

# 太极拳锻炼对提高大学生身体素质的 Meta 分析

马赫

北京师范大学体育与运动学院, 北京市海淀区 100875

**摘要:** **目的:** 采用 Meta 分析系统评价太极拳锻炼对大学生身体素质的影响, 为提高大学生身体素质的发展提供依据。**方法:** 截止 2023 年 4 月 22 日, 检索 Web of Science、CNKI、Wan Fang 数据库中关于太极拳锻炼对大学生身体素质等指标干预的随机对照实验文献, 由 2 名研究者独立对纳入文献进行筛选、数据提取及质量评价, 使用 Reviewer Manager 5.3 软件和 Stata16.0 软件进行效应量合并、敏感性分析、亚组分析和异质性检验、Meta 回归和发表偏倚分析。结果: 6 篇文献中 40 份研究纳入 Meta 分析, 其中有 2 篇文献存在低风险偏倚, 有 2 篇文献存在中等风险偏倚, 其他 2 篇文献存在高度风险偏倚, 纳入分析总样本 785 人。**结果:** Meta 分析结果显示: (1) 太极拳锻炼对大学生速度素质的提高有显著性影响, 训练周期大对于受试者速度素质的提高效果比较明显; (2) 太极拳锻炼对大学生力量素质的提高有显著性影响, 对于受试者运动周期和运动频率选择 12 周和  $\geq 1$  次/周是提升受试者力量素质能力最好的运动时间; (3) 太极拳锻炼对大学生耐力素质提高的合并效应量不具有显著的统计学意义, 除宁昌峰等、曲喜峰研究外, 其它 3 个项目测试结果呈显著性, 通过太极拳锻炼后, 对受试者的耐力测试成绩有明显提升; (4) 太极拳锻炼对大学生柔韧素质提高的合并效应量呈微显著的统计学意义, 除岳保柱、陈成香研究外, 其它 4 个项目测试结果呈显著性, 通过太极拳锻炼后, 受试者柔韧素质成绩显著提升; (5) 太极拳锻炼对大学生平衡素质的提高有显著性影响, 异质性的来源可能受性别、运动项目和运动频率的影响。**结论:** 体育对了锻炼对于男性组提升速度素质较好, 且在下肢爆发力和有氧代谢能力也有一定发展, 同时经过  $\geq 12$  周训练受试者的速度素质能有较好的效应; 太极拳锻炼对于女性组负提升力量素质产生更好的效应同时对下肢力量的发展得到提升, 且每周进行  $\geq 1$  次/周力量素质运动较好; 太极拳锻炼对于 BMI 较高的受试者 BMI 得到一定的降低且耐力素质能到一定提升; 太极拳锻炼对于提升女性受试者柔韧素质较好, 且能提升受试者对肌肉的控制能力及运动幅度太极拳锻炼对于女性受试者平衡素质能力优于男性受试者且对肌肉的控制以及不同部位肌肉之间的配合能力提升效果较好。太极拳锻炼提升大学生身体素质效果大小与受试者的性别、运动干预的方式、频率和周期等因素密切相关。

**关键词:** 太极拳锻炼; 大学生; 身体素质; 元分析

**Abstract:** To systematically evaluate the effects of Tai chi exercise on college students' physical

quality by Meta-analysis, and to provide a basis for improving the development of college students' physical quality. By April 22, 2023, the randomized controlled trial literatures on the intervention of Tai chi exercise on college students' physical fitness and other indicators were searched in Web of Science, CNKI and Wan Fang databases. Two researchers independently screened the included literatures, extracted data and evaluated the quality. Reviewer Manager 5.3 software and Stata16.0 software were used for effect size pooling, sensitivity analysis, subgroup analysis, heterogeneity test, Meta regression and publication bias analysis. Results: A total of 40 studies from 6 studies were included in the Meta-analysis, of which 2 studies had low risk of bias, 2 studies had medium risk of bias, and the other 2 studies had high risk of bias. A total of 785 people were included in the analysis.

The results of Meta-analysis showed that: (1) Tai Chi exercise had a significant effect on the improvement of speed quality of college students, and the training period was more significant for the improvement of speed quality; (2) Tai Chi exercise has a significant effect on the improvement of college students' strength quality. For the subjects' exercise cycle and frequency, 12 weeks and  $\geq 1$  time/week are the best exercise time to improve the subjects' strength quality ability. (3) The combined effect size of Tai Chi exercise on the improvement of college students' endurance quality was not statistically significant. Except for the study by Ning Changfeng et al and Qu Xifeng, the test results of the other three items were significant. After tai chi exercise, the endurance test scores of the subjects were significantly improved. (4) The combined effect size of Tai Chi exercise on the improvement of flexibility of college students was slightly statistically significant. Except for the study by Yue Baozhu and Chen Chengxiang, the results of the other four items were significant. After tai chi exercise, the subjects' flexibility scores were significantly improved. (5) Tai Chi exercise has a significant effect on the improvement of balance quality of college students. The source of heterogeneity may be affected by gender, exercise items and exercise frequency. Conclusion: In the male group, the exercise on the right can improve the speed quality better, and has a certain development in the lower limb explosive power and aerobic metabolism ability. At the same time, after more than 12 weeks of training, the speed quality of the subjects can have a good effect. Tai Chi exercise has a better effect on the negative improvement of strength quality and the development of lower limb strength in the female group, and it is better to do strength quality exercise more than once a week. Tai chi exercise can reduce

BMI and improve endurance quality of subjects with high BMI. Tai Chi exercise has a better effect on improving the flexibility of female subjects, and can improve the muscle control ability and movement range of the subjects. Tai Chi exercise has a better effect on the balance ability of female subjects than male subjects, and has a better effect on the muscle control and the coordination ability between different parts of the muscles. The effect of Tai chi exercise on the physical fitness of college students is closely related to the gender of the subjects, the method, frequency and period of exercise intervention and other factors.

**Key words:** Tai Chi exercise; College students; Physical fitness; Meta-analysis