

# Effectiveness of the Sport Climbing Curriculum on Student Performance in Colleges in Jiangxi, China

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## Abstract

This study aims to examine a sports climbing curriculum and its promotion and effects on college students in Jiangxi China. It also fills the gap of the existence of an unstructured programme and discusses how a programme of such nature could be beneficial to the student's health, both physically and psychologically. The study provides frameworks based on Self-Determination Theory, Social Learning Theory, and the Transtheoretical Model of Behavior Change dealing with intrinsically motivated learning, acquisition of necessary skills and community support within the context of the school. It has written literature on the curriculum, having aspects like safety measures and notions such as VR and AR. Hattie and Timperley therefore present a framework of how to plan curriculum and instruction as well as piloting and implementation process that places safe learning as well as inclusion of all students as well as the evaluation measures at the heart of the task. Finally, Climbing Activities should be incorporated into college physical education so that students attain their myriad benefits and educational performance in Jiangxi is boosted.

**Keywords:** Sports Climbing Curriculum, Self-Determination Theory (SDT), Social Learning Theory, Transtheoretical Model of Behavior Change (TTM), Implementation Challenges

## Introduction

This research examines the effects of sports climbing curricula on students' performance in colleges in Jiangxi China with a focus on the developmental changes in Curriculum, aims and objectives, course delivery and training phases from the grassroots to elite levels. This work intends to examine the impact of rock climbing on the physical and psychological well-being of the students with the help of meta-analysis interviews, personal reflection and secondary sources. The research will identify how climbing sports can be included and how it will improve the fitness levels of the students as well as their perceived capability to manage their lives, post-college, with specific consideration to their emotional health. Further, it will cover the social, informational, and safety-related obligations of climbing including topics like goal-setting, fitness training, skills-focused activity, and assessment. The outcome shall also reveal

the prospects and negative impacts involving climbing sports in tertiary institutions as well as fashion the best approach towards achieving a secure learning atmosphere.

Due to the lack of an official APS course in sports climbing in the colleges in Jiangxi, it becomes difficult for the physical education teacher to incorporate them as an extracurricular activity hence they are of not much value in enhancing the motivation, learning and development of the college students. Extra curriculum activities such as sports climbing are an important factor in students' development and well-being, however, at present, this area is not properly organized to bring those benefits to students (Morales-Rodríguez et al., 2020). This study seeks to fill the above gap by elucidating why a standardized curriculum is required in sports climbing. They will examine how it can be established that such a curriculum will foster a positive learning climate and physical and mental well-being. The research will establish the needs assessment to lead to the provision of recommendations for an efficient programme in sports climbing; thus, the research will enhance improved learners' education attainment and all-round development in Jiangxi-China. The first issue that the intervention seeks to solve is the absence of a well-developed sports climbing program that would show extracurricular activities' positive impact on learner achievements and health status.

The research limitations and delimitations of this study on the sports climbing curriculum in Jiangxi colleges and universities include Packages related to issues not included in the study for example other co-curriculum activities other than sports climbing (Jenkins, 2020). These are the procedural limitations that assist in defining the study as well as its scope to make the research efficient. Exclusion is limited to factors outside the scope of the study about the adopted sports climbing curriculum. The study aims to understand the effectiveness and possibility of participating in sports climbing in colleges without other extracurricular activities. It will be vital to note that the main aim of the research will be to include specific objectives oriented toward sports climbing. By so doing, the research will create a list of factual factors to pursue the subject's importance. This organized method provides a better understanding and documentation of the effects of the sports climbing curriculum study on the student's performance and profile, as well as the improvement and adjustment ideas regarding its curriculum. In the case of the study of the sports climbing curriculum in Jiangxi colleges, it is seen as having a close relationship with students' motivation and improved learning aeration. Sports climbing is also accepted as one of the most accredited co-curricular activities that enrich the education process and the relations between students and teachers. They point to its importance in enhancing the students' confidence and motivation to work. This study also seeks to define the subject and relevance of a sports climbing curriculum in Chinese colleges, particularly its impact on fostering positive change in the students.

The work will reveal the practice of the sports climbing curriculum and contribute a detailed and factualized picture of the curriculum's adoption. This will also consider how to incorporate the sports climbing activities in the colleges to help in improving the students' experiences. Through assessing the impact of these strategies the research intends to exhibit how sports climbing could prove beneficial to the currently established structures of education (Doran et al., 2020). The final aim is all about the significance of sports climbing in enhancing all-around learning concepts for the student's overall health to enhance educational performance and balanced development of colleges in Jiangxi. Ethical issues hence help in maintaining the validity of a study and a proper analysis of results. The ethical practice in this study shall be upheld since the participants will be consulting willingly, signing consent forms, and will remain anonymous, the data collected in this study will also be valid

since it will be sourced from journals, newspapers, and articles, hence guiding the research design and practices ethically.

- To describe the concept of sport climbing curriculum in the colleges of China
- To elaborate on the importance of the sport climbing curriculum for the college students of China.
- To discuss the implementation of the sport climbing curriculum in the colleges of China.
- To assess the strategies that will help the colleges to implement the sport climbing curriculum activities in China.

### **Literature Review**

The availability of the concept of the sports climbing curriculum in Jiangxi colleges originates from the fact that sport climbing as a form of recreation and competition has gained significant momentum across the globe. The proposed curriculum is aimed at improving students' fitness and body coordination, attentiveness, and logical thinking. In the paper, Ramalho et al (2020) particularly addresses curriculum design with an emphasis on elective classes for different learners' preferences. The physical and academic aspects, while Kompan focuses more on the mental preparation for competitions and the improvement of great skills. Issues of safety, teamwork non-technical skills and environmental responsibility. In the first context, there is consistent difficulty grading while in the second context, Kozina provides education incorporating sports science into climbing. Augmented reality can influence motor skills, while other study shows new motion measurements with higher accuracy. The role of teacher and teacher self-efficacy when it comes to incorporating the use of technology in teaching. It is a comprehensive approach grounded by the aim to train physically conditioned, technically sound climbers with strong character.

Alternatively, the establishment of a sports climbing curriculum in the colleges of Jiangxi is crucial in many ways, bringing various prospects to the multitudinous domains. Youthful sports participation; improves the health, mental well-being and social competence of teens. The content of the curriculum reflects cultural Indigenous norms about the environment and ethos of communities. As Doolani et al (2020) also stress the aspects of cognitive and physical skill acquisition, they also highlight the use of VR and AR technologies as effective tools to supplement training and flexibility. Gender equality and female empowerment, urging gamers and developers to create environments that impact gender bias and encourage more females to join. Health and Wellness are core to the concept as Teisberg et al (2020) applaud the improvement in the student's health status, and hence welfare as a result of the curriculum, thus enhancing the students' well-being.

In analyzing the measures of the Jiangxi colleges' sports climbing curriculum, motivational elements significantly bear a lot of weight. Self-motivation is the notion that is enjoyed by climbers through challenge pleasure and self-satisfaction (Chan, 2020). This intrinsic motivation flows and climbers get engrossed in the climbing movements. Among the core components of singularity stressed by Johann and Kar, goal-setting helps people to have orientation and gives them purpose with a sense of accomplishment and personal development. This is in line with having frequent goal check-ins, which enable a positive feedback loop of frequent recognition of progress and accomplishment. Finally, the present study reveals how these motivational elements improve not only students' learning but also their self-motivation, self-confidence and sustained interest in the sports climbing curriculum.

Now, having implemented a sport climbing curriculum in colleges, the students' worthwhile experiences and the pedagogical gains have positively affected students' physical and psychological well-being. Theoretical work is believed to provide fundamental prescriptions and instructions, standards of conduct, and key procedures required in actual practice. Practical activity strengthens the students' gross and fine motor coordination, develops required teamwork and prepares them for competitions. The design of well-defined progressions from basic to more advanced learning levels is beneficial to the student's confidence and skills (Argyilan et al., 2024). Featuring climbing experts in the program increases curriculum feasibility and students' progress. The need to learn climbing facilities is important in providing children with the necessary climbing equipment and safety features to enable them to learn. Maintenance of equipment used in learning and inspections ensure that the students are safe and they get the best chance to learn. The sport climbing implementation involves the provision of all-around resources, cooperation between various people, safety measures, as well as a set plan that enhances learning among the students so that they can achieve the best results in the sports.

Namely, some critical objectives of teaching sport climbing curriculum and current trends when it comes to college curriculum are crucial. Among them, the goal of equal access and non-discrimination can be identified as an important goal, that seeks to solve problems related to inclusive education for students with various backgrounds (De Beco, 2022). Teachers are motivated to design conditions favorable for students who have different abilities, to ensure that all students feel comfortable learning and the learning process facilitates their ability to learn at their best. Another crucial aim is their safety, which is both physical and emotional. Teachers take all necessary measures to make sure that the environment is trustworthy, and that the students can accept challenges without compromising their decision-making abilities (Garrecht et al., 2020). This approach consists of very strict observation of the climbing activities' potential risks and adherence to the safety measures that would allow for a secure learning process. Another explicit learning goal in sports climbing is the improvement of problem-solving abilities. Teachers strive to prepare learners to fight problems and complete climbing exercises systematically and independently as much as possible. It is important to note that these skills also contribute positively to performance while at the same time encouraging students to discover more about themselves and the best learning models.

There is a strong emphasis on group cooperation and effective communication within the framework of sports climbing to ensure unity and support among learners. In addition to supporting functional climbing, these abilities also necessitate developing a positive group learning environment for students. The possibility of teaching sport climbing indoors is one of the most dominating trends observed in the modern climbing world. These facilities provide different formations; different climbs; and state-of-the-art safety measures that provide conducive learning conditions and environmental impact hazards. Space features rooted for their ease of access and safety make indoor facilities some of the most efficient means of improving physical functions and general student development. Furthermore, the integration of climbing with other subjects, such as meditation, yoga and or environmental subjects is being encouraged, as part of an interdisciplinary approach to learning for students (Demo et al., 2021). It also promotes more extensive ways of perceiving things and the general improvement of skills that students acquire in their overall development and participation. Competition events in sport climbing are also being organized more frequently, enabling students to practice and demonstrate their performance in diverse activities. These events

create some sort of unity and purpose, they encourage students to work hard and do their best to deliver good results; thus supporting the development of high levels of physical fitness and competitiveness among the students. Last but not least, as part of the sports climbing learning process, mental training has proved to be significant. In student success, teachers encourage approaches such as making goals, speaking positively to oneself, and meditation (Zeilhofer, 2023). Mental training not only helps to strengthen the students' mental aspects but also enhances the approach to physical training for efficient physical, intellectual, and overall student development in sports climbing education.

There is a systematic model to follow for a sports climbing curriculum to be implemented and those steps include the following; Firstly, the need assessment phase is an essential part of the process that helps to determine the need of curriculum and expectations towards its development. This step affirms that it is necessary to integrate climbing activities into PE, especially given the multiple health-related issues that many Chinese college students experience. It defines a starting point for creating a match-up between course goals and the education needs of the target clients. Second, the planning session regards the establishment of a rigid framework that can be followed to implement the curricula. In this phase, participants can consider several approaches and options to meet the curriculum development goals appropriately. While planning lays the roadmap for the activities to be completed in the future, it also helps in defining a clear curriculum map and instructional approaches (Rice & Mars, 2023). Moreover, it tries to link what is taught with what is to be learned; at the same time, it seeks to make what is taught clear and user-friendly for a wide range of learners.

Secondly, content development is imperative for organizing the curriculum and its contents with the right stuff. This step focuses on both what tools are required when teaching sports climbing as well as the training requirements and safety considerations when teaching this particular speciality of climbing. It must be lengthy but to the point to leave out no aspect regarding climbing competence and precaution. After content development, the next steps are pilot delivery and then revision to determine how effective the developed curriculum is. During this phase, the curriculum devised is implemented on a small scale to determine the feasibility of the proposed implementation and its consonance with intended learning achievement. Getting responses from the pilot run of the curriculum enables the refinement and improvement of the curriculum in form and content to be effective for the educators as well as effective for the learners. Lastly, implementation depicts the final unmodified curriculum that has been documented and approved for practice. It covers all the developed contents, teaching methods and assessment standards that may facilitate efficient learning advanced in sport climbing (Taylor et al., 2020). This stage represents the final activity to promote the advancement of sports climbing into physical education college student workouts to enhance the fitness level of college students in China.

Therefore, there is a need to understand approaches to implementing a sports climbing curriculum within college settings to counter challenges and to improve its adoption. First of all, one of the key concerns is the issue of resistance to change: this is when to encourage the students, the teacher will need to address and overcome their concerns and doubts. This strategy is based on the fact that educators and leaders have to convince the students about the advantages and fun related to integrating sports climbing into the curricular offerings. Secondly, the strategy entails the use of methods that are engaged throughout the implementation process, hence providing motivation. This approach involves working with students and faculties, trying to create an atmosphere where all the objectives of the

curriculum that are to be set will be met together with cultural backgrounds taken into consideration. Moreover, adopting a concern-based approach towards technology allows for more systematic application by tackling innovation configurations, stages of concern, and levels of use. This sequential approach assists in the infusion of sport climbing into the college curriculum besides tackling the varying preparedness and fears that key stakeholders may exhibit (Fekpe, 2023). Lastly, the Leadership Obstacle Course (LOC) strategy emphasizes the importance of leadership as an agent of change that can coordinate stakeholders through visioning, networking, experimenting, risk-taking and other types of empowering actions. Managers are the main actors when it comes to handling difficulties and opposition to bring effectiveness into the climbing curriculum in different colleges. Overall, these strategies ensure a better and more constructive focus regarding the engagement of sports climbing in college physical education programs in China.

The incorporation of other innovations such as virtual reality (VR) and augmented reality (AR) into the physical study of college sports climbing is quite revolutionary. The main features of VR include its realistic simulation of climbing conditions/contexts, which can be trained in different places and under certain restrictions. AR superimposes interactive digital images on top of tangible physical environments to facilitate practical and realistic training as well as performance demonstration (Russo, 2021). These technologies mimic steep inclines, thus providing safer terrains for students to hone their skills and decision-making complexities in a step-by-step fashion. Furthermore, technology plays a significant role through big data analytics that transform the education provision in climbing by offering student performance information. This quantitative-based method helps in designing and developing training strategies, anticipating difficulties or constraints, and developing strategic thinking among the students. It also allows for global benchmarks as students seek to develop climbing proficiency through competition and coalition.

There are challenges in implementing the sports climbing curriculum in colleges too. Permission to set up climbing apparatus must involve careful planning and full compliance with the international standards of safety. It has been found that informing the students about safety measures and management when relating learning to experience and the risks implied is important. Similarly, promoting diversity such that the needs of all students, as regards their backgrounds and abilities, are met improves accommodation and engagement within a curriculum. To maintain and expand the curriculum in the long term, the analysis and further development must be constant. Concerning formative assessment, there is continuous evaluation of learning outcomes and students' participation for provisions to be made for modifications to achieve congruity with educational goals and objectives and other changes observed in the trends of climbing.

## **Theoretical Framework**

### ***Self-Determination Theory (SDT)***

Self-Determination Theory (SDT), proposed by Deci and Ryan (1985), posits that human motivation and behaviour are driven by three fundamental psychological needs: The three basic psychological needs of individuals include; autonomy, competence and relatedness. Self-determination pertains to perceived volition or choice regarding decisions and processes, typical for intrinsic motivation. In the setting of a sports climbing curriculum of desire, students are likely to act intrinsically motivated when they have the option to decide their goals on climbing and likes. Confidence refers to a subject's feeling of being capable of handling tasks like mastering climbing techniques or being able to achieve difficult routes.

With the implementation of these SDT principles in a sports climbing programme of colleges, colleges will be able to enhance the aspect of intrinsic motivation, self-organised activities and psychological well-being of a student thus making the learning journey in climbing as fulfilling as possible.

### ***Social Learning Theory***

The Social Learning Theory which was formulated by Bandura (1977) posits that humans learn not only individually but also collectively through modelling. In the sport climbing curriculum, students learn via observation and from fellow climbers and climbers who are learning. Recalling methods of effective climbing and safety measures, seen in climbing walls and through videotapes, motivates the students to emulate those methods. Moreover, community learning among climbers shapes reciprocal interpersonal encouragement and advice of the student with the focus of enhancing their confidence in climbing skills (Bouffard, 2023). Having expert instructors and mentors also adds to learning in a way that they observe and guide students as well as correct their mistakes during the climb, thus helping in their overall motivation and skill level in climbing activities.

### ***Transtheoretical Model of Behavior Change (TTM)***

The Transtheoretical Model of Behavior Change (TTM), developed by Prochaska and DiClemente (1983), identifies five stages individuals go through when adopting new behaviours: Preliminary stage, consideration stage, preparation stage, action stage and maintenance stage (Moullin et al., 2020). Concerning athletes wanting to develop the sport climbing curriculum, the students may not initially think of climbing as an activity at all (Pre-contemplation). Another way through which colleges can make their clientele aware of the advantages of climbing is through publicity. When getting to the contemplation stage, learners start to appreciate the benefits of climbing in terms of participation. It is useful to take a word or two with those who have been through the climbing to have a clue on how to go about it and even develop curiosity. Before climbing, students ask for directions, get basic information, and training concerning the gear, and safety measures during the climbing process, which enhances their preparedness to engage in climbing activities through introductory workshops and use of climbing facilities.

### **Conclusion**

Thus, the need to embrace the curriculum in sports climbing among universities in Jiangxi, China shall be supported as a way of promoting students' ability to improve their physical and mental health as well as improved learning. Through this research, various theories like Self-Determination Theory (SDT), Social Learning Theory, and the Transtheoretical Model of Behavior Change (TTM) have been utilized to outline general principles and a framework of essential strategies for creating and implementing a successful curriculum on sustainable behaviour change. According to the framework of SDT, autonomy, competence, and relatedness are fundamental principles enabling students' intrinsic motivation in climbing activities. In another way, goal setting, decision making, and competence that come from skills development also provide meaningful activities for students invite their ownership, and increase their satisfaction with their curriculum through colleges. Also, Social Learning Theory underlines observation modelling, and reinforcement by peers to influence students' behaviours and skills in climbing. Not only are students taught proper ways to climb and interact with climbing partners from others and the environment they encounter, but they

also gain confidence and a sense of the community they belong to, aspiring to be in, hence developing themselves holistically. Additionally, this theory helps in managing students' reinforcement and interaction by colleges and proposes educational awareness on climbing activities while making stage-by-stage interventions from pre-contemplation, contemplation, preparation, action and maintenance phases.

Theoretical information that helped Garcia to form the practical recommendations identified four major categories of learning benefits deriving from an SC curriculum: cardio-vascular fitness, motor skills, cognitive improvement, and psychological/emotional health. Further, with advancements in technology, theories such as Virtual Reality (VR) and Augmented Reality (AR) as well as big data analytics hold the key to creating safe envired simulations and assessments of learning that may otherwise be hazardous to individuals for practice and evaluation. However, it is in the implementation of such a curriculum that the challenges lie in the area of dangers, integration and the keeping of students' engagement charges. These challenges call for sound planning, safety guidelines and assessments to ensure that any loopholes in the curriculum are fixed continually as teaching continues.

### **Contribution**

They evaluated a work on the development and application of a sports climbing curriculum in colleges of Jiangxi China and identified several important contributions in the following points. Firstly, it suggests a solution to an important deficiency in the present physical education curriculum by supporting the idea of sports climbing incorporation into the lesson plan. The purpose of this stand is to promote an increased degree of systematic training which would improve the motor skills of the students and make them healthier individuals. Using the theories including Self-Determination Theory (SDT), observance, Social Learning Theory, and the Transtheoretical Model of Behavior Change (TTM), this study is relevant in developing a more comprehensive approach to creating appropriate climbing programs to enhance desire, capacity, and reinforcement of students. Moreover, the study also distils that climbing education nowadays is transformed into a technology-enabled process integrated with the use of VR, AR, and data analysis for providing a climbing learning environment that is safe and performance-oriented. It also focuses on the preference for introducing and implementing cultures that value and enhance student accessibility to learning irrespective of the learner's disability, one's race, colour, national origin, age, marital status, pregnancy, gender, disability ethnic origin, political beliefs, financial status, sexual orientation, or religion. In conclusion, this study, therefore, encourages the use of such findings in improving overall physical development and functional physical and cognitive abilities in climbing while promoting students' emotional well-being and assessing the contribution of physical. ed to students' education in Jiangxi colleges.



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