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· 综 述 ·

体育运动对青少年自杀风险的影响与对策

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【摘要】 为明晰体育运动与青少年自杀风险关系及其作用机制,文章通过梳理和剖析相关文献,发现体育锻炼可降低中学生自杀率,每周 5~7 d 高强度有氧运动效果最佳,参与团队运动者自杀概率降低;但日常身体活动及肌肉增强锻炼与自杀相关行为关联无统计学意义。体育运动降低青少年自杀风险的作用机制包括体育运动通过情绪宣泄而习得性自助、帮助青少年建立与社会的关系,提升身体及大脑功能等。建议家庭和学校帮助青少年发掘体育参与乐趣、协助组建体育团队,保证每天至少 60 min 中高强度体育活动,以降低青少年自杀行为风险。

【关键词】 运动活动;自杀;健康促进;青少年

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Impact of sports participation on suicide risk among adolescents and countermeasures

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【**Abstract**】 To clarify the relationship between sports participation and adolescent suicide risk, as well as its underlying mechanisms for preventing suicidal behaviors, the study employs a literature review approach to analyze, synthesize, and summarize relevant research. The findings reveal that physical exercise can reduce suicide rates among middle school students, with high-intensity aerobic exercise performed 5-7 days per week demonstrating the most significant effect. However, daily physical activity and muscle-strengthening exercises show no significant correlation with suicide-related behaviors. The mechanisms through which physical activity reduces the risk of suicide among adolescents include emotional release leading to self-help skills, helping adolescents build social connections, and improving physical and brain function. It is recommended that families and schools help adolescents discover the joy of participating in sports, assist in forming sports teams, and ensure at least 60 minutes of moderate to vigorous physical activity daily to reduce the risk of suicidal behavior among adolescents.

【**Keywords**】 Motor activity; Suicide; Health promotion; Adolescent

青少年自杀是由多种危险因素相互作用所致,有学者从精神病学、心理学、神经生物学等诸多视角探寻青少年自杀原因及机制,以评估、预测、预防和干预自杀行为[1-5]。发现运动是青少年自杀的保护因素。本文通过梳理、剖析和总结体育运动与青少年自杀行为相关文献,旨在回答体育运动能否成为降低青少年自杀风险的干预手段,以及对青少年自杀风险的作用和对青少年自杀动因产生的影响,为降低中国青少年自杀率提供积极、探索性的体育行为学干预路径。

1 体育运动降低青少年自杀率

1.1 体育运动对青少年自杀的总体影响 首先,体育锻炼有保护青少年免于自杀的独特心理益处,课外体育活动降低了青少年自杀率[6],较高身体活动水平与较低自杀意念相关[7-8]。在已被证明有效解决自杀问题的方法中,增加心率和呼吸且没有副作用的体育活动具有显著的心理优势[9-12];体育锻炼还可降低自杀意念[13]。其次,早期青少年体育参与者的自杀意念较低[14]。越早开始且坚持参与体育运动的年轻人报告的自杀行为越少[15-17]。每周≥4 d 的体育锻炼对自残意向影响积极,可降低中学生 23%的自杀率[18-19]。与未参与者相比,初中、高中均坚持参加体育运动的青少年自杀意念较低,报告较少的自杀行为[20]。

1.2 体育运动对青少年自杀影响的性别差异 首先,体育运动对男生自杀率影响效果好于女生。团队运动与自杀意念关系仅在男生中观察到,参加团队运动的男生有自杀意念的可能性更小[21],可能是因为体育中竞争性更多受男生重视[22]。男生比女生更自然地

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处理体育练习中的冲突，挑衅会让女生感到不快，从而厌恶运动[23]。

其次，团队体育运动可降低“跨性别”青少年自杀率。女同性恋、男同性恋、双性恋、变性和质疑者青少年自杀率较高，且均高于异性恋同龄人的 2~3 倍[24]。跨性别青少年参与团队体育运动可降低自杀意念[24]。

1.3　体育运动方式影响青少年自杀的差异性　青少年越早开始团队体育运动自杀率越低。与从未参加过体育团队运动的青少年相比，小学和中学阶段参加体育团队运动的青少年在中学时期报告自杀意念较低。青少年体育团队运动参与和降低自杀意念有关[25-26]，比个人运动效果更好[27]。

60 min 中高强度体育运动效果最好[28]。青少年参与各种类型身体活动均有积极影响[29]。较低身体活动水平与自杀行为风险增加有关[30-31]。青少年不同身体活动类型与自杀行为等所有因素均存在关联[32-33]。自杀行为发生率随着 60 min 以上运动频率的增加而下降[34]，每周超过 3 d 体育运动对青少年自杀行为也有显著影响[35]，中高强度有氧运动频率有相同效果[36-38]。未超过 60 min 中高强度运动的儿童患抑郁症的概率增加了 2.18 倍[39]。

2　体育运动降低青少年自杀率的机制

2.1　体育运动通过情绪宣泄而习得性自助　第一，体育运动是青少年选择的一种极为正确的宣泄渠道。体育运动有助于转移注意力，帮助摆脱消极冲动情绪[40]，而情感积极的影响在体育活动后仍存在。高度体育参与的青少年认为自己有心理韧性或经历问题能恢复原状。运动后即刻检测发现，被试者抑郁、焦虑、心理紊乱水平明显下降[41]。体育参与抑制和减少以意志力脆弱、情绪不稳定、社会适应能力差、承受挫折能力不强、自我调节能力低下为主要因素的青少年自杀行为[42]。运动参与青少年韧性得分更高[43]。

第二，体育运动改善神经系统功能。游泳通过调节肠道微生物群抑制炎症，预防抑郁发生[44]。抗阻运动通过神经分子机制发挥调节作用[45-46]，强化神经营养因子表达，提升 5-羟色胺（5-hydroxytryptamine，5-HT）和去甲肾上腺素（norepine phrine，NA）的可用性[47]，上调下丘脑-垂体-肾上腺（hypothalamic-pituitary adrenal，HPA）轴的通路活性[48]，降低系统性炎症信号传导[49]，加强神经元之间的突触连接[50]，调节与情绪相关的神经通路，改善抑郁。有氧运动回调大鼠海马区与抑郁症相关的氨基酸类代谢物水平，通过调节这些代谢物发挥抗抑郁作用[51]。有氧联合抗阻运动有效增加身体相关代谢酶的活性，提升胰岛素生长因子 1（insulin-like growth factors-1，IGF-1）和蛋白表达水平，促进肌纤维生长与分化，有效舒缓压力、紧张等情绪，改善自我价值[52-53]。

2.2　体育运动帮助建立自我与社会的关系　体育运动有助于促进家庭情感支持、冲突解决技能、积极身份感、有益代际关系、社会能力、成就动机等青少年积极发展的资产，帮助青少年确立良好自我认识所组成的自我概念，主观上建立对自己身体、思想和情感等方面的整体评价，提高身体满意度。体育参与者体验到更多社会支持，提供非正式的社会和情感支持，保护青少年免受生活压力影响[54]。参与组织的项目增加与非父母成年人的相处时间，提供定期互动机会[55-56]，减少参与者健康危险行为[57]，为儿童青少年生活提供意义、使命感和归属感[58]。

团队体育运动鼓励互动形成积极社会关系。社会支持强的青少年通常表现出更高的韧性，更低的绝望感或自杀风险。团队比赛与队友直接合作，具有多变的环境和战术-战略，有助于培养集体精神、激发社会互动，通过促进社会支持和融入提供额外保护。体育运动中，青少年有机会建立积极的社会关系；体育相关社交不仅引起生理变化，对心理健康的影响更为显著[59]。

2.3　体育运动提升身体及大脑功能　体育运动可改善青少年身体功能和生活方式，提高免疫系统功能，提升生命质量和生活尊严[60]。经常参加体育锻炼可提高青少年注意力、记忆力、反应力、思维力、想象力，以及智力水平。运动可增加锻炼者海马齿状回体积、延缓颞叶内侧萎缩速度、增加额叶等体积。海马体与学习和记忆等认知功能密切相关，其齿状回体积的增加意味着运动可能有助于提升认知能力、增强记忆力、改善学习效果等。同样，颞叶内侧在情感、记忆等方面有重要作用，延缓其萎缩有助于维持大脑的正常功能，降低因颞叶内侧萎缩引发的认知障碍和情感问题的风险。最后，额叶涉及决策、注意力、计划等高级认知功能，体积增加表明运动对这些功能的维持和提升可能有积极意义[61]。

体育运动促进青少年大脑健康发展。运动增加神经营养因子表达并诱导成年海马神经发生，其中脑源性神经营养因子最为敏感，可在积极参与神经元修复、再生及突触可塑性增强过程中，增加其 mRNA 表达和蛋白含量[62]。血管内皮生长因子、IGF-1 等在运动抗抑郁过程中发挥作用[63]，这些神经营养因子功能互补重叠，通过影响情绪调节神经网络发挥调节作用。运动可调节多种神经递质系统，如运动能升高 NA 水平[47]、增加大鼠脑区 DA 及其代谢物水平、提升大脑 5-HT 水平[47]、改变谷氨酸水平[62]等，进而起到抗抑郁的作用。

3　建议与对策

3.1　促进青少年体育参与乐趣　第一，帮助青少年切

实从体育参与中感受乐趣。乐趣使得青少年更容易沉浸在体育活动中,忘却时间和疲劳,主动克服困难、挑战自我极限,在持续锻炼中提升身体功能、塑造心理品质、深化自我认知,获得强烈的自我良好感[64]。家长和教师应掌握学生身体特征和兴趣爱好,发掘他们喜欢的体育项目和方式。第二,外在拉力与内在驱动力共同促进青少年体育参与。父母选择体育这个成本最低、副作用最少的方式,帮助青少年增强心理健康,降低自杀意向和自杀可能。学校帮助学生发现体育乐趣,明白体育价值,促进体育参与。

3.2 指导青少年体育参与方式 第一,团队运动和有氧运动。多方合力为青少年提供体育团队的参与可能性;学校体育社团活动的开展,家庭付费体育课外培训的参与,社区为青少年提供免费体育参与机会。共同促进青少年体育团队的建立及可持续发展。第二,保证青少年每天至少 60 min 中高强度体育运动,以使降低青少年自杀率效能最大化。

3.3 积极关注不同性别青少年的体育参与 第一,关注高自杀率的特殊性别取向青少年。多方应共同关注特殊性别趋向的个体,提供更多社会支持,在体育团队运动过程中促进该群体体育参与效果的最大化和最优化。第二,关注女性青少年。需要消除女生参与运动的刻板印象,考虑其身体状况,为女生提供更多鼓励及体育参与机会,提高其运动强度和体育参与频率。

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