

13th

International Congress on

Sport Sciences

7-9 March 2022 - Tehran-Iran

Physical Activity and Modern Era



Exercise training with blood flow restriction, application for health promotion

Oral Presentation

DOI: [10.22089/SSRC-13TH.2022.4055](https://doi.org/10.22089/SSRC-13TH.2022.4055)

Paper ID : 1903-SSRC-13TH

Authors

Seyed Alireza Hosseini Kakhak 

Ferdowsi University of Mashhad, Hakim Sabzevari University

Abstract

The relationship between physical activity and health is well documented. Regular physical activity (PA) contributes to preventing and managing many chronic diseases including but not limited to cardiovascular disease, hypertension, type-2 diabetes, and cancers. Almost all international PA guidelines confirm that muscle-strengthening activities should be a part of the PA regimen. This type of activity increases muscle mass and volume and insulin sensitivity. To achieve health benefits from these activities, strength training (ST) should be done according to the basic principles, the most important of which is intensity. According to the guidelines, an intensity of at least 65% + of one-repetition maximum (1RM) is needed to achieve adaptations for muscle mass and hypertrophy. But, unfortunately, high-intensity resistance training (HI-RT) may increase the risk of muscle and tendons damage and on the other hand, this intensity is often impossible or contraindicated in clinical populations or may not be adopted or tolerated by some individuals such as the elderly or women. In this condition, low-intensity resistance training (LI-RT) with blood flow restriction (BFR) has been introduced as an alternative strategy.

BFR involves the application of a tourniquet, strap, or elastic band around the most proximal region of the upper or lower limbs to restrict blood flow during exercise. This training modality typically uses low loads (20–40% individual's 1RM). This training modality mimics the effects of HI-RT by creating a hypoxic environment around the muscle. Studies show that exercise training with BFR has a similar or greater effect on muscle function than HI-RT. However, most studies have used RT combined with BFR, aerobic training (AT) (walking, jogging, cycling, etc.), plyometric training, and soccer-specific training also have been investigated. It has been shown that a combination of AT with BFR in addition to improvement in muscle size and strength, also may increase VO₂max, capillary density, and aerobic performance which means this strategy may elicit significantly greater aerobic adaptations than traditional aerobic training alone. So, it has been postulated that performing AT with BFR may accelerate aerobic adaption to the exercise and therefore, save time.

So, exercise training (whether RT or AT) with BFR can be recommended for anyone who exercises for health purposes. The advantage of this training modality is that it is not expensive, has no need for special equipment, easy to use, and is pretty safe. However, many studies have confirmed the effectiveness and safety of this training modality, due to the lack of enough prospective clinical trials, there is some concern about the long-term adverse effect that is still largely ignored in the literature.

Keywords

Blood flow restriction; Health; aerobic exercise; resistance exercise; Safety

Subjects

Invited/Keynote Speakers