Last Word on Viewpoint: The curious case of anabolic resistance: old wives’ tales or new fables?

Nicholas A. Burd, Benjamin T. Wall, and Luc J. C. van Loon
Department of Human Movement Sciences, NUTRIM School for Nutrition, Toxicology and Metabolism, Maastricht University Medical Centre + (MUMC +), Maastricht, The Netherlands

SOME PHYSICAL ACTIVITY A DAY KEEPS (MOST OF) THE AGE-RELATED ATROPHY AWAY?

TO THE EDITOR: We would like to thank the scientists for their comments (and agreement) on our Viewpoint article (see Ref. 3). Originally, we put forward the idea that physical inactivity may be a critical factor underpinning age-related differences in postprandial muscle protein synthesis rates (MPS) (1). In our view, this idea remains a strong one. For instance, exercise induces a substantial carryover effect on the feeding-induced stimulation of MPS that can last for days (2, 4). We know very little about whether simply getting out of bed in the morning, walking down/up a flight a stairs, or going for a casual stroll around the neighborhood block will also confer a nutrient sensitizing effect on MPS (an effect observed after higher intensity exercise). However, if the threshold of physical activity that induces a sensitizing effect on MPS is relatively low, than our view may need much more consideration. Specifically, if it is not the aging muscle tissue per se but rather its recruitment in a daily life setting that contributes to the proposed “anabolic resistance” (and its curiosity) then it is not entirely surprising that comparisons between different aging populations from different geographical locations do not seem to line up.

For muscle atrophy to occur there must be a net loss of muscle protein brought about by disturbances in muscle protein turnover as the proteins do not simply vanish in aging muscle. Admittedly, the scientific community is pretty “good” at measuring MPS in vivo in humans. However, stable isotope dilution methods for determining muscle protein breakdown are going to reflect the muscle protein pool that is turning over the quickest and thus we remain relatively in the dark concerning whether specific muscle protein pools are being degraded differently in aging muscle. Ultimately, if the lack of knowledge is the fuel for science then there is still plenty of wood left to be placed on the fire!

DISCLOSURES

No conflicts of interest, financial or otherwise, are declared by the authors.

AUTHOR CONTRIBUTIONS

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REFERENCES