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Application of low-load blood flow restriction training in elderly chronic diseases

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Objective Low-load blood flow restriction training (It's also called KAATSU) refers to the stimulation of skeletal muscle growth and muscle strength with low-load training intensity when the blood flow of the proximal venous vessels of the limbs is restricted for a short time. Thereby improving the muscle function of the skeletal muscle. KAATSU uses a low training load (20% 1RM), which can play a medium to high load training effect. It is suitable for older people with weaker constitution, less skeletal muscle strength, and different degrees of aging muscle loss (sarcopenia). Therefore, there have been more and more studies on KAATSU intervention in chronic diseases in the elderly in recent years. This study systematically reviews the recent progress in the application of KAATSU in chronic diseases in the elderly, and provides a theoretical basis for the widespread application of KAATSU in the intervention of chronic diseases in the elderly.

Methods Enter keywords in the websites of CNKI, CQVIP, Elsevier Science Direct, and Journals @Ovid Full Text, Pub Met, etc: "KAATSU, chronic disease"/"blood flow restriction, older", a total of more than 3000 articles were searched, Screening of 98, At last, more than 40 literatures meeting the standards were analyzed and summarized.

Results 1) Applied to skeletal muscle atrophy: KAATSU can significantly increase the cross-sectional area of skeletal muscle muscles, strengthen muscle strength, improve muscle contraction function, effectively prevent and interfere with sarcopenia, Especially for stroke patients with rehabilitation and long-term bed caused by muscular atrophy of disuse has a good clinical effect. 2) Application to osteoporosis: KAATSU can improve bone mineral density, stimulate bone cell activity and improve bone health, but it is not yet certain whether to improve Senile osteoporosis. Future research should be combined with nutritional supplements to comprehensively evaluate its therapeutic effect. 3) Applied to cardiovascular and cerebrovascular diseases: Long-term KAATSU can effectively improve blood lipid metabolism, optimize cardiovascular function parameters, It doesn't activate the thrombin system, and has no significant negative impact on cardiovascular function in the elderly, the application effect is good in cardiovascular and cerebrovascular diseases such as atherosclerosis and hypertension. 4) Application to metabolic syndrome: KAATSU can promote fat breakdown, reduce BMI, body fat percentage, insulin resistance index, glycosylated hemoglobin index, and improve diabetes and senile obesity in the elderly. 5) Others: There are a few studies showing that KAATSU can improve the daily activities of patients with Alzheimer's disease, promote the remodeling of bone tissue in elderly patients with osteonecrosis, and intervene with the muscle atrophy of patients with certain chronic heart diseases.

Conclusions KAATSU is an effective exercise method for the elderly and has a good application prospect in comprehensive prevention and intervention of chronic diseases in the elderly. It deserves popularization and application. Future research could try to used in chronic diseases such as chronic obstructive pulmonary disease and senile osteoarthritis.