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Corresponding author:
jian lizhu

2250110501@qq.com

Author Affiliation:
Ningde Vocational and Technical College.

The effects of blood flow restriction training on post-activation potentiation and upper limb muscle activation: A meta-analysis

Wang, J[1]; Liu, HY[2]; Jiang, LH[3].

ADMINISTRATIVE INFORMATION

Support - 67778.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202430008

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 02 March 2024 and was last updated on 02 March 2024.

INTRODUCTION

Review question / Objective This article systematically analyzes the impact of BFR training on upper limb muscle activation and PAP effect through meta-analysis, further expanding the application scope of BFR in sports training, and providing more reliable theoretical and practical guidance for improving athletes' competitive performance and preventing sports injuries.

Condition being studied This article is a review article, with a total of three people responsible. One of them retrieved 2025 articles from PubeMed, CNKI, Web of Science, and EBSCO databases. The English search terms used are as follows: ("blood flow restriction training" or "BFR" or "KAATSU training" or "pressure training") and ("Potential after activation" or "PAP" or "muscle activation" or "upper limbs" or "upper extremeities") and ("RCT") The other two people are responsible for data processing and article polishing.

METHODS

Participant or population Not reported.

Intervention Intervention measures: The experimental group received blood flow restriction training, while the control group received other training methods.

Comparator The experimental group received blood flow restriction training, while the control group received other training methods.

Study designs to be included RCT.

Eligibility criteria The study should provide details about the experimental design and the intensity of blood flow restriction (BFR) training, among other relevant information.Source Inclusion: To minimize the risk of bias in the included literature, this paper considers only papers indexed in SCI (Science Citation Index)And Chinese core journals.

Information sources PubeMed, CNKI, Web of Science, EBSCO.

Main outcome(s) The impact of different testing methods on the PAP of upper limb blood flow restriction training may vary, which reflects the characteristics of the testing methods themselves and the influence of individual differences among trainees. In future research, it is necessary to further explore the differences in different testing methods and their impact on the training effect of upper limb blood flow restriction, in order to comprehensively understand and utilize the potential of this training method.

Quality assessment / Risk of bias analysis Refer to Cochrane Risk Bias Assessment Tool for literature quality assessment.Homogeneity test (Q test, test level a=0.1) was used to test for heterogeneity, and I2values range from 0 to 100%, I2 > 50%, P < a, indicates the existence of heterogeneity, and the random-effects model was selected.

Strategy of data synthesis Statistical analysis was performed using Review Manager 5.4 software.The outcome indicators included in the literature in this paper were continuous variables, and standardized mean differences (SMD) and 95% confidence intervals were chosen for the effect sizes because of the different testing methods for each indicator.

Subgroup analysis Based on the data from this study, the author suspects that heterogeneity comes from exercise patterns, exercise intensity, and pressure intensity, so subgroup analysis is conducted according to the above research characteristics.

Sensitivity analysis Sensitivity analysis was conducted on the included literature by excluding individual studies from each group, in order to determine the heterogeneity of the literature.

Country(ies) involved China.

Keywords blood flow restriction training , post-activation potentiation , upper limb , muscle activation, A meta-analysis.

Contributions of each author
Author 1 - Jian Wang.
Author 2 - Haiyang Liu.
Author 3 - Lizhu Jiang.