64	P=0.2095	0.29	0.21	P=0.6505
S x G	0.64	0.33	P=0.5785	<0.01	<0.01	P=0.9927
E x S x G	0.25	0.12	P=0.7280	1.44	1.04	P=0.3168

Table S6. Results of three-way ANOVA testing the effects of genotype (WT vs. TRPV1^{-/-}), sex (male vs. female) and exercise (sedentary vs. trained) on relative twitch amplitude and twitch kinetics of EDL muscles.

	Relative twitch amplitude			Time to peak			Half relaxation time		
Factor	%	F (1, 27)	P value	%	F (1, 27)	P value	%	F (1, 27)	P value
Exercise (E)	45.18	30.25	P<0.0001	53.20	53.30	P<0.0001	17.44	11.69	P=0.0020
Sex (S)	11.75	7.87	P=0.0092	12.64	12.67	P=0.0014	21.09	14.14	P=0.0008
Genotype (G)	0.56	0.37	P=0.5470	6.28	6.29	P=0.0185	10	6.70	P=0.0153
E x S	0.03	0.02	P=0.8963	0.53	0.53	P=0.4725	7.43	4.98	P=0.0341
E x G	0.69	0.46	P=0.5029	0.01	0.01	P=0.9090	1.2	0.81	P=0.3770
S x G	0.66	0.44	P=0.5129	0.51	0.51	P=0.4831	3.1	2.08	P=0.1612
E x S x G	0.74	0.49	P=0.4881	0.01	0.01	P=0.9081	1.88	1.26	P=0.2720

Table S7. Results of three-way ANOVA testing the effects of genotype (WT *vs.* TRPV1^{-/-}), sex (male *vs.* female) and exercise (sedentary *vs.* trained) on relative twitch amplitude and twitch kinetics of SOL muscles.

	Relative twitch amplitude			Time to peak			Half relaxation time		
Factor	%	F (1, 27)	P value	%	F (1, 27)	P value	%	F (1, 27)	P value
Exercise (E)	6.59	2.69	P=0.1129	4.16	1.65	P=0.2103	13.20	10.42	P=0.0033
Sex (S)	7.23	2.94	P=0.0976	15.81	6.27	P=0.0186	26.35	20.81	P<0.0001
Genotype (G)	0.4	0.16	P=0.6884	8.87	3.52	P=0.0716	8.34	6.59	P=0.0161
E x S	1.51	0.62	P=0.4397	0.36	0.14	P=0.7077	6.23	4.92	P=0.0351
E x G	14.21	5.7879	P=0.0233	0.2	0.08	P=0.7805	7.03	5.56	P=0.0259
S x G	4.81	1.96	P=0.1731	2.63	1.04	P=0.3159	6.75	5.33	P=0.0289
E x S x G	0.07	0.03	P=0.8668	<0.01	<0.01	P=0.9696	2.21	1.74	P=0.1980

Table S8. Results of three-way ANOVA testing the effects of genotype (WT *vs.* TRPV1^{-/-}), sex (male *vs.* female) and exercise (sedentary *vs.* trained) on relative tetanus amplitude (Tmax) and tetanus to twitch ratio (Tmax/t) of EDL and SOL muscles.

	EDL						SOL					
	Relative Tmax			Tmax/t			Relative Tmax			Tmax/t		
Factor	%	F (1, 27)	P value	%	F (1, 27)	P value	%	F (1, 27)	P value	%	F (1, 27)	P value
Exercise (E)	22.20	14.29	P=0.0008	4.2	1.77	P=0.1944	9.55	4.94	P=0.0349	0.05	0.023	P=0.8801
Sex (S)	31.79	20.46	P=0.0001	12.4	5.23	P=0.0302	22.35	11.55	P=0.0021	4.77	2.18	P=0.1517
Genotype (G)	0.07	0.04	P=0.8355	0.61	0.26	P=0.6170	0.46	0.24	P=0.6291	4.19	1.91	P=0.1784
E x S	0.19	0.12	P=0.7298	1.63	0.69	P=0.4145	17.09	8.83	P=0.0062	16.77	7.64	P=0.0101
E x G	3.24	2.09	P=0.1600	1.88	0.79	P=0.3807	1.21	= 0.63	P=0.4353	11.47	5.23	P=0.0303
S x G	0.64	0.41	P=0.5274	8.04	3.39	P=0.0764	0.03	0.01	P=0.9027	5.43	2.48	P=0.1273
E x S x G	0.29	0.19	P=0.6677	4.3	1.81	P=0.1891	0.01	<0.01	P=0.9356	0.37	0.17	P=0.6842

Table S9. Results of three-way ANOVA testing the effects of voltage of stimulation (from 0.5 V to 6 V), genotype (WT *vs.* TRPV1^{-/-}) and exercise (sedentary *vs.* trained) on relative force-voltage relationship of EDL and SOL muscles.

	EDL						SOL					
	Male			Female			Male			Female		
Factor	%	F (DFn, DFd)	P value	%	F (DFn, DFd)	P value	%	F (DFn, DFd)	P value	%	F (DFn, DFd)	P value
Voltage (V)	69.74	F (5, 78) = 71.99	P<0.0001	71.70	F (5, 78) = 67.01	P<0.0001	65.96	F (5, 78) = 39.31	P<0.0001	72.98	F (5, 84) = 59.14	P<0.0001
Genotype (G)	0.02	F (1, 78) = 0.08	P=0.7757	0.65	F (1, 78) = 3.05	P=0.0846	0.97	F (1, 78) = 2.9	P=0.0923	1.14	F (1, 84) = 4.61	P=0.0346
Exercise (E)	12.58	F (1, 78) = 64.93	P<0.0001	9.1	F (1, 78) = 42.49	P<0.0001	2.74	F (1, 78) = 8.15	P=0.0055	<0.01	F (1, 84) = 0.01	P=0.9194
V x G	0.02	F (5, 78) = 0.02	P=0.9998	0.19	F (5, 78) = 0.17	P=0.9744	0.77	F (5, 78) = 0.46	P=0.8071	0.36	F (5, 84) = 0.29	P=0.9163
V x E	2.66	F (5, 78) = 2.74	P=0.0246	1.9	F (5, 78) = 1.77	P=0.1286	0.58	F (5, 78) = 0.34	P=0.8844	0.37	F (5, 84) = 0.3	P=0.9124
G x E	0.52	F (1, 78) = 2.71	P=0.1039	0.25	F (1, 78) = 1.16	P=0.2859	0.31	F (1, 78) = 0.92	P=0.3416	2.11	F (1, 84) = 8.56	P=0.0044
V x G x E	0.16	F (5, 78) = 0.17	P=0.9735	0.17	F (5, 78) = 0.16	P=0.9772	2.52	F (5, 78) = 1.5	P=0.1994	0.69	F (5, 84) = 0.56	P=0.7300

Table S10. Results of three-way ANOVA testing the effects of frequency of stimulation (from 10 to 100 Hz), genotype (WT *vs.* TRPV1^{-/-}) and exercise (sedentary *vs.* trained) on relative force-frequency relationship of EDL and SOL muscles.

	EDL						SOL					
	Male			Female			Male			Female		
Factor	%	F (DFn, DFd)	P value	%	F (DFn, DFd)	P value	%	F (DFn, DFd)	P value	%	F (DFn, DFd)	P value
Frequency (F)	65.94	F (9, 130) = 67.66	P<0.0001	69.17	F (9, 140) = 72.15	P<0.0001	62.60	F (9, 130) = 44.95	P<0.0001	66.98	F (9, 140) = 41.69	P<0.0001
Genotype (G)	0.21	F (1, 130) = 1.93	P=0.1669	0.04	F (1, 140) = 0.42	P=0.5207	0.23	F (1, 130) = 1.46	P=0.2290	3.42	F (1, 140) = 19.08	P<0.0001
Exercise (E)	17.45	F (1, 130) = 161.1	P<0.0001	13.37	F (1, 140) = 125.5	P<0.0001	10.98	F (1, 130) = 70.95	P<0.0001	<0.01	F (1, 140) < 0.01	P=0.9512
F x G	0.28	F (9, 130) = 0.29	P=0.9766	0.03	F (9, 140) = 0.03	P>0.9999	0.03	F (9, 130) = 0.02	P>0.9999	0.4	F (9, 140) = 0.25	P=0.9863
F x E	1.74	F (9, 130) = 1.78	P=0.0774	1.1	F (9, 140) = 1.15	P=0.3305	3.42	F (9, 130) = 2.46	P=0.0127	0.64	F (9, 140) = 0.4	P=0.9329
G x E	0.31	F (1, 130) = 2.89	P=0.0917	0.26	F (1, 140) = 2.42	P=0.1221	0.97	F (1, 130) = 6.29	P=0.0134	1.7	F (1, 140) = 9.54	P=0.0024
F x G x E	0.11	F (9, 130) = 0.11	P=0.9993	0.75	F (9, 140) = 0.78	P=0.6365	0.01	F (9, 130) < 0.01	P>0.9999	0.2	F (9, 140) = 0.13	P=0.9989

Table S11. Results of three-way ANOVA testing the effects of genotype (WT *vs.* TRPV1^{-/-}), sex (male *vs.* female) and exercise (sedentary *vs.* trained) on relative tetanus amplitude at fatigue, 5 min recovery and 10 min recovery times of EDL muscles.

	Fatigue			5 min recovery			10 min recovery		
Factor	%	F (1, 26)	P value	%	F (1, 26)	P value	%	F (1, 26)	P value
Exercise (E)	15.60	5.83	P=0.0231	15.77	6.19	P=0.0196	16.18	6.41	P=0.0178
Sex (S)	0.13	0.05	P=0.8283	<0.01	<0.01	P=0.9844	0.16	0.06	P=0.8016
Genotype (G)	5.98	2.23	P=0.1471	7.33	2.88	P=0.1018	7.26	2.88	P=0.1019
E x S	<0.01	<0.01	P=0.9944	0.03	0.01	P=0.9144	0.07	0.03	P=0.8654
E x G	0.01	<0.01	P=0.9417	0.02	<0.01	P=0.9304	<0.01	<0.01	P=0.9701
S x G	6.22	2.32	P=0.1395	5.23	2.05	P=0.1638	4.77	1.89	P=0.1810
E x S x G	0.98	0.36	P=0.5515	3.25	1.28	P=0.2689	4.12	1.63	P=0.2128

Table S12. Results of three-way ANOVA testing the effects of genotype (WT *vs.* TRPV1^{-/-}), sex (male *vs.* female) and exercise (sedentary *vs.* trained) on relative tetanus amplitude at fatigue, 5 min recovery and 10 min recovery times of SOL muscles.

	Fatigue			5 min recovery			10 min recovery		
Factor	%	F (1, 27)	P value	%	F (1, 27)	P value	%	F (1, 27)	P value
Exercise (E)	0.10	0.04	P=0.8494	0.26	0.1	P=0.7573	0.49	0.17	P=0.6804
Sex (S)	7.24	2.64	P=0.1158	8.02	3.04	P=0.0926	3	1.05	P=0.3140
Genotype (G)	4.05	1.48	P=0.2347	0.3	0.11	P=0.7384	0.04	0.01	P=0.9116
E x S	13.78	5.02	P=0.0334	14.43	5.47	P=0.0270	11.71	4.11	P=0.0526
E x G	1.99	0.73	P=0.4015	6.66	2.52	P=0.1238	8.63	3.03	P=0.0932
S x G	0.14	0.05	P=0.8254	0.89	0.34	P=0.5659	0.03	0.01	P=0.9151
E x S x G	<0.01	<0.01	P=0.9828	<0.01	<0.01	P=0.9973	0.01	<0.01	P=0.9474