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The Influence of Recreational Sports on Physical and Mental Health: A Systematic Review

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Abstract. Leisure sports such as climbing, skiing, surfing, golf and skating can make us healthier, feel better and make more friends. Recently, a systematic study put forward two analysis models: one is "MCS" model and the other is "Capability-Fit for Environment" model. These models tell us that the benefits of leisure sports are not only physical exercise, but also improve our internal motivation, enhance our physical and mental abilities, and let us participate in supportive social and environmental activities. In addition, when sports match our own skills, the health effect will be better. These findings provide a basis for formulating personalized and inclusive leisure sports health promotion strategies.

Keywords: Recreationalsports, health, motivation-capability-support framework, capability-environment fit motivation-capability-support framework, capability-environment fit

1. Introduction

Industrialization and informatization have greatly changed our daily life. Although it has brought convenience, it has also accelerated the pace of life and increased psychological pressure. Nowadays, many people feel anxious, depressed and even clumsy. For example, it is estimated that about 23.8% college students in China have depressive symptoms. Sitting still for a long time and relying too much on technology will increase the risk of physical and mental health problems and make people worry about the negative effects of modern life. Therefore, leisure sports have become a healthy activity. Different from competitive sports, leisure activities pay more attention to fun, personal choice and social interaction, which makes it easier for everyone to stick to it for a long time. Research shows that leisure sports can enhance our cardiovascular and muscular endurance, make our mood more stable, reduce stress and help us make friends. However, many existing studies like to separate the physical, psychological and social benefits, so it is difficult for us to fully understand the overall impact of leisure sports on health [1]. Our research is to fill this gap and see how participating in these fun activities affects health in all aspects. By studying factors such as participation motivation, skill training and whether there is a supporting environment around us, we want to find out good conditions for different people to get more health benefits from leisure sports.

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2. Methodology

2.1. Search strategy

To find literature that has been recently practiced about how recreational sports can affect individuals physical well being and mental well being, a systematic search was performed across the web of science core collection and Ebscohost. Search scope is limited to the time frame of january 1 2015 - aug 1 2025. Two stage iteration search with goal of thorough and right results.

Round 1: Broad Search

Core concept "recreational sport" is used in the search term, combined with the Boolean operator "AND" along with the below set of keywords related to physical & mental health as follows: Physical health: "physical health" OR "physiological health" OR "fitness"; Mental health: "mental health"OR "psychological well-being"OR "emotion";

Social and cognitive function: self - efficacy or quality of life or social connect; Study type: effect or impact or outcome or intervention

Round 2: Specific Sports Search

To avoid the omissions due to the broad search, targeted search was performed on the five specified sports: climbing, skating, skiing, golfing, and surfing. Search strategy including names of these 5 sports and the above-mentioned health-related keyword sets combined by "AND", all conducted in title, abstract and keywords field. Moreover, we did a manual backward search of the references in the included studies to find more references. (see table1.)

2.2. Sources inclusion and southwest criteria

Table 1. Literature inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
Publication from January 1, 2025, to August 1, 2025. Studies examining the effects of recreational sports on physical and/or mental health. Empirical research, systematic reviews, theoretical discussions, etc.	Books, book reviews, conference abstracts, editorials, and news reports. Literature for which the full text is unavailable. Studies entirely unrelated to the health benefits of recreational sports. Studies focusing on professional athletes where the primary aim is enhancing competitive performance. Duplicate publications

Literature Screening Note:

This study used an inclusive screening method and did not restrict the type of study design. Systemic reviews, qualifiers, other sorts as well were all fit for inclusion so as to get a full sense of what is currently being done in this area. It was not that we included the study because of the research methods used. The emphasis was on the relevancy of the study to the topic on recreational sports and health.

2.3. Literature screening process

This study is a systematic review according to PRISMA guidelines. The researchers themselves use the dual-track method to screen the literature: on the one hand, they extensively search for recreational sports, and on the other hand, they specialize in searching for five specific activities (rock climbing, skating, skiing, golf and surfing). In the first round of screening, the researchers evaluated the documents according to their titles and abstracts, mainly to see if they were related to the theme. Those studies that did not meet the standards were excluded. For those studies that passed

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the preliminary screening, we reviewed the full text and evaluated their research design, participants, intervention measures and results. In order to improve the reliability, the author used a structured self-examination program to check the screening decisions at different times to ensure consistency. When in doubt, we refer to the original materials and make detailed records to keep the transparency of the inclusion and exclusion criteria. After screening, the rest of the research was divided into two groups: one group studied the total effect of recreational sports on physical and mental health, and the other group focused on the specific health benefits brought by individual sports. We strictly abide by the research methods, processes and quality control, laying a solid foundation for data extraction and analysis.

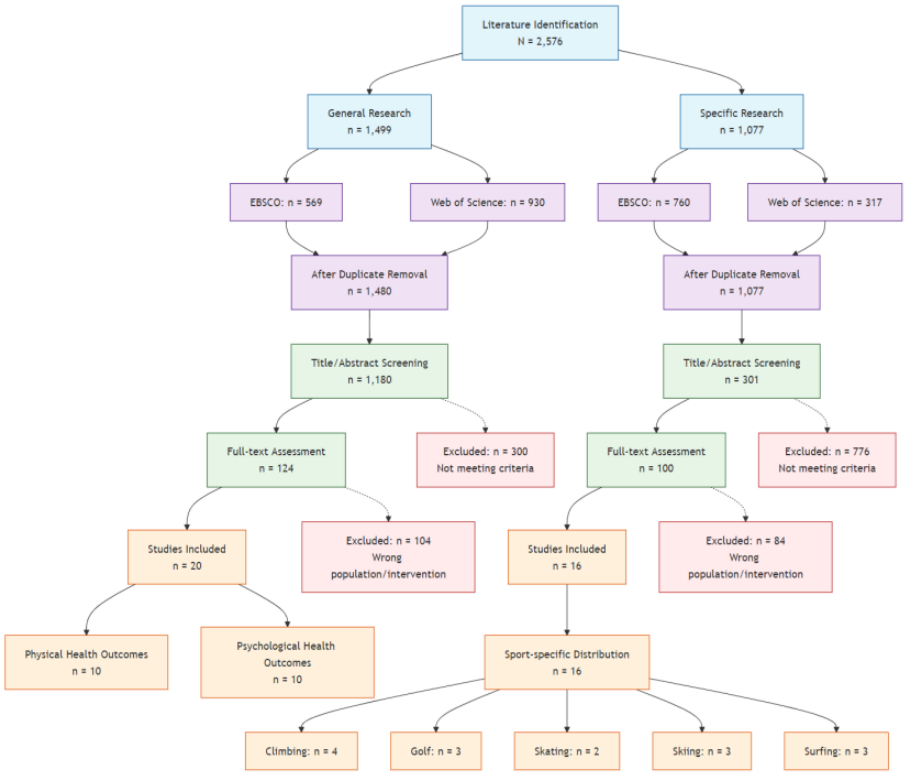


Figure 1. Literature screening process

2.4. Data extraction, synthesis, and classification

In order to clearly show the influence of reproductive sports on our physical and mental health, this study systematically extracts data and makes a thematic analysis of the papers found in "General Search" and "Specific Project Search". Its goal is to establish an analytical framework, which can cover a wide range and contain in-depth details.

2.5. Thematic framework creation according to general searches literature

First of all, we analyzed the contents of the literature found through extensive search. We have extracted key information from these studies, such as the main benefits, how they work, and who the research object is. Through induction and comparison, we put forward a preliminary thematic framework, which includes 4 main aspects and 12 secondary aspects (see Table 2). This is done in

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order to fully understand the field of leisure sports and health research and show the complete situation of this research field.

Table 2. Thematic distribution of literature from the general search

Distribution of Literature from General Search		
Primary Dimension	Secondary Dimension	Estimated Number of Papers
Physical Health	Physical Function Development	4
	Health Risk Prevention	3
	Metabolic Function Optimization	2
Psychological Health	Emotional Regulation	5
	Psychological Capital	3
	Health Behaviors	2
Social Adaptation	Social Support	3
	Environmental Interaction	2
	Cultural Transmission	1
Public Health	Health Promotion	2
	Policy Support	1
	Health Equity	1

2.6. Refine sorting and classification based on the project search of literature

In order to strengthen the research conclusion, we conducted an in-depth investigation on the literature found through "Specific Project search". This part mainly studies individual sports such as rock climbing, skating, skiing, golf and surfing to see what benefits they have on the body and mind, what are the principles behind them, and relevant evidence. The results of the analysis will be compared and integrated with the larger theme framework, so that the original framework can be adjusted as needed. Through this method of repeated adjustment, we finally established a three-layer thematic analysis framework, which covers a wide range and can be analyzed in depth (see Table 3). Results We sorted out 3 main topics, 10 secondary topics, and a total of 28 tertiary topics, and carefully counted how many studies correspond to each research direction. When sorting out and classifying the data, we checked the literature repeatedly to ensure that no matter whether it is a big classification or a small detail, it is accurate. These steps have laid a solid foundation for the comprehensive analysis.

Table 3. Three-level thematic analysis framework

Literature Classification by Three-Level Themes			
Primary Theme	Secondary Theme	Tertiary Theme	Number
Physical Health Benefits	Physiological Function Improvement	Cardiorespiratory & Aerobic Capacity Enhancement	4
		Muscular Strength & Endurance Development	5
		Balance & Coordination Improvement	5
	Body Composition & Metabolic Improvement	Body Fat Control & Weight Management	2
		Bone Health & Density Promotion	1
	Musculoskeletal Risks	Acute Injury Patterns	2
		Overuse Injuries	1
Psychosocial Benefits	Positive Emotion & State Regulation	Stress Relief & Negative Emotion Reduction	5
		Pleasure, Flow Experience & Vitality	4

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Table 3. (continued)

	Self-Perception & Efficacy	Self-Confidence & Self-Efficacy Enhancement	6
		Sense of Achievement & Self-Worth	4
		Resilience & Coping Skills	3
	Social Connection & Support	Social Belonging & Group Cohesion	5
		Social & Communication Skills	2
		Positive Social Identity & Networks	3
	Clinical Intervention Potential	Depression & Anxiety Alleviation	2
		PTSD "Respite" & Regulation	1
		Substance Use Disorder Rehabilitation	1
Mechanisms & Influencing Factors	Underlying Mechanisms	Physiological Mechanisms	2
		Psychological Mechanisms	2
		Environmental Mechanisms	2
	Key Influencing Factors	Activity Characteristics	3
		Participation Patterns	3
		Individual Differences	2

3. Results

Table 4. Summary of empirical findings by sport category

Sport	Paper Title	Key Findings
Climbing	Exploring the role of the rock climbing Treadwall as a novel therapy tool in physical rehabilitation [2].	This study explores the use of a climbing treadwall as a novel rehabilitation tool, demonstrating its effectiveness in improving hand coordination and gait control in children with cerebral palsy, showing promise in physical therapy.
	Adaptive rock climbing as a recreational therapyfor spinal cord injury and brain injury [3].	This pilot study found that adaptive rock climbing serves as an effective recreational therapy, boosting self-confidence, achievement, and self-efficacy in individuals with spinal cord and brain injuries, highlighting its psychological benefits.
	Handgrip fatigue and forearm girth in intermediate sport rock climbers [4].	This research on intermediate climbers reveals that while climbing enhances muscle strength and endurance, it also causes significant acute grip fatigue, quantifying a 22-23% decrease in grip strength.
Golf	Golf and physical health: A systematic review [5].	This systematic review confirms that golf, as moderate-intensity exercise through walking and swinging, can improve cardiovascular function, enhance balance, and promote bone health.
	Virtual golf, "exergaming", using virtual reality for healthcare in older adults [6].	The study finds that playing virtual golf in a natural environment can effectively relieve psychological stress and anxiety, highlighting its benefits for the mental health of older adults.
	Experiences of playing golf as a part of the treatment and rehabilitationprocess among patients in substance use disordertreatment [7].	Research indicates that incorporating golf into treatment can enhance self-efficacy and a sense of achievement for patients with substance use disorders, aiding their rehabilitation process.
Surfing	The effect of a single bout of surfing on exercise-induced affect [8].	A single session of surfing significantly improves cardiovascular endurance, enhances core strength and balance, and boosts positive emotions while reducing fatigue.
	The effects of surfing and the natural environment on the well-being ofcombat veterans [9].	Surfing combined with the "blue space" ocean environment aids in the psychological recovery of veterans with PTSD, providing calm and enhancing sociall
	Surf therapy for people with mental health disorders: A systematic review [10].	Surf therapy is effective in alleviating symptoms of anxiety and depression, and can enhance self-esteem and self-efficacy in individuals with mental health disorders.
Skating	The meaning of adapted ice-skating for children and youths with disabilities [11].	Adapted ice-skating significantly enhances balance, coordination, and lower limb strength, while also boosting participants' self-confidence and sense of control.

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Table 4. (continued)

Skiing	Orthopaedic injury patterns related to ice skating, inline skating, and roller skating: A 20-year epidemiologic analysis [12].	Fractures are the most common injury in skating, accounting for 37.1% of cases, with upper limb injuries being particularly prevalent in inline and roller skating.
	Physical and mental health effects of recreational cross-country skiing: A systematic review [13].	Recreational cross-country skiing effectively improves cardiovascular and pulmonary functions, aids in metabolism and weight control, and reduces anxiety, enhancing overall happiness.
	Return to on-snow performance in ski racing after anterior cruciate ligament reconstruction [14].	ACL injuries are common in ski racing (incidence of 5.5 per 100 per season), and post-surgery return to performance is challenging, with only 53% of athletes showing improvement.
	Effects of body angles on the aerodynamic characteristics in the flight period of ski jumping: A simulation study [15].	This simulation study focuses on the biomechanics of ski jumping, analyzing how different body angles during the flight phase significantly impact aerodynamic performance and stability.

This paper thoroughly researched sports such as rock climbing, ice skating, golf, surfing, and skiing—both physically and mentally—and explained how they affect us. Research find out conclusions from three parts, research conclusion level, mechanism level and mechanism of moderation level.

4. Discussion

4.1. Integration of multidimensional concepts of health definition

The concept of health has significantly expanded in recent decades, evolving into a multidimensional construct recognized across various disciplines. Originally defined by the WHO as a state of complete physical, mental, and social well-being, health is now viewed through new lenses thanks to frameworks like the Ottawa Charter, which characterizes health as a "resource for everyday life" that supports individual practices. The rise of chronic diseases, mental health issues, and social stressors has prompted research that moves beyond traditional definitions. Huber et al. (2011) proposed that health encompasses "the capacity for adaptation and self-management," emphasizing the ability to function amidst adversity. Health is also seen as an ongoing adjustment to one's environment. Positive health research highlights subjective well-being, social participation, and psychological attributes such as positive emotions and self-efficacy as core health components. Ryan and Deci noted that fulfilling needs for autonomy, competence, and connectedness benefits both physical and mental health. Thus, contemporary discussions frame health as a dynamic process shaped by physiological, psychological, social, and environmental factors.This paper adopts a practice-oriented view of health, emphasizing how well individuals can engage physically, psychologically, and socially, with recognition that health is situational. Recreational sports exemplify this health dynamic, as the enjoyment and social interactions associated with such activities enable individuals to develop their capabilities and sustain a healthy lifestyle, focusing on the creation of skills that contribute to the analysis of the health benefits of recreational sports.

4.2. Health promotion functions of particular leisure sports

Popular sports such as mountain climbing, skiing, surfing and golf are very different to play, but they are all good for our health, psychology and making friends. Each sport requires different physical abilities: climbing mountains mainly depends on arm strength, grip and balance, which can make muscles more coordinated; Skiing depends on legs and core strength, and it can also make the heart healthier; Surfing is a full-body exercise, because the waves are always changing, so you need to respond quickly; Although the intensity of golf exercise is not so great, it can also make us walk

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more and be more flexible. All these exercises will make people tired, but if you persist, your body will gradually become better. Psychologically, challenging sports such as mountain climbing, skiing and surfing can make us more confident, more aware of danger and feel a sense of accomplishment. And relatively smooth sports like golf and skating can help us reduce our tension, concentrate more and have a more stable mood. Skiing and surfing, especially playing in nature, can make people feel better and relieve stress. Nature itself has a relaxing effect and is very helpful to mental health. Socialization is also very important in these sports. Surfers are often closely related because they face challenges together and share a common cultural identity, while golf is a relaxed environment suitable for maintaining interpersonal relationships. Rock climbing and skiing can cultivate teamwork and mutual support, while skateboarding encourages young people to socialize more. These social contacts can make people more willing to keep participating in sports, which is also good for overall health.

Although these activities have different mechanisms to promote health, they all embody a framework of "physical adaptation → psychological growth → social support". Through challenge, study and interpersonal communication, Rational Sports provides us with a way to have fun and improve our health.

4.3. Recreational sports have health promotion value as a whole category

Recreational sports play an important role in our health, because they are fun and voluntary, so they can easily become a part of daily life. When we take part in activities that we are really interested in, we are more likely to stick to them for a long time, which is good for our health for a long time. Recreational sports is very flexible, people can choose their favorite activities and adapt to different lifestyles. There are many choices of activities-from low-intensity activities like walking and golf to more exciting activities like climbing and surfing-which allows people of all ages, physical fitness levels and cultural backgrounds to participate. This flexibility lowers the threshold of participation and allows more people to participate in public health activities. Participating in leisure sports is a continuous process, not a one-off activity. With the passage of time, participation can cultivate the skills of immersion, concentration and emotion management, and help us build self-confidence and maintain mental health. Even playing for a short time is helpful to emotional recovery and mental health. Social interaction in leisure sports can greatly enhance the experience. Environments such as ski resorts, beaches and golf courses naturally encourage teamwork and communication, help us make friends and make our mood better. Interesting outdoor activities-such as skiing, surfing and hiking-can make us close to nature, promote physical and mental recovery and maintain a healthy balance. Generally speaking, leisure sports combines personal choice, flexible environment, continuous participation, social support and the benefits of nature, forming a multi-faceted system, which can not only promote health, but also provide reference for future public health plans.

5. Conclusion

In this study, we chose mountain climbing, skiing, surfing, playing golf and skating as fun sports to make a multi-faceted analysis to see what benefits they have on health. It turns out that these benefits not only make people healthier, but also have psychological benefits, such as better management of emotions and feeling more valuable, as well as social benefits from friends and communities. By studying the framework of "motivation-ability-support" and the model of "ability-environment matching", we find that these leisure sports can really help different people become healthier. Simply put, regular participation in these sports can form a virtuous circle: it will make us

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feel better, feel calmer and have better friends, which is an important inspiration for us to promote health plans in the future.

References

[1] Caddick, N., Smith, B., Phoenix, C., (2015). Surfing and the natural surroundings, and well-being of battle veterans. Qualitative Health Research, 25(1), 76–86.

[2] Bartolo, K., Prais, K., D'Amico, E., Androwis, G. J. , J. C hen g , H. Sh oval A. (2025). Study rocks c]*(the) treadwall of climbing the new kind of physical recovery therapy PM& R, 17 (4), 396–403. https: //doi.org/10.1002/pmrj.13283

[3] Smith, K., Peckham, M., Agarap, S. (2024). Adaptive rock climbing as a recreational therapy for spinal cord injury and brain injury: Findings from mixed—methods pilot study Archives of Physical Medicine and Rehabilitation, 105(12), e127. golf

[4] MacDonald, G. A. (2018). Intermediate sport rock climber's handgrip fatigue, forearm girth (Publication No. 10825223) [Master's thesis]. University of Nevada, Las Vegas: ; ProQuest Dissertations and Theses Global.

[5] Sorbie, G. G., Beaumont, A. J., Williams, A. K., & Lavallee, D. (2022). Golf and physical health: A systematic review. Sports Medicine, 52(12): 2943—2963. https: //doi.org/10.1007/s40279-022-01732-w

[6] Choi, C., Kim, D.-K., & Lee, I. (2024). Virtual golf, " exergaming", virtual reality for health care in older adults: Pay attention to leisure restraints, participation advantages, and continuous participation. Healthcare 12(10): p. 962. https: //doi.org/10.3390/healthcare12100962

[7] Hystad, J., & Bergly, T. H. (2021). Golf playing experience as recovery and rehabilitation of substance abuse disorder disease patients. Journal of Substance Use, 26(2), 184–189.

[8] Pittsinger, R., Kress, J., & Crussemeyer, J. (2017). A proceed of 1 session (1) of Exercise-induced em-Affef. International Journal of Exercise Science, 10(7): 989 – 999. https: //doi. org/10. 70252/ XBNU4472.

[9] Carneiro, L., Clemente, F. M., Claudino, J. G., Ferreira, J., Ramirez-Campillo, R., Afonso, J., et al (2024). Surf therapy for people with mental illness: A systematic review of randomized and non- randomized controlled trials. BMC Complementary medicine and therapies, 24, Article 376. https: //doi.org/10.1186/s12906-024-04674-0

[10] Thorslund, E., & Rosberg, S. (2024). Meaning of adapted ice-skating for kids and youths with disabilities Disability and Rehabilitation, 46(24), 5914–5926.1

[11] Dhodapkar, M. M., Halperin, S. J., Gardner, E. C., & Grauer, J. N. (2023). Ice skate, in-line skate and roller skate orthopathy injury pattern: A 20-year epidemiologic analysis. Orthopaedic journal of sports medicine, 11(9), 23259671 – 23 – 1198208.

[12] Tian, H., Ma, P., Su, C., Li, D. (2022). Recreation cross country skiing effect on body and mind: A systematic review. Frontiers in Public Health, 10, 1046295.

[13] Morris, N., da Silva Torres, R., Heard, M., Doyle-Baker, P., Herzog, W., Jordan, M. J. (2025). Return to on-snow performance in ski racing after anterior cruciate ligament repair American Journal Of sports medicine, 53 (3), 640-648. https: //doi. org/10.1177/03635465241307212

[14] Li, X., Wang, X., Chen, L., Zhao, T. (2025) Body angels effects on the aerodynamic features in the flight period of ski jumping: A simulation study. Sports Biomechanics, 24(5), 1385–1399.

[15] Huber, M., Knottnerus, J. A., Green, L, Van der Horst, H, Jadad, A. R. Kromhout, D., Leonard, B., Lorig, K., Loureiro, M. I., van der Meer, J. W. M.Schnabel P.Smith R.Smith C.van Weel H.Smid (2011). What do we think of for health to do? BMJ, 343, d4163.