**Supplementary Figure 1: Fatigue curves in EDLand soleus muscles from IL-15KO and HSA-IL-15TG mice.** A repeated stimulation protocol was performed to determine the fatigue characteristics of EDL and soleus muscles. Muscles were stimulated for 330ms every second for 6-minutes, and the fatigue index was calculated as the percent difference in tetanic force between the first contraction and each subsequent contraction. No differences were observed in the fatigue properties of EDL or soleus muscles from IL-15KO mice **(A)** or HSA-IL-15TG mice **(B)**. Date presented as Mean ± SD.
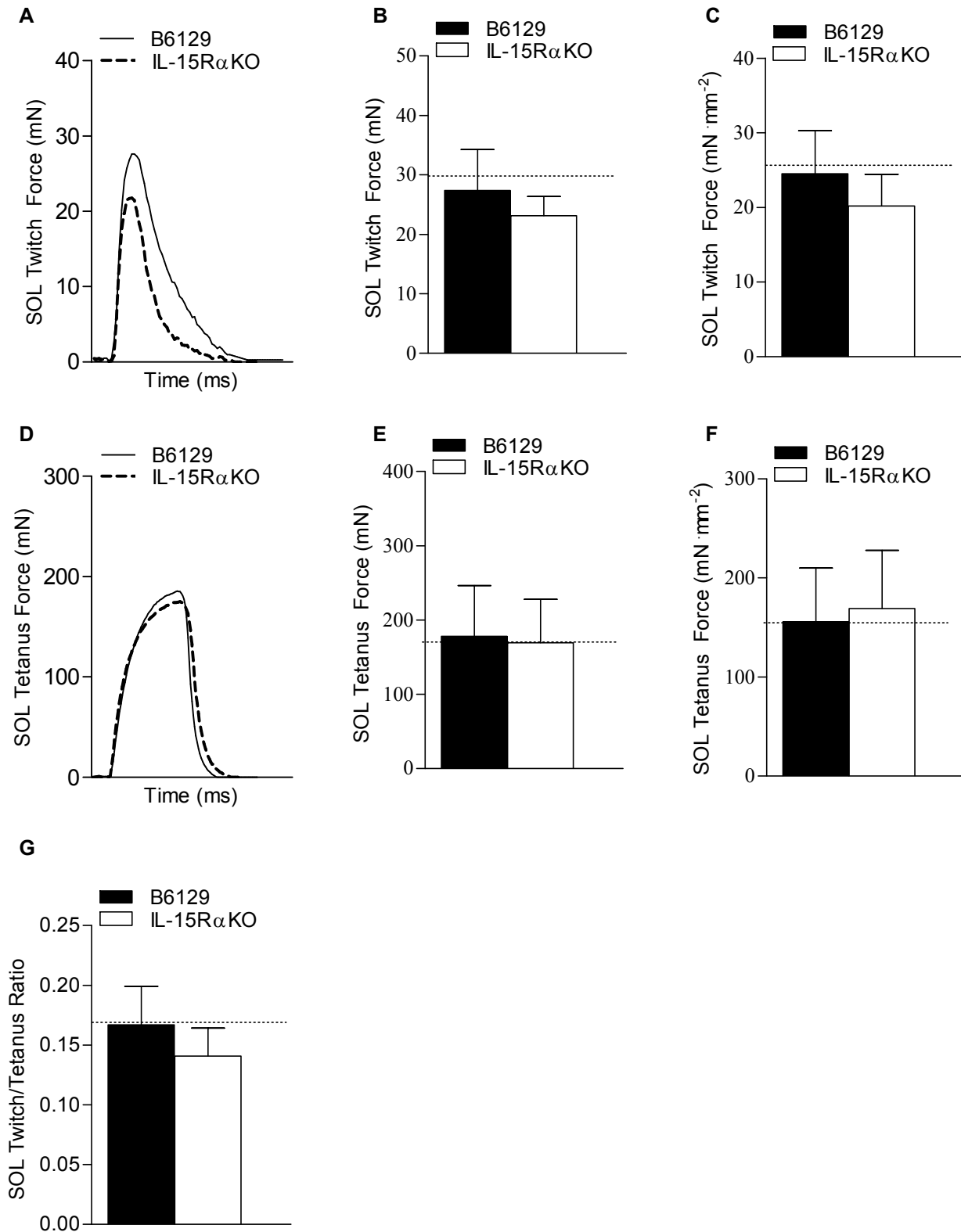
Supplementary Figure 2: Isometric force production and resistance to fatigue in soleus muscles. The soleus muscles from IL-15RαKO mice and B6129 control mice were stimulated *ex vivo* to quantify isometric force production and fatigue properties. **(A)** Representative twitch contraction force traces. **(B)** Absolute twitch force. **(C)** Normalized twitch force. **(D)** Representative tetanic contraction traces. **(E)** Absolute tetanic force. **(F)** Normalized tetanic force. **(G)** The twitch/tetanus ratio. Dotted lines represent values for wild-type C57BL/6 mice. Data are presented as Mean ± SD.
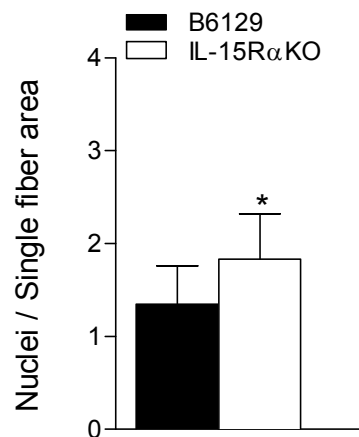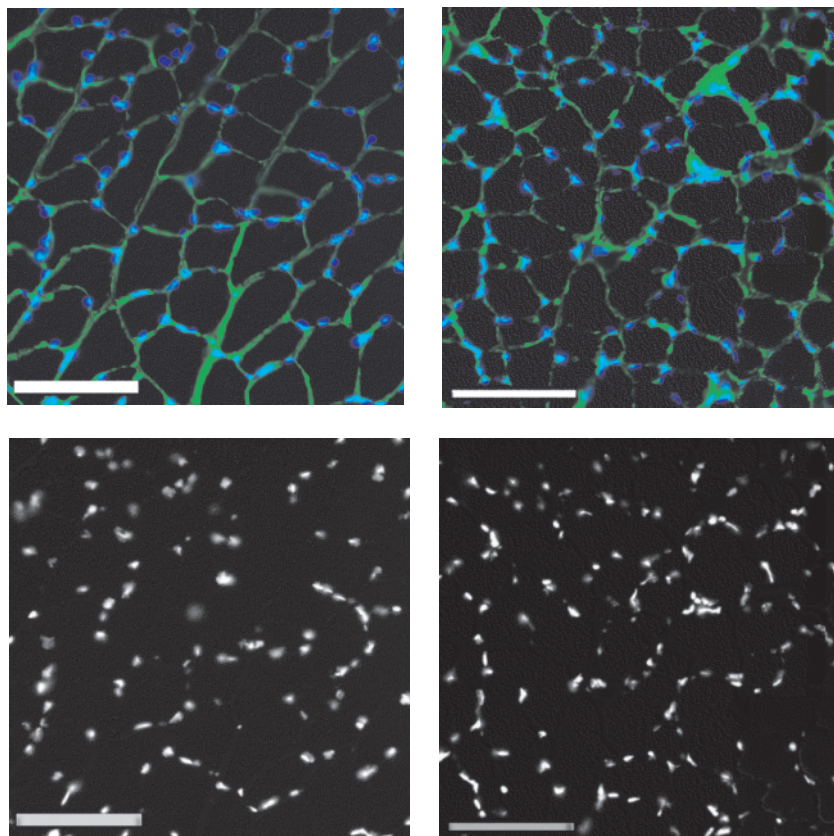
Supplementary Figure 3: The nuclei/single fiber CSA ratio in EDLmuscles from IL-15RαKO mice. The total number of nuclei in EDL muscles from B6129 and IL-15RαKO mice were quantified from Dapi stained sections, and expressed relative to the average single fiber CSA. The ratio was significantly greater in EDL muscles from IL-15RαKO mice, consistent with a remodeling of these muscles to a slower, more oxidative phenotype. Scale bars represent 100μm. *. Data presented as Mean ± SD, p<0.05.

Supplementary Table 1: *IL15RA* **SNP Associations with Athlete Status**

Sport	Endurance/ Sprint	Gender	Total	AA		AC		CC		P value	A allele %	C allele %	P value
				%	n	%	n	%	n				
ATHLETES	Both	M&F	209	24	51	55	114	21	44	NS	52	48	NS
ATHLETES	Both	F	64	20	13	58	37	22	14	NS	49	51	NS
ATHLETES	Both	M	145	26	38	53	77	21	30	NS	52	47	NS
CONTROLS	-	M&F	258	24	63	49	127	26	68	NS	49	51	NS
Endurance Athletes	Endurance	M&F	125	26	33	50	63	23	29	NS	52	48	NS
Endurance Athletes	Endurance	F	38	21	8	53	20	26	10	NS	47	53	NS
Endurance Athletes	Endurance	M	87	29	25	49	43	22	19	NS	53	47	NS
Sprint Athletes	Sprint	M&F	84	21	18	61	51	18	15	NS	52	48	NS
Sprint Athletes	Sprint	F	26	19	5	65	17	15	4	0.071	52	48	NS
Sprint Athletes	Sprint	M	58	22	13	59	34	19	11	NS	52	48	NS
Track and field	Endurance	M&F	20	30	6	60	12	10	2	NS	60	40	NS
Track and field	Sprint	M&F	37	19	7	54	20	27	10	NS	46	54	NS
Track and field	Both	M&F	57	23	13	56	32	21	12	NS	51	49	NS
All Cycling	Both	M&F	73	29	21	59	43	12	9	*0.052*	58	42	*0.027**
All Cycling	Endurance	M&F	66	27	18	59	39	14	9	*0.068*	57	43	*0.067*
Track Cycling	Both	M&F	30	33	10	53	16	13	4	NS	60	40	*0.068*
Road Cycling	Endurance	M&F	43	26	11	63	27	12	5	*0.042**	57	43	NS
Swimming	ALL	M&F	39	26	10	67	26	8	3	*0.010**	59	41	*0.059*

Surf life saving	Endurance	M&F	12	**25**	3	**17**	2	**58**	7	*0.021**	**33**	**67**	*0.088*
AIS triathlon	Endurance	M&F	13	**8**	1	**31**	4	**62**	8	NS	**23**	**77**	*0.005**
X-Country skiers	Both	M&F	8	**50**	4	**50**	4	**0**	0	NS	**67**	**33**	*0.022**
Rowing	Both	M&F	64	**20**	13	**42**	27	**38**	24	NS	**41**	**59**	*0.082*
Elite Rowing	Both	M&F	26	**12**	3	**46**	12	**42**	11	**NS**	**35**	**65**	*0.028**
Speed skating	Sprint	M&F	14	**29**	4	**64**	9	**7**	1	NS	**61**	**39**	NS
Judo	Sprint	M&F	2	**0**	0	**0**	0	**100**	2	NS	**0**	**100**	NS
Time within 15% of winner	Ironman	M	34	**24**	8	**65**	22	**12**	4	NS	**56**	**44**	*0.042**
Time within 10% winner	Ironman	M	18	**28**	5	**61**	11	**11**	2	NS	**58**	**42**	NS
Time Sub9 hours	Ironman	M	12	**25**	3	**58**	7	**17**	2	NS	**54**	**46**	NS