Autophagy in skeletal muscle.

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The ubiquitin-proteasome and autophagy-lysosome pathways are the two major routes for protein and organelle clearance. In skeletal muscle both systems are under FoxO regulation and their excessive activation induces severe muscle loss. Although altered autophagy has been observed in various myopathies, the specific role of autophagy in skeletal muscle has not been determined. Here we report that autophagy is required to preserve neuro muscular junction (NMJ) morphology and mitochondrial function. Inhibtion of autophagy leads to a NMJ degeneration, atrophy, oxidative stress that ultimate in severe weakness. Thus autophagy flux is important to preserve muscle mass and to maintain myofiber integrity.