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ВОЛЕЙБОЛ БОЮНЧА КОМАНДАЛЫК МЕЛДЕШТЕГИ МАШЫГУУЛАРДЫН ЖОГОРКУ ОКУУ ЖАЙЛАРЫНЫН СТУДЕНТТЕРИНИН БУЛЛИНГГЕ ЖАКЫНДЫГЫНА ТИЙГИЗГЕН ТААСИРИ: ЭМПАТИЯ ЖАНА ЭРЕЖЕЛЕРДИ БИЛҮҮ ФАКТОРЛОРУН МОДЕРАТОРЛУК КЫЛУУЧУ ФАКТОРЛОР КАТАРЫ КАРАГАН ИЗИЛДӨӨ

Аннотация. Волейбол командасынын каршы машыгуусунун жогорку окуу жайдын студенттеринин мектептеги зомбулукка жакындыгына болгон кийлигишүү натыйжасын, ошондой эле эмпатия жөндөмүнүн жана эреже сезиминин жөнгө салуучу ролун изилдөө үчүн, мектептеги зомбулукка жакындыгы жеңил деңгээлде болгон (мектептеги зомбулукка жакындык масштабындагы балл≥30 балл) бир жогорку окуу жайдын 80 студентин тандап алып, аларды эксперименталдык топко (40 адам) жана контролдук топко (40 адам) туш келди бөлүштүрдүк.Эксперименттик топ 12 жума бою волейбол боюнча командалык каршылашуу машыгуусун өткөрдү (жумасына 3 жолу, ар бир жолу 90 мүнөт), ал эми контролдук топ кадимки кампустук жашоону улантты. "Студенттердин мектептеги зомбулукка жакындыгын аныктоо шкаласы", "Адамдар ортосундагы симпатиялык жөндөмдүүлүк шкаласы", "Студенттердин эреже сезимин аныктоо шкаласы" аркылуу алдын ала тест, ортоңку тест (6-жумада) жана кийинки тест (12-жумада) жүргүзүлүп, маалыматтар SPSS 26.0 жана PROCESS плагини аркылуу талданды.Жыйынтыктар көрсөткөндөй: 12 жумадан кийин, эксперименталдык топтогу окуучулардын кордоо тенденциясынын жалпы баллы алдын ала текшерүүгө салыштырмалуу 38,6% төмөндөгөн (P<0,01), эмпатиялык жөндөмдүүлүк баллы 29,3% жогорулаган, эреже сезиминин баллы 32,5% жогорулаган (бардыгы P<0,01); модерациялык эффектти текшерүү көрсөткөндөй, эмпатиялык жөндөмдүүлүк (β=-0,31, P<0,01) жана эреже сезими (β=-0,35, P<0,01) тең олуттуу терс модерациялык ролду ойнойт, ошондой эле экөөнүн өз ара модерациялык эффекти олуттуу (β=-0,22, P<0,05), жогорку эмпатия - жогорку эреже сезими тобундагы окуучулардын кордоо тенденциясынын жакшыртуу көрсөткүчү (47,2%) төмөн эмпатия - төмөн эреже сезими тобундагы окуучуларга салыштырмалуу (19,8%) олуттуу жогору болгон.Жыйынтыктар көрсөткөндөй, волейбол боюнча командалык каршылашуу машыгуулары "кызматташтык тажрыйбасы - эмпатияны өстүрүү - эрежелерди ички сезимге сиңирүү" жолу аркылуу студенттердин кордоо тенденциясын төмөндөтө алат, эмпатиялык жөндөмдүүлүк жана эреже сезими интервенциянын натыйжалуулугун күчөтөт, бул жогорку окуу жайларындагы мектеп чөйрөсүндөгү кордоону алдын алуу жана ооздуктоо үчүн "спорт + психология" айкалыштырылган жолун сунуштайт.

Негизги сөздөр: волейбол командалык каршылашуу машыгуусу, студенттер, мектептеги кордоо тенденциясы, эмпатиялык жөндөмдүүлүк, эреже сезими, модерациялык роль.

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ВЛИЯНИЕ ТРЕНИРОВОК В КОМАНДНЫХ СОРЕВНОВАНИЯХ ПО ВОЛЕЙБОЛУ НА СКЛОННОСТЬ СТУДЕНТОВ ВЫСШИХ УЧЕБНЫХ ЗАВЕДЕНИЙ К БУЛЛИНГУ: ИССЛЕДОВАНИЕ, В КОТОРОМ ЭМПАТИЯ И ОСВЕДОМЛЕННОСТЬ О ПРАВИЛАХ ВЫСТУПАЮТ В КАЧЕСТВЕ МОДЕРИРУЮЩИХ ПЕРЕМЕННЫХ

Аннотация. Для изучения эффективности вмешательства командной противоборственной тренировки по волейболу в снижение склонности студентов к кампусному буллингу, а также роли модерации эмпатических способностей и осознания правил были отобраны 80 студентов университета с легкой склонностью к кампусному буллингу (балл по шкале склонности к кампусному буллингу ≥ 30 баллов), которые были случайным образом разделены на экспериментальную группу (40 человек) и контрольную группу (40 человек). Экспериментальная группа прошла 12-недельную командную противоборственную тренировку по волейболу (3 раза в неделю по 90 минут), в то время как контрольная группа продолжала обычную кампусную жизнь. Проводились предварительное, промежуточное (на 6-й неделе) и последующее (на 12-й неделе) тестирования с использованием шкал «Шкала склонности студентов к кампусному буллингу», «Шкала межличностных эмпатических способностей» и «Шкала осознания правил у студентов», а анализ данных проводился с помощью программы SPSS 26.0 и плагина PROCESS.Результаты показывают: через 12 недель общий балл склонности к буллингу в экспериментальной группе снизился на 38,6% по сравнению с предварительным тестированием ($P<0,01$), балл эмпатических способностей увеличился на 29,3%, балл осознания правил увеличился на 32,5% (все $P<0,01$); проверка модерирующего эффекта показала, что эмпатические способности ($\beta=-0,31$, $P<0,01$) и осознание правил ($\beta=-0,35$, $P<0,01$) оказывают значительное отрицательное модерирующее воздействие, при этом взаимодействующий модерирующий эффект между ними является значительным ($\beta=-0,22$, $P<0,05$). Улучшение склонности к буллингу в группе с высоким уровнем эмпатии и высоким осознанием правил (47,2%) значительно выше, чем в группе с низким уровнем эмпатии и низким осознанием правил (19,8%). Выводы показывают, что командная противоборственная тренировка по волейболу может снизить склонность студентов к буллингу через путь «сотрудничество – развитие эмпатии – интернализация правил», а эмпатические способности и осознание правил могут усилить эффект вмешательства, предоставляя университетам интегрированный путь «спорт + психология» для предотвращения и борьбы с буллингом в кампусе.

Ключевые слова: командная противоборственная тренировка по волейболу, студенты, склонность к кампусному буллингу, эмпатические способности, осознание правил, модерирующее воздействие.

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THE IMPACT OF VOLLEYBALL TEAM COMPETITION TRAINING ON COLLEGE STUDENTS' TENDENCY TO BULLYING: A STUDY WITH EMPATHY AND RULE AWARENESS AS MODERATING VARIABLES

Abstract. To investigate the intervention effects of volleyball team confrontation training on college students' bullying tendencies and the moderating roles of empathy and rule awareness, 80 students with mild bullying tendencies (≥30 points on the College Bullying Tendency Scale) were randomly assigned to an experimental group (40 participants) and a control group (40 participants). The experimental group underwent 12 weeks of volleyball team confrontation training (3 sessions per week, 90 minutes each), while the control group maintained regular campus life. Pre-test, mid-test (week 6), and post-test were conducted using the College Bullying Tendency Scale, Interpersonal Empathy Scale, and College Rule Awareness Scale, with data analyzed using SPSS 26.0 and PROCESS add-ins. Results showed that after 12 weeks, the total bullying tendency score in the experimental group decreased by 38.6% compared to pre-test ($P<0.01$), while empathy scores increased by 29.3% and rule awareness scores by 32.5% (all $P<0.01$). Moderation effect tests revealed significant negative moderating effects of empathy ($\beta=-0.31$, $P<0.01$) and rule awareness ($\beta=-0.35$, $P<0.01$), with a significant interaction effect ($\beta=-0.22$, $P<0.05$). The improvement in bullying tendency was significantly greater in the high empathy-high rule awareness group (47.2%) compared to the low empathy-low rule awareness group (19.8%). The findings indicate that volleyball team-based competitive training can reduce bullying tendencies among college students through a three-step process: collaborative experience, empathy cultivation, and rule internalization. Empathy development and rule awareness significantly enhance intervention effectiveness, establishing a 'sports + psychology' integrated approach for campus bullying prevention in higher education.

Keywords: volleyball team confrontation training, college students, tendency to campus bullying, empathy, rule awareness, moderating effect.

Introduction

1.1 Research Background

Campus bullying, a critical issue in mental health and safety management at higher education institutions, has become a significant threat to students 'physical and mental well-being. According to the "2024 Report on the Mental Health Development of College Students" released by China's Ministry of Education, 15.8% of university students exhibit varying degrees of bullying tendencies, including verbal aggression, social exclusion, and malicious isolation. Notably, 8.3% of students have engaged in minor bullying behaviors. Such incidents not only cause psychological issues like anxiety and depression in victims but also damage campus relationships and may even lead to extreme incidents. Data from a university's 2023 campus safety report reveals that bullying-related conflicts accounted for 22.7% of all campus emergencies.

Sports training, as an effective intervention for aggressive behavior, demonstrates unique value in addressing bullying tendencies through its team-based competitive nature. Wei Chunsheng (2017) highlighted in his volleyball pedagogical research that the match method (the core format of team competition) cultivates respect and emotional regulation through "rule-based constraints" and "collaborative demands." His experimental study in secondary school volleyball education revealed a 24.5% reduction in aggressive behaviors among students participating in team competition training.

Centered on "offensive-defensive coordination and rule adherence," volleyball team training requires close coordination between players and strict compliance with competition rules. Frequent interpersonal interactions during training also foster empathy development – which aligns closely with the core factors influencing school bullying tendencies (empathy deficiency and rule indifference).

However, current research on volleyball team confrontation training and bullying tendencies in schools remains limited. Existing sports intervention studies predominantly focus on basketball and soccer, with insufficient exploration of the moderating effects of empathy and rule awareness. Liu Chijian (2020) emphasized that cultivating rule awareness in physical education classes is crucial for reducing aggressive behaviors. Yet current volleyball training primarily emphasizes skill enhancement (e.g., defensive techniques, offensive tactics) while neglecting the design of "rule internalization" and "empathy cultivation." Meanwhile, scholars like Xu Qiu (2001) and Gong Degui (2000) have studied volleyball awareness (including defensive and rule consciousness), but their research fails to connect these concepts with bullying tendency interventions, revealing significant gaps in existing scholarship.

1.2 Research Purpose and Significance

This study systematically evaluates the intervention effects of volleyball team-based competitive training on college students 'bullying tendencies, clarifies the mediating mechanisms of empathy and rule awareness, and ultimately proposes actionable anti-bullying strategies for universities. Theoretically, by integrating "sports training theory" with "bullying intervention theory," this research fills a critical gap in volleyball training's application to bullying prevention while expanding interdisciplinary research in sports and educational psychology. Practically, the findings provide actionable guidance for integrating volleyball courses with mental health education in universities, offering cost-effective and scalable intervention approaches to combat bullying and foster safe, harmonious campus environments.

1.3 Research Methods

1.3.1 Literature research method

Through a search of China National Knowledge Infrastructure (CNKI) for relevant literature from 2000 to 2024, the topics covered include "team volleyball training", "intervention of bullying tendencies in schools", "regulatory role of empathy", and "cultivation of rule awareness". The study focuses on systematically reviewing achievements such as Wei Chunsheng's (2017) volleyball match teaching method, Liu Chijian's (2020) cultivation of rule awareness in physical education classes, and Xu Qiu's (2001) and Gong Degui's (2000) research on volleyball awareness. A total of 76 valid papers were screened, establishing a theoretical framework and empirical foundation for the research.

1.3.2 Experimental method

Study Design: Using cluster sampling, first to third-year students from a provincial university were selected as the screening population. The "College Student Bullying Tendency Scale" (α=0.90) was employed to identify 80 students exhibiting mild bullying tendencies (with scores $\geq$30). Participants were randomly divided into an experimental group (40 males, 22 females) and a control group (40 males, 21 females). No significant differences were observed between the groups in gender composition (18 males vs. 22 females in the experimental group; 19 males vs. 21 females in the control group), academic year distribution (15 first-year students vs. 13 second-year students vs. 12 third-year students in the experimental group; 16 first-year students vs. 12 second-year students vs. 12 third-year students in the control group), or initial bullying tendency scores (35.2±4.6 vs. 34.8±4.3 in the experimental group, $P>0.05$). The groups demonstrated comparable characteristics.

Experimental Design: The experimental group underwent 12-week volleyball team competition training, designed based on Wei Chunsheng's (2001) match methodology, divided into three phases: ① Basic Rules Phase (Weeks 1-4): Learning volleyball competition rules (e.g., serving rules, foul judgments), basic competitive techniques (spiking, passing, defense), conducting "2V2 Simplified Competition" to focus on rule comprehension; ② Collaborative Competition Phase (Weeks 5-8): Conducting "4V4 Standard Competition" with a "Team Tactics Discussion" segment, requiring players to formulate defensive and offensive strategies based on opponents' characteristics, enhancing teamwork awareness; ③ Comprehensive Improvement Phase (Weeks 9-12): Organizing "Class League" with "Fair Competition Scoring" (including rule compliance, respect for opponents, team coordination), linking scores to training rewards to deepen rule internalization and empathy cultivation. The control group did not participate in any team competition sports training, maintaining regular classes, club activities, and campus life.

1.3.3 Questionnaire Survey Method

Three standardized assessments were conducted using the following scales: Pre-test (1 week before the experiment), Mid-test (end of Week 6), and Post-test (end of Week 12). The scales used included: ① "College Student Bullying Tendency Scale" (Wang Lei et al., 2023): Comprising three dimensions ("Verbal Bullying", "Social Exclusion", "Malicious Provocation") with 22 items, Likert 5-point scale, higher scores indicate stronger bullying tendencies (α=0.89); ② "Interpersonal Empathy Scale" (Zhang Min et al., 2022): Featuring two dimensions ("Emotional Empathy", "Cognitive Empathy") with 18 items, Likert 5-point scale (α=0.87); ③ "College Student Rule Awareness Scale" (Li Jun et al., 2023): Covering three dimensions ("Rule Recognition", "Rule Compliance", "Rule Maintenance") with 15 items, Likert 5-point scale (α=0.85). Questionnaires were distributed and collected on-site during each assessment, with 240 questionnaires distributed and 240 valid responses collected, achieving a 100% valid recovery rate.

1.3.4 Data Analysis Method

Data processing was conducted using SPSS 26.0 software: ① Descriptive statistics were calculated to present mean and standard deviation of scale scores across groups; ② Repeated measures ANOVA was employed to compare score differences between experimental and control groups at different time points; ③ Independent samples t-test was used to analyze post-test score differences between groups; ④ Hayes' PROCESS plugin (Model 2) was applied to examine the moderating effects of empathy and rule awareness on the relationship between "volleyball team confrontation training and bullying tendency", with a significance level of α=0.05.

II. Literature review

2.1 Factors influencing school bullying tendencies and current intervention status

The development of bullying tendencies in schools is influenced by both individual and environmental factors. At the individual level, impaired empathy makes students less sensitive to others' suffering, leading to a lack of moral restraint against bullying (Zhang Min et al., 2022). Their research reveals a significant negative correlation between empathy capacity and bullying propensity ($r=-0.42$, $P<0.01$). Meanwhile, weak rule awareness causes students to disregard behavioral boundaries, perceiving aggressive actions as "fair competition." Li Jun et al. (2023) found that students with low rule awareness scored significantly higher in bullying tendencies (38.6±4.2) compared to those with high rule awareness (26.3±3.5) ($t=10.25$, $P<0.01$). On the environmental front, toxic campus climates—such as excessive competitive pressure and low interpersonal trust—further exacerbate bullying tendencies. A 2024 university survey showed that students in "high-

pressure competition" classes exhibited 1.8 times higher bullying tendencies than those in regular classes.

Current campus bullying interventions predominantly adopt a "psychological counseling + institutional constraints" model. Psychological counseling improves students 'aggressive cognition through cognitive restructuring, yet faces challenges of "short-term effectiveness with long-term maintenance difficulties." Institutional constraints deter bullying behaviors through school regulations, but struggle to fundamentally alter students' behavioral habits. Sports interventions, emerging as a novel approach, have gained attention due to their "experiential" and "interactive" advantages. For instance, basketball team training can reduce bullying tendency scores by 26.3% (Liu Yang et al., 2025). However, existing studies predominantly employ "generalized team training" without designing for "competitive scenarios," and fail to incorporate moderating variables like empathy and rule awareness, resulting in limited intervention effectiveness.

2.2 Characteristics and Interventional Value of Volleyball Team Competition Training

Volleyball team training centers on "collaborative competition under rule constraints," offering three key advantages: First, rule enforcement—strict adherence to volleyball regulations (including prohibiting intentional collisions and respecting referees 'decisions) enhances rule awareness and compliance. Second, teamwork—attack and defense require coordination among roles like setter, spiker, and blocker, where any misstep impacts team performance, fostering collaboration and trust. Third, emotional regulation—competitive experiences teach students to manage emotions and avoid aggressive behavior. Wei Chunsheng (2017) demonstrated through volleyball match-based teaching research that 12-week team training improved students' "emotional regulation scores" by 27.6% and "interpersonal collaboration satisfaction" by 31.2%, providing practical evidence for bullying intervention.

While existing volleyball training research has addressed rules and teamwork, it has not sufficiently connected these elements with bullying tendencies. Xu Qiu (2001) and Gong Degui (2000) explored the "conceptual patterns" in volleyball defensive awareness, emphasizing that defensive training should integrate rule understanding with team collaboration. However, their studies focused on technical improvement rather than behavioral intervention. Lou Jing and Li Yuming (2000) highlighted the need to cultivate volleyball awareness (including rule consciousness and teamwork) during technical training, yet failed to examine its impact on aggressive behaviors. The "rules-cooperation-emotion" triad in volleyball team training aligns closely with the core triggers of bullying tendencies— "rule indifference, lack of empathy, and emotional instability" —making it a valuable target for targeted interventions.

2.3 The moderating effect of empathy and rule awareness

Empathy, as an "emotional regulation variable," enhances students 'sensitivity to others' suffering, thereby curbing bullying behaviors. Students with high empathy actively monitor both teammates 'and opponents' emotions during team competitions (e.g., avoiding intentional harm to opponents). Zhang Min et al. (2022) found that high-empathy students committed significantly fewer "malicious fouls" (0.3±0.1 per match) compared to low-empathy students (1.8±0.5 per match) ($t=15.32$, $P<0.01$). Rule awareness, as a "cognitive regulation variable," clarifies behavioral boundaries and reduces "unconscious bullying." Liu Chijian (2020) demonstrated in a study on sports classroom rules that systematic rule education reduced "rule-breaking rates" by 34.7%, with stronger rule awareness correlating to heightened "moral judgment" against bullying.

Current research on moderating effects predominantly focuses on single variables. For instance, studies either exclusively examine the impact of empathy (Zhang Min et al., 2022) or analyze the role

of rule awareness (Liu Chijian, 2020), while neglecting their interaction. In real-world scenarios, empathy and rule awareness exhibit a synergistic effect: high rule awareness provides "boundary guidance" for empathetic behavior (e.g., recognizing actions that harm others), while strong empathy enhances the "intrinsic motivation" for rule adherence (e.g., voluntarily following rules out of compassion for others). Therefore, it is essential to incorporate both variables simultaneously to clarify their interactive moderating effects, thereby providing a foundation for precise interventions.

III. The mechanism of volleyball team confrontation training to reduce bullying tendency

3.1 Internalizing Rules: From "Passive Compliance" to "Active Maintenance"

Volleyball team training employs a "rule learning-practice reinforcement-feedback correction" approach to internalize compliance and reduce unconscious bullying. During the foundational rules phase, instructors clarify regulations through "rule explanations and case analyses" (e.g., prohibiting verbal criticism of teammates and intentional obstruction of opponents). Building on Chen Fengqin's (2001) defensive improvement strategy, they demonstrate the distinction between "reasonable defense" and "malicious fouls" (e.g., allowing normal blocking but prohibiting intentional shoving). Simultaneously, "2V2 simplified scrimmage matches" are conducted with "rule supervisors" (alternating student roles) to monitor violations in real-time, reinforcing rule awareness. Liu Chijian (2020) emphasizes that "rule practice" in physical education classes proves more effective than mere lectures, enabling students to intuitively grasp the necessity of rules—such as when team points are lost due to violations, prompting them to actively reflect on the importance of compliance.

The collaborative confrontation phase and comprehensive enhancement phase further reinforce rule enforcement. In the "4V4 Standardized Competition," referees promptly penalize violations (such as serving off the line or intentional collisions) and require students to explain both "reasons for violations" and "improvement measures." The "Class League" introduces a "Fair Competition Scoring" system that incorporates "rule compliance" into team scores (30% weighting). Teams scoring zero points receive full marks, while malicious violations incur deductions. This "rules-linked incentives" design shifts students from passive compliance to proactive rule adherence. Experimental data shows the "rule maintenance" dimension on the rule awareness scale improved from 12.3±2.1 to 15.8±2.3 points ($t=8.76$, $P<0.01$). Students reported actively reminding teammates to follow rules and self-regulating misconduct to boost team scores. Internalized rule awareness helps students clarify behavioral boundaries in campus interactions, reducing bullying behaviors (e.g., verbal attacks, malicious exclusion) caused by "rule indifference."

3.2 Empathy Cultivation: From 'Ego-Centric' to 'Others-Centered'

Volleyball team training employs a "collaborative experience-emotional resonance-perspective-taking" approach to cultivate empathy and reduce bullying tendencies. The "4V4 competitive match" in collaborative confrontation stages requires close coordination between attackers and defenders. For instance, the setter must adjust passing height based on the main attacker's positioning, while the main attacker needs to understand the setter's passing intentions. This "mutual dependence" collaborative experience allows students to grasp the importance of "peer support" – when the team scores through successful teamwork, students recognize teammates 'value; when the team loses points due to collaboration errors, they empathize with teammates' frustration, fostering emotional resonance. Wei Chunsheng (2017) found in volleyball competition research that prolonged collaborative confrontation improves students' "perspective-taking" ability by 29.8%, which aligns closely with the core requirements of empathy.

The "Class League" in the comprehensive improvement phase deepens emotional empathy. After matches, a "two-way feedback" session is implemented: On one hand, players are required to

share "touching moments in team collaboration" (such as teammates voluntarily stepping in to save balls) to strengthen emotional bonds; on the other hand, students are guided to pay attention to opponents 'emotions, such as "not mocking but respecting when opponents make mistakes," or even offering help when opponents get injured. Lou Jing and Li Yuming (2000) emphasized that emotional guidance should be integrated into technical training, as the "win-lose experience" in volleyball team drills helps students better understand "the pain of failure" and "the joy of success," thereby learning to empathize with others. Experimental data showed that the "emotional empathy" dimension score in the empathy ability scale of the experimental group improved from 14.5±2.3 to 18.2±2.5 ($t=9.13$, $P<0.01$). Students reflected, "Seeing opponents' sadness after losing made me realize how wrong it was to mock classmates before. I won't do that again." Enhanced empathy enables students to shift from "self-centeredness" to "other-focused attention," reducing bullying behaviors caused by "empathy deficiency."

3.3 Emotional Management: From "Impulsive Outburst" to "Rational Control"

Volleyball team training employs an "emotional experience-cognitive adjustment-behavioral training" approach to enhance emotional management skills and prevent "emotional breakdowns" during bullying scenarios. The "win-lose scenarios" in competitive drills trigger students' emotional responses (such as victory euphoria or defeat anger). Coaches strategically use these moments for emotional guidance: When students become agitated over referee decisions, coaches pause drills to prompt reflections like "Can anger change the outcome?" and "What consequences might impulsive actions bring?" They then teach techniques like "deep breathing regulation" and "positive self-suggestion." For post-defeat frustration, coaches organize "team encouragement" sessions where players comfort each other, analyze mistakes, and transform emotions into motivation for improvement. Xu Qiu (2001) noted in volleyball defensive awareness research that "stress scenarios" in defensive training cultivate emotional stability—a principle equally applicable to team drills. Repeated win-loss experiences help students gradually adapt to emotional fluctuations and develop rational coping strategies.

Post-experiment data revealed that the experimental group's self-reported "emotional regulation ability" score increased from 2.3±0.6 (Likert 5-point scale) to 3.8±0.7 ($t=12.58$, $P<0.01$), with the "malicious provocation" dimension showing a 42.7% decrease ($P<0.01$). One student shared in the interview: "Previously, I couldn't help blaming teammates after losing matches, but now I calm down first and think about how to improve. I also avoid getting angry immediately when encountering conflicts in daily life." The enhanced emotional management skills help reduce "impulsive aggression" in bullying behaviors, enabling students to choose rational communication over malicious confrontation when facing conflicts.

IV. Empirical analysis

4.1 Changes in the scores of the school bullying tendency scale between the two groups of students

dimension	group	Pre-test (T1)	T6	Post-test (T12)	Group F value	F-value between groups (T12)
Verbal bullying	experimental group	12.3±2.4	9.1±1.9	7.2±1.6	78.56**	56.32**
	control group	12.1±2.3	11.8±2.1	12.0±2.2	0.79	-

Social exclusion	experimental group	11.5±2.2	8.3±1.8	6.8±1.5	72.34**	51.87**
	control group	11.3±2.1	11.1±2.0	11.2±2.1	0.56	-
Malicious provocation	experimental group	11.4±2.3	7.6±1.7	6.5±1.4	85.72**	62.45**
	control group	11.4±2.2	11.2±2.0	11.3±2.1	0.48	-
total points	experimental group	35.2±4.6	25.0±3.8	21.6±3.2	98.65**	73.29**
	control group	34.8±4.3	34.1±4.1	34.5±4.2	1.03	-

Note: ** indicates P<0.01, and the same applies below. Intra-group F-values test score differences at different time points within the same group, while inter-group F-values (T12) test post-test score differences between two groups.

The results demonstrate that during the 12-week volleyball team confrontation training, the experimental group exhibited significant decreases in bullying tendency dimensions and total scores, with highly significant within-group differences (all F-values> 72, P<0.01). In contrast, the control group showed no significant changes in any dimensions or total scores before and after the experiment (all F-values <1.1, P>0.05). Post-test analysis revealed a 38.6% reduction in the total bullying tendency score for the experimental group, with the most substantial decrease in the "malicious provocation" dimension (42.7%), followed by "verbal bullying" (41.5%) and "social exclusion" (40.9%). All post-test dimensions and total scores of the experimental group were significantly lower than those of the control group (all F-values> 51, P<0.01), indicating that volleyball team confrontation training demonstrates significant and sustained effects in reducing college students 'bullying tendencies. This finding aligns with Wei Chunsheng's (2017) conclusion that "team confrontation training reduces aggressive behaviors."

4.2 Changes in empathy and rule awareness scores between two student groups

scale	dimension	group	Pre-test (T1)	T6	Post-test (T12)	Group F value	F-value between groups (T12)
Interpersonal Empathy Scale	Emotional Empathy	experimental group	14.5±2.3	18.2±2.5	19.8±2.7	82.45**	58.63**
		control group	14.3±2.2	14.5±2.3	14.4±2.2	0.62	-
	Cognitive Empathy	experimental group	13.2±2.1	16.8±2.4	18.1±2.5	76.93**	53.27**
		control group	13.0±2.0	13.2±2.1	13.1±2.0	0.59	-

	total points	experimental group	27.7±3.8	35.0±4.2	37.9±4.5	91.26**	65.89**
		control group	27.3±3.7	27.7±3.8	27.5±3.6	0.78	-
College student consciousness scale	Rule cognition	experimental group	11.8±2.0	15.3±2.3	16.7±2.5	79.34**	55.12**
		control group	11.6±1.9	11.8±2.0	11.7±1.9	0.65	-
	Compliance	experimental group	12.1±2.1	15.8±2.4	17.2±2.6	85.67**	60.35**
		Control group	11.9±2.0	12.1±2.1	12.0±2.0	0.57	-
	Rule maintenance	experimental group	12.3±2.1	15.8±2.3	17.5±2.5	88.42**	63.78**
		control group	12.1±2.0	12.3±2.1	12.2±2.0	0.61	-
	total points	experimental group	36.2±4.5	46.9±5.2	51.4±5.6	97.83**	70.25**
		control group	35.6±4.3	36.2±4.5	35.9±4.4	0.82	-

The data revealed that both the experimental group and the control group showed significant improvements in empathy, rule awareness, and overall scores during volleyball team training, with statistically significant intra-group differences (F-values all> 76, P<0.01) compared to no significant changes in the control group (F-values all <0.9, P>0.05). Post-test results demonstrated a 29.3% improvement in empathy scores for the experimental group, with "emotional empathy" increasing by 36.6% and "cognitive empathy" by 37.1%. Rule awareness scores rose by 32.5%, with "rule maintenance" improving by 42.3%, "rule compliance" by 42.1%, and "rule cognition" by 41.5%. These findings validate Liu Chijian's (2020) research on "cultivating rule awareness through physical education" and Lou Jing & Li Yuming's (2000) study on "emotional bonding through technical training." The results indicate that volleyball team training can simultaneously enhance empathy and rule awareness, providing dual support for bullying prevention interventions.

4.3 The moderating effect of empathy and rule awareness

With 'participation in volleyball team training' as the independent variable (0 = control group, 1 = experimental group), the total bullying tendency score as the dependent variable, and empathy ability and rule awareness scores as moderating variables, we conducted moderation effect tests after controlling for gender and grade level. The results are as follows:

Table 4.3 Adjustment effect test results

variable	regression coefficient β	standard error SE	t price	P price
sex	-0.35	0.22	-1.59	0.11
grade	-0.31	0.24	-1.29	0.20
Training Intervention (X)	-12.86	1.57	-8.19	<0.001
Empathy (M1)	-0.48	0.12	-4.00	<0.001
Rule awareness (M2)	-0.55	0.14	-3.93	<0.001
X×M1	-0.31	0.09	-3.44	<0.001
X×M2	-0.35	0.10	-3.50	<0.001
X×M1×M2	-0.22	0.08	-2.75	0.007
R^2	0.72	-	-	<0.001
Adjusted R^2	0.69	-	-	<0.001

The results demonstrate that empathy capacity (β=-0.31, P<0.01) and rule awareness (β=-0.35, P<0.01) exhibit significant moderating effects. Their third-order interaction (X×M1×M2) also proves statistically significant (β=-0.22, P<0.01). This indicates that both empathy capacity and rule awareness not only independently enhance the intervention effects of volleyball team confrontation training on bullying tendencies, but also demonstrate a synergistic moderating effect.

To clarify the interaction mechanism, empathy and rule awareness were categorized into "high/low" groups using the "mean ±1 standard deviation" criterion, forming four intervention groups to compare bullying tendency improvement rates: High empathy-High rule awareness group showed 47.2% improvement; High empathy-Low rule awareness group showed 32.5% improvement; Low empathy-High rule awareness group showed 30.8% improvement; Low empathy-Low rule awareness group showed 19.8% improvement.

The results demonstrated that the high empathy-high rule awareness group showed significantly greater improvement in bullying tendencies compared to the other three groups (P<0.05), while the low empathy-low rule awareness group exhibited the least improvement. This finding indicates that when empathy and rule awareness are both at high levels, the intervention effect of volleyball team confrontation training is optimal. High rule awareness provides students with "behavioral boundary guidance" to clarify which behaviors constitute bullying, while high empathy enables emotional rejection of bullying, creating a "cognitive-emotional" dual constraint. As Gong Degui (2000) pointed out in volleyball awareness research, "rule cognition must be combined with emotional identification to truly transform into behavioral habits." The synergistic effect of these two elements maximizes intervention effectiveness.

4.4 Discussion of Results

4.4.1 Effectiveness of volleyball team confrontation training in intervening bullying tendencies

This study demonstrates that 12 weeks of volleyball team training significantly reduces college students 'tendencies toward campus bullying, with a 38.6% decrease in total scores—a better outcome than existing basketball team training (26.3%). The core reason lies in volleyball's "three unique characteristics": First, strict rules. Volleyball regulations impose clearer restrictions on physical contact and verbal behavior (e.g., prohibiting intentional collisions and verbal abuse), enabling more precise correction of violations. Second, tight coordination. The instant synchronization required for volleyball offense and defense (e.g., a 0.5-second time gap between setter's pass and spiker's spike) fosters interpersonal trust more effectively. Third, emotional control. The "non-physical nature" of volleyball matches reduces intense conflicts, making it easier to guide students in rationally managing emotions. Wei Chunsheng's (2017) research also confirms that volleyball teaching methods enhance students' "interpersonal respect awareness" more effectively, aligning with this study's conclusions.

Analyzing dimensional differences, the "malicious provocation" dimension showed the most significant decline, indicating that volleyball team confrontation training proved most effective in curbing impulsive aggressive behaviors. This is because the "emotional guidance phase" during training (such as team encouragement after failure and deep breathing techniques during anger) directly enhances emotional management skills, reducing malicious provocations caused by emotional instability. In contrast, the "social exclusion" dimension demonstrated relatively lower decline, likely because social exclusion often stems from long-standing interpersonal cognitive biases, requiring extended intervention periods to achieve full improvement.

4.4.2 The Regulatory Mechanism of Empathy and Rule Awareness

The negative moderating effect of empathy essentially manifests as "emotional restraint" that suppresses bullying behavior. Students with high empathy demonstrate heightened sensitivity to emotional cues from both teammates and opponents during team confrontations (such as the frustration of teammates after setbacks or the disappointment of opponents after mistakes), which fosters an emotional inclination to "avoid harming others." Experimental data revealed that the reduction in verbal bullying dimensions among high-empathy students (48.3%) was significantly greater than that of low-empathy students (32.1%) ($P<0.05$), validating Zhang Min et al.'s (2022) conclusion that "empathy inhibits aggressive behavior." This dual mechanism—emotional empathy enabling students to instinctively reject bullying, and cognitive empathy helping them understand its harmful effects—results in superior intervention outcomes when both are activated.

The negative moderating effect of rule awareness demonstrates how "cognitive constraints" limit bullying behaviors. Students with strong rule awareness can more clearly identify bullying behaviors (e.g., recognizing that "deliberately isolating classmates" constitutes social exclusion) and prioritize rule enforcement (e.g., believing that "violating rules should lead to consequences"). Chen Fengqin (2001) noted in volleyball defense research that rule cognition helps students distinguish between "reasonable behavior and rule-breaking." This study further confirms that rule awareness not only reduces training violations but also extends to campus life, decreasing bullying caused by "ignorance of rules." In the experiment, students in the high-rule group showed a 45.6% improvement in the "rule maintenance" dimension score, while the "malicious provocation" dimension decreased by 46.8% ($P<0.05$), significantly higher than the low-rule group's 35.2% reduction. This fully demonstrates the moderating value of rule awareness.

The interaction effect between empathy and rule awareness demonstrates a "synergistic enhancement" relationship. High rule awareness provides "behavioral guidance" for empathy

development, helping students recognize "harmful behaviors" and avoid "well-intentioned mistakes." Conversely, strong empathy fuels "internal motivation" for rule adherence, transforming passive compliance into active maintenance of rules, preventing "formal compliance without genuine acceptance." This cognitive-emotional synergy creates dual constraints against bullying behaviors, maximizing intervention effectiveness.

V. Conclusions

5.1 Research Conclusions

1. The intervention demonstrated significant effectiveness: After 12 weeks of volleyball team training, college students' tendencies toward campus bullying decreased by 38.6% in total scores. Notably, the "malicious provocation" dimension showed the most remarkable improvement, with a 42.7% reduction. The results also indicated sustained effects, as bullying tendencies continued to decline during the follow-up period.

2. The intervention pathway is clearly defined: Volleyball team confrontation training employs three core mechanisms to reduce bullying tendencies—namely, "rule internalization, empathy cultivation, and emotional regulation". First, rule internalization helps students establish clear behavioral boundaries, thereby reducing unconscious bullying behaviors. Second, empathy cultivation strengthens emotional restraint, curbing the impulse to harm others. Finally, emotional regulation enhances rational control capabilities, effectively minimizing impulsive aggressive actions.

3. The moderating effects were statistically significant: The study revealed that empathy capacity and rule awareness exerted notable negative moderating effects in reducing bullying tendencies. Specifically, the moderating effect of empathy capacity was β=-0.31, which was statistically significant ($P<0.01$), while the moderating effect of rule awareness was β=-0.35, also showing statistical significance ($P<0.01$). This indicates that students with higher empathy capacity and stronger rule awareness demonstrated more pronounced reductions in bullying tendencies after participating in volleyball team training.

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