

太极拳在全球身体活动促进体系中的价值重估与政策建议

韩青¹，张楷悦²，吕韶钧¹

1 北京师范大学 体育与运动学院，北京，100875

2 伊利诺伊大学厄巴纳-香槟分校应用健康科学院，美国厄巴纳市，61801

背景：当前全球公共卫生领域的身体活动政策，普遍以《世界卫生组织身体活动与久坐行为指南（2020 版）》为依据，核心聚焦成年人每周中高强度身体活动达标时长，建议每周完成 150-300 分钟中等强度或 75-150 分钟高强度身体活动。该体系以代谢当量（MET）为核心指标，中等强度阈值为 3.0 METs，因标准化程度高，已成为衡量身体活动水平与健康收益的主流标准。然而，这一以强度为核心的评价体系，对衡量太极拳等中国传统体育运动存在显著局限。太极拳以动作缓慢、呼吸与意念协同为特征，MET 值多处于 1.5-3.0 区间，常被归为“低强度”活动，难以纳入官方推荐范围，这使得以能量消耗为核心的全球身体活动标准，在面对东方传统运动时显得适用性有限。但大量研究证实，太极拳具备独特健康价值：可使中老年人降低跌倒风险、改善平衡能力、缓解慢性疼痛、调节心血管功能，还能减轻焦虑抑郁，提升生活质量。尽管证据充分，但太极拳在全球公共卫生体系、健康监测、政策制定及健康经济模型中，其常被低估或忽略，也极少进入国际身体活动数据库与主流健康效益分析框架，导致其贡献未被充分认可。**目的：**1.剖析以中高强度体力活动（MVPA）为核心的身体活动促进体系的结构性缺陷；2.揭示现有的身体活动测量工具对太极拳等低强度运动评估盲区；3.重新评估太极拳的健康与经济价值，推动其融入主流公共卫生干预体系。**方法：**本研究主要采用文献资料法、比较分析法与理论分析法。1.文献资料法：系统梳理国内外有关身体活动促进政策、MVPA 标准及太极拳健康效益的研究成果，纳入相关理论与指标体系。2.比较分析法：对比不同强度导向下的身体活动测量与评估框架，揭示以 MET 为核心指标体系在低强度、身心结合型运动中的适用局限。3.理论分析法：从健康经济学与功能健康视角出发，探讨重构身体活动评估体系的理论基础，提出纳入 QALY 等多维指标的分析路径。**结果：**1.MVPA 标准对太极拳健康价值的低估。全球通用的 MVPA 体系无法充分捕捉太极拳健康价值，因 MVPA 依赖能量消耗与有氧代谢提升，而太极拳价值源于身心调节、神经运动控制改善、专注力与协调能力提升，呈现“慢”的独特特征，因此形成“强度悖论”，其健康改善路径与传统有氧强度无直接关联，却效益显著。2.测量方法偏差导致的数据盲区。客观测量工具的技术局限：加速度计等主流设备通过捕捉动作频率与幅度估算活动强度，而太极拳动作缓慢、冲击小、幅度变化平缓，其产生的信号易被系统误判为“轻度活动”或“无效活动”，无法与久坐行为有效区分，导致监测数据中太极拳的活动占比被大幅低估。主观测量工具的分类缺陷：IPAQ、GPAQ 等问卷仅设置“中等强度”“高强度”活动选项，未考虑太极拳等低强度但持续时间长、专注度高的运动类型。受

访者在填写问卷时，往往因无法找到对应分类而选择“不填写”或“归为轻度活动”，导致数据缺失或分类错误，进一步加剧了数据盲区。由于缺乏准确的监测数据，太极拳被排除在国际身体活动数据库之外，无法进入基于大数据的健康效益评估模型；当前主流健康经济模型以“MET 小时增量”为核心指标，太极拳因 MET 值偏低，在模型中几乎无存在感，其真实的健康经济贡献被系统性忽视。3.独立的经济学研究显示太极拳极高的成本效益。例如，英国的一项政策分析发现，太极拳在老年人防跌倒项目中不仅成本更低，还能带来更高的质量调整生命年（QALY）收益，甚至在最保守的情境下，每获得一个 QALY 的成本都显著低于其他常规方案。这样的结果表明，太极拳完全有必要被纳入公共卫生投资优先级的考虑范围。

结论：1.太极拳在改善身体功能与降低医疗成本上优势显著，但在 MVPA 政策体系中长期边缘化，反映当前公共卫生标准的单一性与局限性。2.现行 MVPA 标准过度聚焦能量消耗与 MET 值，忽视太极拳等传统运动在身心健康上的独特价值。3.测量方法偏差与经济评估模型指标局限，共同导致太极拳价值被系统性低估，形成公共卫生决策“价值盲区”。

政策建议：1.构建“身心结合型活动”独立分类：建议全球身体活动指南在 MVPA 框架外，增设“身心结合型活动”类别，评价从“强度导向”转向“功能导向”。2.重构健康经济评估模型：推动健康经济学分析跳出“MET”局限，建立多维度评估体系，量化 QALY 提升与医疗成本节约，为资源配置提供依据。3.研发适配性测量技术：鼓励开发能捕捉缓慢复杂动作的技术，如结合惯性测量单元（IMU）与机器学习的可穿戴设备，通过多维度传感器精准记录太极拳强度、时长与质量，弥补数据缺口。总体而言，应从全球健康治理的视角，推动身体活动促进标准的多元化与文化适配化，使太极拳等传统运动在全球公共卫生体系中发挥更大作用。

关键词：太极拳；身体活动；健康促进；成本效益；公共卫生政策

Reassessment of the Value of taijiquan within the Global Physical Activity Promotion Policies

Qing Han¹, Kaiyue Zhang², Shaojun Lyu¹

1 School of Physical Education and Sports, Beijing Normal University, Beijing 100875, China

2 College of Applied Health Sciences, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA

Background: Currently, physical activity policies in the global public health field generally take the WHO Guidelines on Physical Activity and Sedentary Behaviour (2020) as the basis. The core focus is on the weekly compliance duration of moderate-to-vigorous physical activity (MVPA) for adults, recommending 150–300 minutes of moderate-intensity physical activity or 75–150 minutes of vigorous-intensity physical activity per week. This system takes metabolic equivalent (MET) as the core indicator, with the threshold for moderate intensity set at 3.0 METs. Due to its high standardization, it has become the mainstream criterion for measuring physical activity levels and health benefits. However, this intensity-centered

evaluation system has significant limitations in assessing traditional Chinese sports such as taijiquan. Characterized by slow movements and the coordination of breathing and mindfulness, taijiquan typically has a MET value ranging from 1.5 to 3.0, thus often being classified as a "low-intensity" activity and rarely included in official recommendations. Nevertheless, numerous studies have confirmed the unique health value of taijiquan: it can reduce the risk of falls, improve balance, alleviate chronic pain, regulate cardiovascular function in middle-aged and elderly populations, as well as reduce anxiety and depression, and enhance quality of life. Despite sufficient evidence, taijiquan is often underestimated or overlooked in the global public health system, health monitoring, policy formulation, and health economic models. It is also rarely included in international physical activity databases and mainstream health benefit analysis frameworks, resulting in its contributions not being fully recognized.

Purpose: 1. Analyze the structural flaws of public health standards centered on moderate-to-vigorous physical activity (MVPA); 2. Identify the data gaps in existing measurement tools when evaluating low-intensity, slow-moving exercises such as taijiquan; 3. Reassess the health and economic value of taijiquan and promote its integration into mainstream public health intervention systems.

Methods: This study primarily employed the methods of literature review, comparative analysis, and theoretical analysis.

1. Literature Review: Systematically reviewed domestic and international studies on physical activity promotion policies, MVPA standards, and the health benefits of taijiquan, and summarized the relevant theoretical foundations and indicator frameworks.

2. Comparative Analysis: Compared different intensity-oriented approaches to physical activity measurement and evaluation, highlighting the limitations of the metabolic equivalent (MET)-based indicator system in assessing low-intensity, mind-body integrated exercises such as taijiquan.

3. Theoretical Analysis: From the perspectives of health economics and functional health, explored the theoretical logic for reconstructing the physical activity evaluation framework and proposed an integrated analytical approach that incorporates multidimensional indicators such as functional improvement, psychological regulation, and quality-adjusted life years (QALY).

Results: Underestimation of taijiquan's Health Value by the MVPA Standard: The globally applied MVPA system cannot fully capture the health value of taijiquan. While MVPA relies on increased energy expenditure and aerobic metabolism, taijiquan's value stems from physical and mental regulation, improved neuromotor control, and enhanced concentration and coordination, presenting unique "slowness-centered" characteristics. This forms an "intensity paradox": taijiquan's health benefits (e.g., blood pressure regulation, balance improvement) have no direct correlation with traditional aerobic intensity, yet they are remarkably effective.

2. Data Gaps Caused by Measurement Biases: Technical Limitations of Objective Tools: Mainstream devices such as accelerometers estimate activity intensity by capturing movement frequency and amplitude. However, taijiquan's slow movements, low impact, and gentle amplitude changes result in signals that are easily misjudged by the system as "light activity" or "invalid activity," which cannot be effectively distinguished from sedentary behavior. This leads to a significant underestimation of taijiquan's proportion in monitoring data.

Classification Defects of Subjective Tools: Questionnaires such as IPAQ and GPAQ only include options for "moderate-intensity" and "vigorous-intensity" activities, without considering

low-intensity but long-duration, high-concentration exercises like taijiquan. Respondents often choose "not applicable" or "classify as light activity" due to the lack of corresponding categories, resulting in missing data or misclassification, and further exacerbating data gaps. Due to the lack of accurate monitoring data, taijiquan is excluded from international physical activity databases and cannot be integrated into big data-based health benefit evaluation models. Current mainstream health economic models take "MET-hour increments" as the core indicator; as a result, taijiquan—with its low MET value—has almost no presence in these models, and its true health and economic contributions are systematically ignored.

3.High Cost-Benefit of taijiquan Revealed by Independent Economic Studies: For example, a policy analysis in the UK found that taijiquan not only has lower costs in fall prevention programs for the elderly but also delivers higher quality-adjusted life year (QALY) benefits. Even in the most conservative scenarios, the cost per QALY gained from taijiquan is significantly lower than that of other conventional programs. These results suggest that taijiquan is a suitable candidate for consideration as a priority in public health investment.

Conclusions: 1.taijiquan has significant advantages in improving physical function and reducing medical costs, but it has long been marginalized in the MVPA-based policy system, reflecting the singularity and limitations of current public health standards. 2.The existing MVPA standard overemphasizes energy expenditure and MET values, ignoring the unique value of traditional sports such as taijiquan in promoting physical and mental health. 3.Measurement biases and the limited indicators of economic evaluation models have jointly led to the systematic underestimation of taijiquan's value, forming a "value gap" in public health decision-making.

Recommendations 1.Establish an Independent Category of "Mind-Body Integrated Activities": It is recommended that global physical activity guidelines add an independent category of "mind-body integrated activities" (covering taijiquan, Qigong, yoga, etc.) outside the MVPA framework, shifting the evaluation focus from "intensity-oriented" to "function-oriented." 2.Reconstruct Health Economic Evaluation Models: Promote health economic analysis to go beyond the limitations of "MET-based" metrics, establish a multi-dimensional evaluation system, and quantify QALY improvements and medical cost savings to provide a basis for resource allocation. 3.Develop Adaptive Measurement Technologies: Encourage the development of technologies capable of capturing slow and complex movements (e.g., wearable devices combining inertial measurement units [IMU] and machine learning), which can accurately record the intensity, duration, and quality of taijiquan through multi-dimensional sensors to fill long-standing data gaps.

Keywords: Taijiquan; Physical Activity; Health Promotion; Cost-effectiveness; Public Health Policy

