

中国传统功法对肺癌患者术后康复的网状 meta 分析

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摘要: **目的:** 在中国, 肺癌的发生率常年居高不下, 位居恶性肿瘤首位, 诸多研究已经可以证明中国传统功法对肺癌患者的术后康复可以起到一定的作用, 但是目前还缺乏不同传统功法对肺癌患者干预效果的优劣比较。本研究采用网状 Meta 分析不同中国传统功法对肺癌患者运动能力、疲乏程度和生活质量的影响, 探索最佳治疗方法, 为肺癌患者的术后康复提供可靠依据。**方法:** 1) 研究人群为明确诊断为肺癌的患者, 年龄 18 岁及以上, 不限性别、国籍、种族和 TNM 分期。2) 试验组为中华传统运动疗法, 包括太极拳等, 对照组为其他运动干预或常规治疗(常规药物治疗、指导饮食等)。3) 系统检索 Web of Science、PubMed、Cochrane Library、Scopus、Embase、中国知网 CNKI、万方数据库、维普数据库和 SinoMed, 检索日期为建库以来至 2025 年 3 月 1 日, 英文检索词包括“Tumors”、“Cancer”、“Lung Neoplasms”、“Neoplasms, Pulmonary”、“Tai Ji”、“baduanjin”、“Fitness qigong”等, 中文检索词包括“癌”、“肿瘤”、“太极拳”、“八段锦”、“肺癌”、“肺恶性肿瘤”等。4) 结局指标为六分钟步行试验距离(6MWD)、欧洲癌症治疗与研究组织生活质量核心量表(EORTC QLQ-C30)和 Piper 疲乏修订量表(RPFS)。5) 使用 Stata 14.0 软件进行网状 Meta 分析, 使用 RevMan 5.3 进行文献质量评价, 通过 Network 和 Mvmeta 程序包进行数据的处理和网状 Meta 图形的绘制, 通过程序包计算各干预措施的累积排序概率图下面积(SUCRA), SUCRA 值越大代表干预效果越好。**结果:** 1) 共检索出 10765 篇文献, 机器筛掉重复文献后还剩 9781 篇, 查看标题和摘要后筛出 424 篇, 下载并阅读全文后排除不符合要求的文献, 最后剩余 23 篇, 共纳入 2117 例受试者, 其中试验组 1016 例, 对照组 1101 例, 年龄为 18 岁以上, 一共纳入 13 种干预手段(常规治疗—CT; 八段锦—BDJ; 太极—TC; 坐位八段锦联合专项呼吸训练—ST; 阶梯式八段锦—SB; 六字诀—LZJ; 五禽戏鸟戏—BOW; 自我管理运动—SS; 有氧运动—AS; 中医常规护理—CMN; 坐式八段锦联合术后止痛方穴位贴敷干预—SM; 八段锦联合身心康复护理—BAP; 八段锦锻炼配合五行音乐疗法—BAM)。2) 对形成闭环的指标进行不一致性检验, 结果显示 6MWD 全局和局部不一致性检验结果良好($P>0.05$), 两个闭环的不一致性因子下限均包括 0, 因此采用

一致性模型进行分析,其他没有形成闭环的指标无须采用一致性检验。3) 网状 Meta 分析结果表明: ①与常规治疗相比, TC、SB 和 BDJ 对肺癌患者 6MWD 治疗更有效 ($P<0.05$), 治疗效果由大到小依次为 TC (77.8)、SS (74.7)、SB (71.6)、LZJ (67.8)、AS (51.1)、BOW (45.3)、CMN (38.4)、ST (34.8)、BDJ (32.8)、CT (5.9)。②在 QLQ-C30 总分的治疗效果方面, 与常规治疗相比, BDJ 治疗更有效 ($P<0.05$), 治疗效果最好的是 BDJ (93.2)。③在 QLQ-C30 角色功能方面, 任一中国传统功法均比常规治疗更有效 ($P<0.05$), BAM 比 BDJ 更有效 ($P<0.05$), 治疗效果最好的是 LZJ (87.2)。④在认知功能方面, 任一中国传统功法均比常规治疗更有效 ($P<0.05$), 治疗效果最好的是 SB (81.5)。⑤在躯体功能方面, 与 CT 相比, BDJ、SB、BAP、BAM 治疗更有效, SB 比 BDJ, BAM 比 BDJ 和 BAP 更有效 ($P<0.05$), 治疗效果最好的是 SB (98.0)。⑥在社会功能方面, 任一中国传统功法均比常规治疗更有效 ($P<0.05$), LZJ 比 BDJ、SB、BAP、BAM 更有效 ($P<0.05$), 治疗效果最好的是 LZJ (100.0)。⑦在感情功能方面, 与 CT 相比, BDJ、BAP、LZJ 治疗更有效, LZJ 比 BDJ 更有效 ($P<0.05$), 治疗效果最好的是 LZJ (95.9)。⑧在总体健康方面, 与 CT 相比, BDJ、SB、LZJ 治疗更有效, LZJ 比 BDJ、SB、QG 更有效 ($P<0.05$), 治疗效果最好的是 LZJ (100.0)。⑨在疲乏程度方面, BDJ 干预效果优于 CT ($MD=-1.93, 95\%CI=-3.56\sim-0.31$), 在对所有疲乏的干预中, BDJ 的 SUCRA 值最高, CT 最低。此外, 对纳入的研究进行漏斗图的绘制, 未观察到明显的不对称性, 不存在发表偏倚。**结论:** 本研究发现, 中国传统功法能有效改善肺癌患者的运动能力和生活质量, 且与其他运动相比, 太极拳在改善运动能力、六字诀和八段锦在改善生活质量方面展现出了更好的改善效果, 但很多干预措施之间没有直接比较, 未来需要大样本、多中心、高质量临床证据支撑。

关键词: 中国传统功法; 肺癌; 生活质量; 运动能力; 疲乏程度

Traditional Chinese exercises for postoperative rehabilitation of lung cancer patients: a network meta-analysis

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Abstract: Objective: In China, the incidence of lung cancer has remained consistently high, ranking first among malignant tumors. Numerous studies have demonstrated that traditional Chinese exercises can play

a certain role in the postoperative rehabilitation of lung cancer patients. However, there is currently a lack of comparisons of the advantages and disadvantages of the intervention effects of different traditional exercises on lung cancer patients. This study employed a network meta-analysis to investigate the effects of different traditional Chinese exercises on the exercise capacity, fatigue level and quality of life of lung cancer patients, exploring the best treatment methods and providing a reliable basis for the postoperative rehabilitation of lung cancer patients. **Method:** 1) The study population was patients with a clear diagnosis of lung cancer, aged 18 years and above, regardless of gender, nationality, race, or TNM stage. 2) The experimental group received traditional Chinese exercise therapy, including Tai Chi, etc., while the control group received other exercise interventions or conventional treatments (conventional drug therapy, dietary guidance, etc.). 3) Systematic searches were conducted in Web of Science, PubMed, Cochrane Library, Scopus, Embase, China National Knowledge Infrastructure (CNKI), Wanfang Database, VIP Database and SinoMed. The search period was from the establishment of the databases to March 1, 2025. The English search terms include "Tumors", "Cancer", "Lung Neoplasms", "Neoplasms, Pulmonary", "Tai Ji", "baduanjin", "Fitness qigong", etc. Chinese search terms include "cancer", "tumor", "Tai Chi", "Baduanjin", "lung cancer", "malignant lung tumor", etc. 4) The outcome measures were six-minute walk distance (6MWD), the European Organization for Cancer Treatment and Research Quality of Life Core Questionnaire (EORTC QLQ-C30), and the Piper Fatigue Revised Scale (RPFS). 5) Network meta-analysis was conducted using Stata 14.0 software, literature quality was evaluated using RevMan 5.3, data processing and network meta-graph drawing were carried out through the Network and Mvmeta packages, and the area under the cumulative ranking probability graph (SUCRA) of each intervention measure was calculated through the packages. The larger the SUCRA value, the better the intervention effect. **Result:** A total of 10,765 documents were retrieved. After the machine screened out duplicate documents, 9,781 were left. After checking the titles and abstracts, 424 were screened out. After downloading and reading the full text, the documents that did not meet the requirements were excluded. Finally, 23 documents remained. A total of 2,117 subjects were included, including 1,016 in the experimental group and 1,101 in the control group, all of whom were over 18 years old. A total of 13 intervention methods were included (conventional treatment - CT; Baduanjin - BDJ; Tai Chi - TC; Sitting Baduanjin combined with specialized breathing training - ST; Step Baduanjin - SB; Six-character formula - LZJ; Five-Animal exercises - BOW; self-management exercise - SS; aerobic exercise - AS; conventional

traditional Chinese medicine nursing - CMN;) Sitting Baduanjin combined with postoperative pain relief formula acupoint application intervention - SM; Baduanjin Combined with Physical and Mental Rehabilitation Nursing - BAP Baduanjin exercise combined with the Five Elements Music Therapy (BAM). 2) Inconsistency tests were conducted on the indicators that formed a closed loop. The results showed that the global and local inconsistency tests for 6MWD were good ($P > 0.05$), and the lower limits of the inconsistency factors for both closed loops included 0. Therefore, a consistency model was used for analysis, and consistency tests were not required for other indicators that did not form a closed loop. 3) The results of the network meta-analysis indicate that: Compared with conventional treatment, TC, SB and BDJ are more effective in the treatment of 6MWD in lung cancer patients ($P < 0.05$). The therapeutic effects, from largest to smallest, were TC (77.8), SS (74.7), SB (71.6), LZJ (67.8), AS (51.1), BOW (45.3), CMN (38.4), ST (34.8), BDJ (32.8), and CT (5.9). ② In terms of the therapeutic effect of the total score of QLQ-C30, compared with conventional treatment, BDJ treatment was more effective ($P < 0.05$), and the best therapeutic effect was achieved by BDJ (93.2). ③ In terms of the role function of QLQ-C30, any traditional Chinese exercise method was more effective than the conventional treatment ($P < 0.05$), BAM was more effective than BDJ ($P < 0.05$), and LZJ had the best therapeutic effect (87.2). ④ In terms of cognitive function, any traditional Chinese exercise was more effective than conventional treatment ($P < 0.05$), and the best therapeutic effect was SB (81.5). In terms of physical function, compared with CT, BDJ, SB, BAP and BAM are more effective in treatment. SB is more effective than BDJ, and BAM is more effective than BDJ and BAP ($P < 0.05$). The best treatment effect is SB (98.0). In terms of social function, any traditional Chinese exercise method is more effective than conventional treatment ($P < 0.05$). LZJ is more effective than BDJ, SB, BAP, and BAM ($P < 0.05$), and the best therapeutic effect is achieved by LZJ (100.0). In terms of emotional function, compared with CT, BDJ, BAP and LZJ treatments are more effective. LZJ is more effective than BDJ ($P < 0.05$), and the best treatment effect is achieved by LZJ (95.9). In terms of overall health, compared with CT, BDJ, SB and LZJ treatments are more effective. LZJ is more effective than BDJ, SB and QG ($P < 0.05$), and the best treatment effect is achieved by LZJ (100.0). In terms of fatigue degree, the intervention effect of BDJ was superior to that of CT ($MD=-1.93, 95\%CI=-3.56$ to -0.31). Among all fatigue interventions, the SUCRA value of BDJ was the highest, while that of CT was the lowest. In addition, funnel plots were plotted for the included studies, and no significant asymmetry was observed, and there was no publication bias. **Conclusion:** This study

found that traditional Chinese exercises can effectively improve the exercise capacity and quality of life of lung cancer patients. Compared with other exercises, taijiquan has shown better improvement effects in enhancing exercise capacity, while Liuzi Jue and Baduanjin have demonstrated better improvement in quality of life. However, many intervention measures have not been directly compared. In the future, large-scale, multi-center, and high-quality clinical evidence is needed to support this.

Keywords: Traditional Chinese exercise; Lung cancer; Quality of life; Athletic ability; Degree of fatigue

