



Crosstalk between skeletal muscle and adipose tissue: the possible preventive and therapeutic mechanistic target of exercise-a systematic review

Oral Presentation

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Abstract

Introduction: Exercise training-induced muscle contraction manipulates white adipose tissue (WAT) and protects against several disorders, including obesity, obesity-induced complications. However, the biological mechanisms underlying this relationship remain poorly understood. White adipose tissue stimulates, produces, and secretes adipokines. Furthermore, skeletal muscle makes the same process regarding myokines when it is contracting. The aforementioned secreted cargoes may establish an organ-to-organ communication that may alter the phenotype of each other, which it results in manipulating the profile of myokines and adipokines. Exercise training as a well-established tool induces crosstalk between skeletal muscle and white adipose tissue through myokines and adipokines, respectively, to facilitate this communication in an endocrine manner. We report here a systematic review on the exercise-induced crosstalk between skeletal muscle and adipose tissue. **Methods:** We identified 265 articles, including n=114 reviews, n=2 systematic reviews, and n=149 original articles. Among 149 original articles, the relevant papers including in vivo and in vitro, were included.

Results: in vivo studies outcomes reinforce in vivo data and demonstrate organ-dependent crosstalk between skeletal muscle and adipose tissue via myokines and adipokines. All data suggest that exercise (contracting skeletal muscles)-induced myokines (IL-6, SPARC, Irisin, etc.) may manipulate and modulate adipose tissue cargo secretion (adipokines including Leptin, Adiponectin, Visfatin, IL-6, etc.) and vice versa. This cooperating results in improving whole-body metabolic health as a potential prevention and treatment option.

Conclusion: There is a need to provide a comprehensive picture of underlying mechanisms in muscle contraction-induced skeletal muscle-adipose tissue crosstalk to offer a new perspective and insight into the mechanistic preventive and therapeutic role of exercise-induced skeletal muscle-adipose tissue pivotal talk. However, the current evidence suggests that muscle-adipose crosstalk may count toward a potential mechanism that is targeted by exercise to exert its beneficial role, including alteration in organs profile in a preventive and therapeutic approach.

Keywords

exercise; Crosstalk; Skeletal muscle; Adipose tissue

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