

Effects of physical exercise on the activation and differentiation potential of satellite cells from skeletal muscles of old mice: an *in vitro* study

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Sarcopenia is an age-related loss of muscle mass, strength and function and represents an important risk factor for physical disability in elderly (Thompson, 2009). The mechanisms leading to sarcopenia are still largely unknown and no specific therapy is at present available to counteract its onset or progress. Many studies have stressed the importance of physical exercise as an effective approach to prevent/limit the sarcopenic drive (Zancanaro et al., 2007; Malatesta et al., 2011). The aim of this investigation was to evaluate the effects of adapted physical exercise (treadmill running) on the proliferation and differentiation potential of cultured satellite-cell-derived myoblasts isolated from skeletal muscles of old mice. Ultrastructural morphology and immunocytochemistry were applied, with special attention to molecular markers of satellite cell activation and RNA processing. The results demonstrate that treadmill running markedly improved the structural and functional features of both myoblasts and myotubes in comparison to old sedentary mice.

References

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Key words

Sarcopenia, skeletal muscle, physical exercise, satellite cell activation, myotube differentiation, transmission electron microscopy.