

A META-ANALYSIS OF THE EFFECTS OF PHYSICAL ACTIVITY INTERVENTION ON ANXIETY AND DEPRESSION IN CHINESE COLLEGE STUDENTS

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SUMMARY:

Background: Systematic evaluation of the effects of physical activities on the psychological disorders of Chinese college students, aiming to provide reference for the improvement and alleviation of anxiety, depression, and other psychological disorders of college students.

Subjects and Methods: By searching CNKI, Wanfang and VIP databases, 32 randomized controlled trials on the effects of physical activities on anxiety and depression in college students were included, 10 of which included anxiety indicators and 22 included depression indicators.

Results: Meta analysis showed that physical activity intervention could effectively improve and relieve anxiety of college students (WMD=3.97, 95% CI: 2.74, 5.20, $P<0.00001$). Subgroup analysis showed that the difference of different physical activity intervention methods on the anxiety of college students was statistically significant. At the same time, physical activity intervention can effectively improve and relieve the depression of college students (WMD=4.15, 95% CI: 3.27, 5.03, $P<0.00001$). Subgroup analysis showed that there was statistical significance in the influence of different physical activity intervention methods on college students' depression.

Conclusions: Sports intervention has a positive effect on improving and alleviating the anxiety and depression of Chinese college students and other psychological diseases. Different ways of sports activities have the effect on reducing the anxiety and depression of Chinese college students.

Key words: sports - college students – anxiety – depression-mental illness

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INTRODUCTION

Studies have shown that 12-32% of the population in developed countries has symptoms associated with anxiety or depression (Haller et al. 2014, Wittayanukorn et al. 2014). The incidence of anxiety or depression is much higher among college students than among adults. Mental illness has become a non-negligible problem affecting college students' daily study life and physical and mental health. Anxiety and depression are common psychological diseases among college students. Due to the physical and mental development of college students is not mature, the self-regulation ability is relatively poor, heavy learning tasks, easy to cause college students anxiety or depression and other psychological problems. Anxiety symptoms are common among Chinese college students, and the incidence is increasing year by year. The survey shows that the detection rate of anxiety among college students reaches 25.7% (Cheng & Jia 2019). Compared with anxiety, the incidence of depression is also a major problem. Relevant studies show that the incidence of depression among Chinese college students reaches 29.3% (Tang et al. 2013). Anxiety or depression symptoms of college students are basically mild to moderate, which can be effectively alleviated with appropriate intervention. However, if they cannot be improved and alleviated in time, they are likely to develop into clinical anxiety or depression in the future (Karsten et al. 2011), and even lead to the occurrence of dangerous events such as self-harm and death of others in college

students.

At present, the main intervention means for anxiety or depression symptoms are drugs, psychology, and exercise. Drug intervention is generally suitable for the group with relatively serious anxiety and depression symptoms, but drug intervention generally has different side effects. Although psychological intervention usually has no side effects, most students are repellent to such intervention and refuse to accept it. Physical activity intervention can reduce the level of anxiety and depression, improve the overall emotional health, and is of great significance to alleviate the symptoms of anxiety and depression. Studies have shown that physical activity is a safe and effective intervention to improve and relieve symptoms of anxiety and depression (Dunn et al. 2005, Olafsdottir et al. 2018). In view of this, this paper conducted a Meta-analysis on the randomized controlled trials of physical activity on the intervention of anxiety and depression in college students to explore the effects of physical activity on anxiety and depression in Chinese college students, aiming to provide a reference for the improvement of anxiety and depression in Chinese college students by physical activity.

SUBJECTS AND METHODS

Literature search

This study used the methods described in the Cochrane Manual of Systematic Evaluation (Higgins & Green 2013) and was assessed and reported in accordance

with the PRISMA Guidelines (Moher et al. 2015). By searching CNKI, Wanfang and VIP databases, this paper collected domestic published literatures on the intervention of physical activities in anxiety and depression among college students in China. The retrieval subject words were “mental illness”, “anxiety”, “depression”, “physical exercise”, “physical activity”, “sports”, “college students”, etc., and the retrieval strategy of combining subject words and free words was adopted, which was determined by manual retrieval after several pre-checks.

Inclusion and exclusion criteria

Literature inclusion criteria.

Literature was included according to PICOS criteria: (P) the subjects were Chinese college students with symptoms of anxiety or depression, regardless of gender, and the criteria were students with scores above the critical threshold after self-rating anxiety or depression scale screening, SAS>50 points, SDS≥53 points (Dai 2010); (I) physical activity or exercise intervention in the experimental group; (C) The control group was not physically active; (O) Anxiety and depression were determined to reflect the state of mental illness of college students according to the literature. SAS was used as the measurement tool for anxiety and SDS was used for depression; (S) The experimental design of the included literature was randomized controlled trials (RCTs) or controlled clinical trials (CCTs), and there was no significant difference between the experimental group and the control group before the experiment.

Literature exclusion criteria.

Literature exclusion criteria were as follows: (1) the subjects were not college students suffering from anxiety or depression; (2) The intervention mode is non-sports intervention; (3) The anxiety measurement tool used in the study was not SAS, and the depression measurement tool was not SDS; (4) Studies of non-randomized controlled trials and clinical controlled trials; (5) Incomplete data or review literature reports.

Literature screening and data extraction

Literature screening includes four stages: preliminary retrieval, screening, confirmation and final inclusion. The researchers conducted screening in strict accordance with the criteria from three aspects of “inclusion”, “uncertainty” and “exclusion”. In the final meta-analysis, 32 studies were included, including 10 studies on anxiety indicators and 22 studies on depression indicators.

In the data extraction process, two researchers respectively reviewed the full text of the included studies in strict accordance with the criteria and extracted the original information. Information extraction includes author name, publication year, study type, diagnostic criteria, and subject information. The extraction of experimental characteristic information includes sample size, intervention method, intervention plan (time, frequency, period), average and standard difference of indicators, etc. The extracted information was sorted out

and checked in Excel, and any inconsistencies were discussed and confirmed.

Risk bias assessment

The Cochrane Risk Bias Assessment Tool in the Cochrane Systematic Evaluation Manual (Furlan et al. 2009) was used for risk bias assessment in the included studies. 32 studies were independently evaluated by 2 researchers. This assessment tool mainly uses the criteria of “low”, “uncertain” and “high” risk of bias to evaluate the included studies from six aspects.

Data analysis

Meta-analysis of the included studies was performed using RevMan 5.3 software. Since the test efficiency is greatly affected by the sample size, in order to avoid the influence of sample size on the statistical efficiency, IQ^2 as another important index of heterogeneity test. Using the I^2 Heterogeneity was tested for the included studies. When $P>0.1$, $I^2<50\%$, it indicates that there is no heterogeneity among the studies, and the fixed effect model is adopted. When $I^2\geq 50\%$ indicates heterogeneity between studies, and random effects model is adopted (Roger et al. 2013). Forest maps were used to determine Z, WMD and 95%CI. Funnel plots were used to test the publication bias of Meta analysis results.

RESEARCH RESULTS

Basic features of literature inclusion

Thirty-two of the included studies were published between 2003 and 2021. There were 10 studies including anxiety indicators. The study samples were 788 college students with SAS>50 measured by the Self-Rating Anxiety Scale, including 394 in the physical activity intervention group and 394 in the control group. The intervention measures of the physical activity intervention group included 3 pieces of basketball and other ball games, 2 pieces of aerobics, 2 pieces of aerobics and 3 pieces of Tai Chi and other traditional Chinese fitness techniques. There was no exercise intervention in the control group. In the intervention program, the duration of exercise ranged from 25 to 90 minutes, the frequency of exercise ranged from 2 to 7 times per week, and the duration of exercise ranged from 10 to 18 weeks. There were 22 studies including depression indicators. The study samples were college students with SDS≥53 measured by the Self-Rating Depression Scale, with a total sample size of 1636 people, including 849 in the physical activity intervention group and 187 in the control group. Intervention measures in the physical activity intervention group included 8 articles of fitness and aerobics, 7 articles of running and other aerobic exercises, 4 articles of traditional Chinese fitness techniques such as Taijiquan and 3 articles of basketball and other ball games. There was no exercise intervention in the control group. In the intervention program, the duration of exercise ranged from 30 to 90 minutes, the frequency of exercise

ranged from 1 to 7 times per week, and the duration of exercise ranged from 4 to 40 weeks. The basic

characteristics of the included literatures are shown in Table 1.

Table 1. Basic characteristics of the included literatures

Literature sources	Sample size (E/C)	Means of intervention	Intervention plan			Measurement
			Time (min)	Frequency (per week)	Cycle (weeks)	
Yuan et al. (2009)	15/15	Basketball	60	3	12	Anxiety
Gao et al. (2013)	15/15	Tai chi chuan	25	2	18	Anxiety
Zhang (2013)	40/40	Aerobics	90	2	18	Anxiety
Guo et al. (2020)	30/30	Basketball and football	50	3	12	Anxiety
Mao et al. (2008)	52/52	Tai chi chuan	60	3	18	Anxiety, depression
Guo et al. (2009)	56/56	Aerobics	60	3	18	Anxiety, depression
Yang (2010)	100/100	Aerobic exercise	60	2	15	Anxiety, depression
Hu et al. (2011)	25/25	Aerobic exercise	60	3	10	Anxiety, depression
Ma (2017)	31/31	Basketball	50	3	12	Anxiety, depression
Zhang (2021)	30/30	Traditional Fitness techniques	60	7	12	Anxiety, depression
He et al. (2003)	30/30	Aerobic exercise	60	3	16	Depression
Fan (2003)	30/30	Aerobic exercise	60	3	16	Depression
He et al. (2004)	30/30	Setting-up exercise	60	3	8	Depression
Wang (2008)	118/60	Jump rope	20	2	4	Depression
Li (2008)	18/19	Aerobics	60	3	12	Depression
Tang et al. (2009)	39/34	Basketball, bad minton	60	3	12	Depression
Qiao (2010)	30/34	Aerobics	90	1	10	Depression
Jiao (2010)	21/23	Setting-up exercise	30	3	8	Depression
Zhu et al. (2011)	24/24	Running	30-50	3	8	Depression
Li (2012)	27/26	Aerobics	60	3	8	Depression
Wang et al. (2013)	15/15	Dancing	60	1	12	Depression
Li (2014)	25/24	Aerobic exercise	60	5	8	Depression
Li et al. (2014)	20/20	Eight, kam	50	5	40	Depression
Zheng (2015)	20/20	Bad minton	90	2	12	Depression
Li (2020)	73/69	Cha-cha	45	2	12	Depression
Tan et al. (2020)	35/35	Eight, kam	40	3	16	Depression

Note: E: Physical activity intervention group; C: control group.

Evaluation of literature methodological quality

The 32 included studies were assessed for risk bias according to the quality assessment criteria in the Cochrane Manual of Systematic Reviews. In the aspect of allocation scheme concealment, only one study mentioned it. As for the blind method, only 3 studies blinded the subjects, and all the studies did not blind the evaluators of the results. Because the evaluators of the results are the implementors of the whole intervention plan, it is difficult to blind them. The data of 32 studies were complete, and the situation of lost follow-up and dropouts was clearly described, as shown in Figure 1.

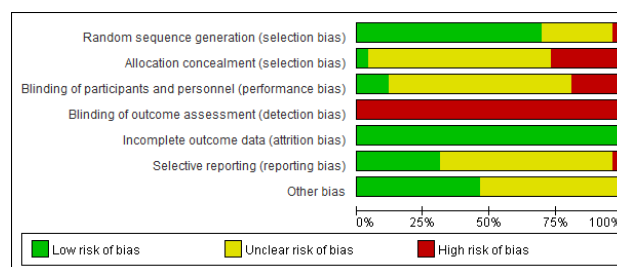


Figure 1. Risk of bias assessment for included studies.

RESULTS OF META ANALYSIS

Influence of physical activity intervention on

anxiety indicators of college students

Ten studies including anxiety indicators included 798 subjects, including 394 in the physical activity intervention group and 394 in the control group. Figure 2 shows the results of Meta-analysis on the influence of physical activities on anxiety indicators of college students. Heterogeneity test shows that $I^2=43%$, $P=0.07$.

There was heterogeneity among studies, and the random effects model was adopted. $WMD=3.97$, 95% CI [2.74,5.20], $Z=6.33$, $P<0.00001$, the difference was statistically significant. It shows that compared with the control group, physical activity intervention can improve the anxiety of college students. Therefore, the physical activity intervention has a positive effect on improving the anxiety of college students.

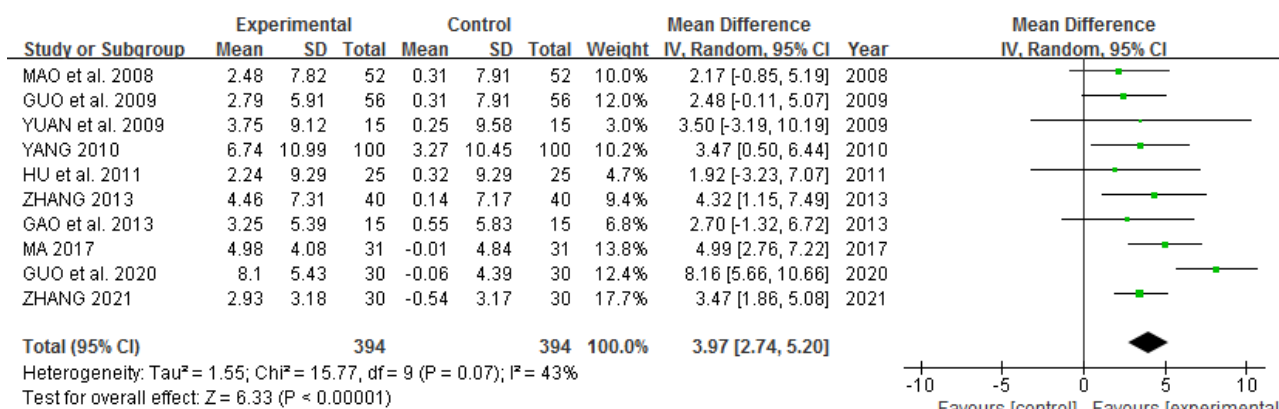


Figure 2. Forest diagram of the influence of physical activity intervention on anxiety of college students.

Influence of physical activity intervention on depression indexes of college students

The 22 studies that included depression markers included 1636 subjects, including 849 in the physical activity intervention group and 787 in the control group. Figure 3 shows the Meta-analysis results of the influence of physical activity on the depression indicators of college students. Heterogeneity test showed that $I^2=53%$,

$P=0.002$. There was heterogeneity among studies, and the random effects model was adopted. $WMD=4.15$, 95% CI [3.27,5.03], $Z=9.28$, $P<0.00001$, the difference was statistically significant. The results show that compared with the control group, the physical activity intervention group can effectively improve the depression mood of college students. Therefore, the physical activity intervention has a positive effect on improving the depression of college students.

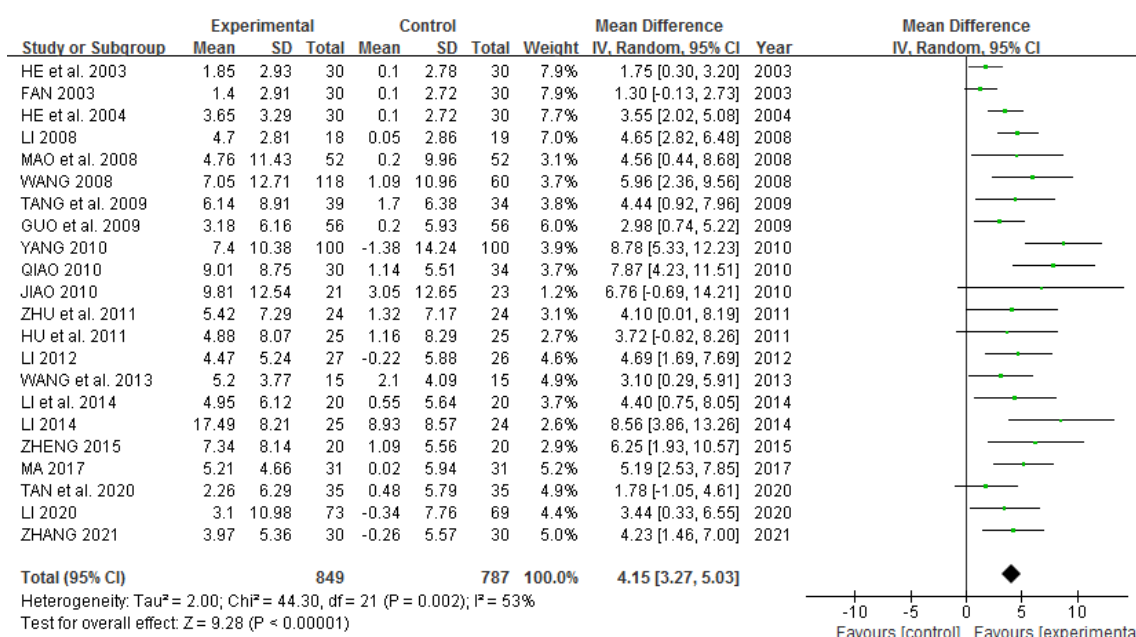


Figure 3. Forest map of the effect of physical activity intervention on college students' depression.

Subgroup analysis

In terms of anxiety index, the 10 included studies divided physical activity into ball games, traditional

Chinese fitness techniques, aerobics and aerobics for subgroup analysis. Heterogeneity test of ball games group showed that $I^2=51%$, $P=0.13$, combined effect size $WMD=6.13$, 95% CI [3.52,8.75], $Z=4.59$, $P<0.00001$, the difference was statistically significant. Heterogeneity test of Chinese traditional fitness technique group showed that $I^2=0%$, $P=0.74$, combined effect size $WMD=3.13$, 95% CI [1.79,4.47], $Z=4.59$, $P<0.00001$, the difference was statistically significant. Heterogeneity test in the aerobics group showed that $I^2=0%$, $P=0.38$, combined effect size

$WMD=3.21$, 95% CI [1.21,5.22], $Z=3.14$, $P=0.002$, the difference was statistically significant. Heterogeneity test in the aerobic exercise group showed that $I^2=0%$, $P=0.61$, combined effect size $WMD=3.08$, 95% CI [0.51,5.66], $Z=2.35$, $P=0.02$, the difference was statistically significant. The forest diagram of the subgroup analysis of the influence of different physical activity intervention methods on anxiety indicators of college students is shown in Figure 4.

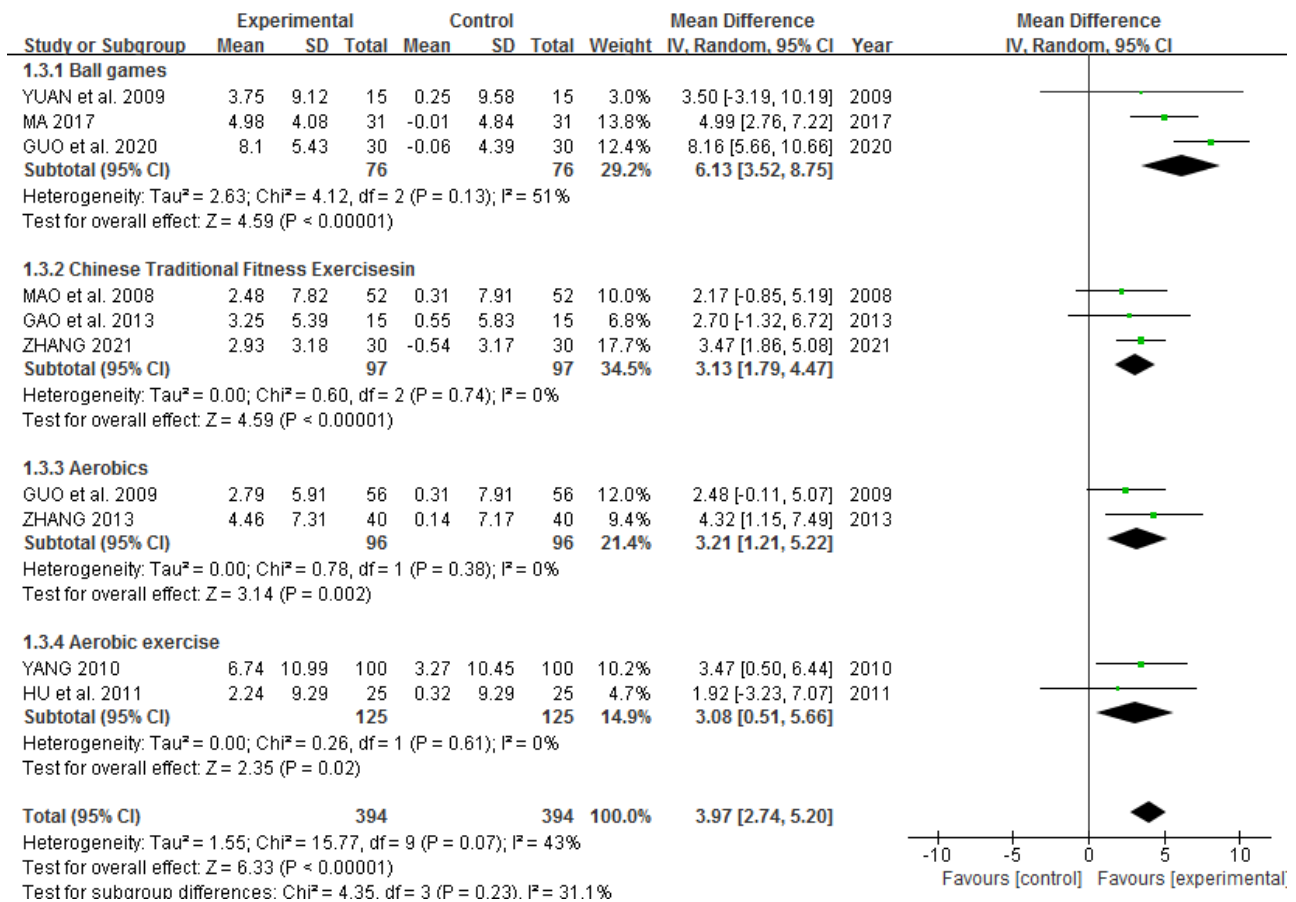


Figure 4. Forest plot of subgroup analysis of the effects of different physical activity intervention methods on anxiety of college students.

In terms of depression indicators, the 22 included studies also divided physical activity into ball games, traditional Chinese fitness techniques, aerobics and aerobics for subgroup analysis. Heterogeneity test of ball games group showed that $I^2=0%$, $P=0.82$, combined effect size $WMD=5.18$, 95% CI [3.27,7.08], $Z=5.33$, $P<0.00001$, the difference was statistically significant. Heterogeneity test of Chinese traditional fitness technique group showed that $I^2=0%$, $P=0.54$, combined effect size $WMD=3.53$, 95% CI [1.93,5.13], $Z=4.32$, $P<0.0001$, the difference was statistically significant. Heterogeneity test

in the aerobics group showed that $I^2=3%$, $P=0.41$, combined effect size $WMD=4.04$, 95% CI [3.16,4.92], $Z=9.03$, $P<0.00001$, the difference was statistically significant. Heterogeneity test in the aerobic exercise group showed that $I^2=78%$, $P=0.0001$, combined effect size $WMD=4.45$, 95% CI [2.23,6.66], $Z=3.94$, $P<0.0001$, the difference was statistically significant. The subgroup analysis of the effects of different physical activity intervention methods on the depression indexes of college students is shown in Figure 5.

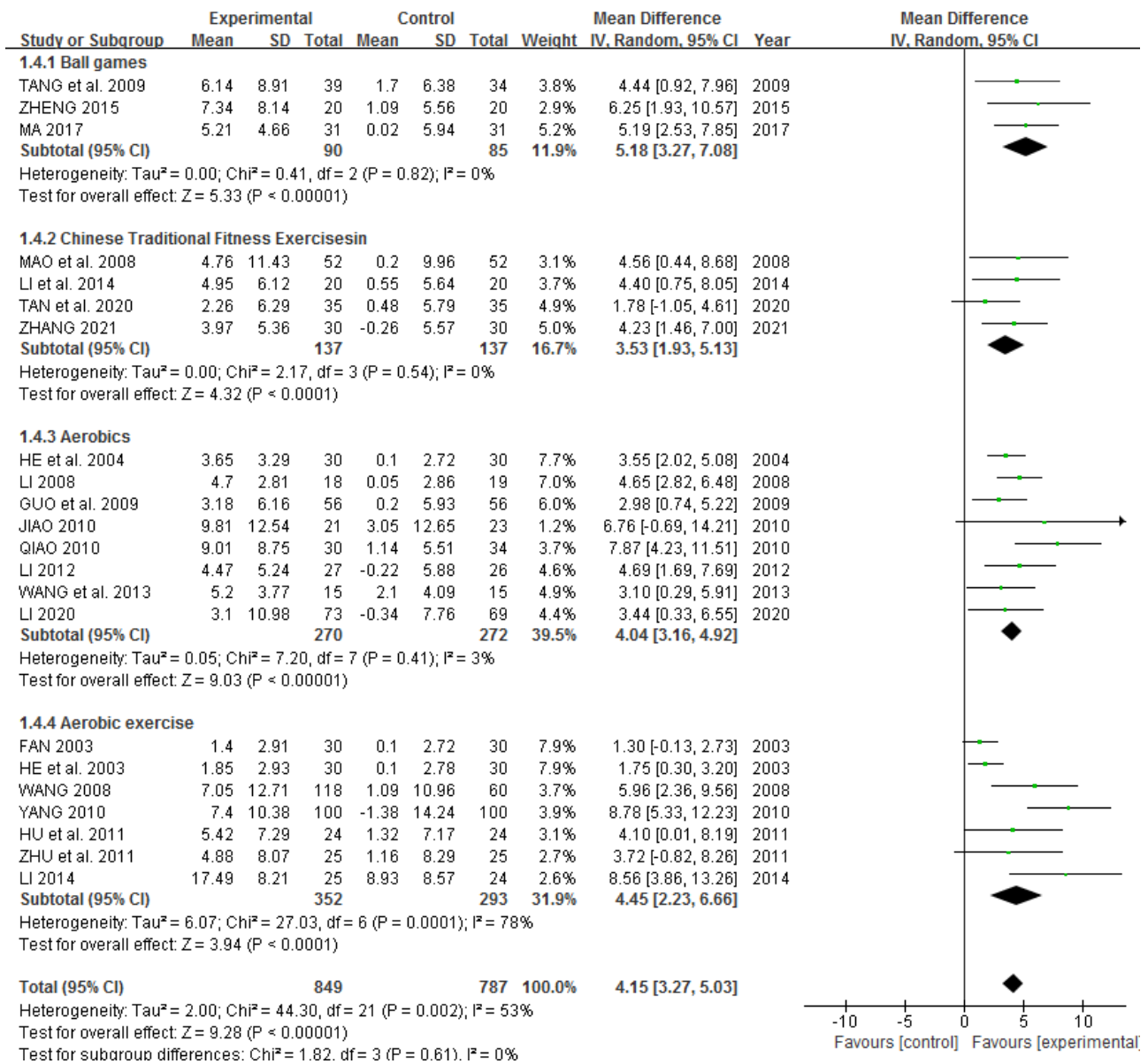


Figure 5. Subgroup analysis of the effects of different physical activity intervention methods on depression indexes of college students. Forest plot.

Publication bias analysis

Publication bias exists objectively, but there is currently no good method to correct it (Reed et al. 2015). Traditional funnel plots were used to test the publication bias of included studies, as shown in Figure 6.

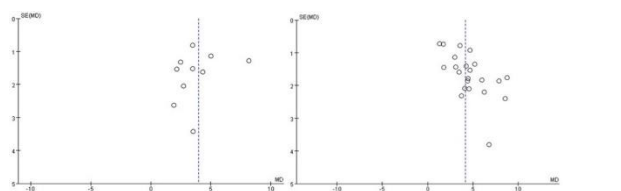


Figure 6. Publication bias funnel plot of the effects of physical activity intervention on anxiety and depression in college students

As can be seen from Figure 6, the 10 included studies

containing anxiety indicators are in the middle and upper part of the funnel plot, and the symmetry of the studies on both sides of the effect line is relatively good. Therefore, there is no obvious publication bias in the included literatures. The 22 included studies containing depression indicators were in the middle and upper part of the funnel plot, and the studies were evenly distributed on both sides of the effect line with relatively good symmetry. Therefore, the publication bias of the included literatures was not obvious. The sensitivity analysis of literatures with high heterogeneity was conducted by cull method in this study. The analysis results showed that the heterogeneity was not significantly changed after the cull of some literatures and had no effect on the results. To ensure the comprehensiveness of the included studies and the integrity of the data, the 32 included studies were not deleted.

DISCUSSION

In the process of intervention for psychological diseases such as anxiety and depression of college students, physical activities have received considerable attention. This study screened the literature on the intervention of physical activity on anxiety and depression among Chinese college students, and used Meta analysis to systematically evaluate 32 included studies. Meta-analysis of the effects of physical activity intervention on anxiety and depression Forest Chart shows that the intervention effect of physical activity group is better than that of the control group, and the physical activity intervention has a significant effect on improving and alleviating anxiety and depression of college students, which is consistent with the results of previous studies (Poyatos-Leon et al. 2017, Manger & Motta 2005). The specific mechanism of exercise intervention in rats with anxiety and depression was discussed. Related studies on rats with anxiety showed that exercise can improve anxiety through channels such as monoamine neurotransmitters and neurotrophic factors (Wang et al. 2015, Xiong et al. 2016). Changes in mouse hippocampal gene expression after cessation of exercise led to the occurrence of anxiety symptoms in mice (Morgan et al. 2019). Studies on depressed rats have shown that by improving the functions of the prefrontal cortex, amygdala, and hippocampus, regulating the contents of serotonin, neurotrophic factor, and dopamine as well as their receptor activity synergistically promote the improvement of depression (Gokdemir et al. 2020, Qu et al. 2019), and some mechanisms have also been confirmed in human studies (Li et al. 2009).

In terms of anxiety indicators, the subgroup analysis shows that different physical activity intervention methods have a positive effect on reducing the anxiety level of college students, and previous studies have also reached this conclusion (Liu et al. 2020). Ma Mingkun compared the influence of basketball, badminton and dance on anxiety of Zhuang college students, and found that different programs had different effects on anxiety intervention of Zhuang college students after conducting moderate intensity training of 50 minutes each time for 12 weeks, 3 times a week. Specifically, badminton has the most significant effect on college students' anxiety, followed by basketball, and finally dance. The study of Zhang Yuhong (2010) shows that there is no significant difference between football and badminton in improving the anxiety of college students. Bhui & Fletcher (2000) found that prolonged physical activity had a good effect on alleviating anxiety in adult men, while prolonged physical activity intervention had no significant effect on improving anxiety in women. Guo Xuting and Guo Mengmeng (2017) believed that exercising more than 3 times a week for more than 60 minutes each time had a positive effect on reducing the incidence of anxiety among college students. However, this study did not mention the upper limit, and it is not necessarily that the more frequency of intervention is better, and the longer

the intervention time is better. The specific effects should be further studied and comparative analysis. Chen Gang (2010) compared the influence of different intervention frequencies on the anxiety of college students, and the frequency of sports intervention was once a week, twice a week and three times a week respectively. The research showed that the anxiety of college students who insisted on taking sports activities twice a week was most significantly improved. He Tiantian (2016) showed that one week of short-term physical activity intervention can alleviate anxiety of college students in the initial stage, but the effect is very short, while 12 weeks of physical activity intervention can effectively improve anxiety of college students, and the effect is very significant.

In terms of depression indicators, the subgroup analysis shows that different physical activity intervention methods have a positive effect on the depression level of college students, which is consistent with previous research results (Zhang 2020). However, Wang Xia and Yan Jun (2006) found that there was no significant difference between running and aerobics in reducing the depression level of female college students. Fang Xiuchong (2008) also pointed out that there was no significant difference between basketball and table tennis in alleviating college students' depression. Wu Zhijian, Song Yan li qing and Wang Zhuying (2020) study, than with the control, sports intervention can effectively improve female college students' level of depression, moderate intensity exercise intervention effect is better than low intensity, and Wang Xia and yan (2006) study for moderate and small intensity no difference on the female college students to reduce depression. Mao Xuechen and Shen Hejun (2014) discussed the influence of tennis on the depression level of male college students, and the results showed that, in terms of the intervention cycle, 6-week tennis had no significant effect on improving the depression level of male college students, but it had a significant effect on reducing the depression level of male college students after 12 weeks of continuous tennis. Guo (2020) compared the alleviating effects of 7 kinds of exercise interventions on depressive symptoms, and the results showed that Taijiquan had the most significant intervention effect on depressive symptoms of college students, followed by yoga exercise, followed by dancing, running, volleyball, basketball and badminton. The reason for this difference may be that volleyball and basketball belong to team sports, while badminton belongs to individual sports. Whether there is any improvement of team sports on college students' depression mood due to individual sports remains to be further tested.

There are some limitations and deficiencies in this study. Only published literature was included in the study, and unpublished and unpublished literature was not included; In this study, only the SAS and SDS scales were selected as the measurement tools for anxiety and depression. Although the measurement differences between different scales were avoided, the selection range became narrow; Of the 32 studies included, only 1 reported the hidden random assignment sequence method,

and only 3 studies blinded participants; Results evaluators were not blinded in any of the studies.

CONCLUSIONS

Physical activity intervention has a positive effect on the improvement and alleviation of anxiety and depression and other psychological diseases of Chinese college students. Different physical activity intervention methods have the same effect on the improvement of anxiety and depression of college students. Despite the limitations of the research methods, this study provides a reference for further research on the effects of physical activities on anxiety, depression and other psychological disorders in college students. Finally, it is suggested that future studies should try to clarify the mechanism of physical activity on anxiety and depression, and study design should be conducted strictly according to the criteria, with detailed description of random grouping method, allocation scheme hiding and blind method, so as to improve the quality of experimental studies.

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Contribution of individual authors:

Ziyun Zhang: conception and design of the manuscript and interpretation of data, literature searches and analyses, clinical evaluations, manuscript preparation and writing the paper;

Chengji Jin: made substantial contributions to conception and design, literature searches and analyses;

Jun Zhang: participated in revising the article and gave final approval of the version to be submitted.

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THE DEVELOPMENT TREND OF CROSBY & FOSTER'S ECO-IMPERIALISM FROM THE PERSPECTIVE OF SOCIAL PSYCHOLOGY

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SUMMARY

Background: The purpose of this article is to explore the development trend of Crosby Foster's ecological imperialism from the perspective of social psychology, and analyze the value of the theory of "critique of ecological imperialism". The connotation and practical value of the theory of "critique of ecological imperialism" have been studied in three aspects: "Focus Theory" and "Social Distance Theory".

Subjects and methods: This study selects three most representative power theories in the field of social psychology: "proximity-inhibition theory", "situational focus theory" and "social distance theory" to study the power theory of ecological imperialism. Crosby Foster's development of ecological imperialism has been outlined.

Results: "Situational Focusing Theory" regards embodied factors as situational factors that affect individual cognitive flexibility and selective attention. Researchers do find that power is related to concretization. The research on embodied concept in situational focus theory provides a new perspective and new method for the study of power. Only by reflecting on the shortcomings of capitalism can human beings think about their own way out, struggle unremittingly, and finally transition to a communist society. And Foster's ecological imperialism reveals the inevitability of such a system. Since the capitalist system inevitably exists, it is only a matter of time before the imperialist aggression extends to the ecological realm. Only by exposing and criticizing its evil deeds can it arouse public introspection and resistance, and progress to a communist society in which man and nature live in harmony.

Conclusions: Analyze the development trend of Crosby Foster's ecological imperialism from the perspective of social psychology, and obtain the Critical Theory of Crosby Foster's ecological imperialism, which provides a certain reference value for China to recognize and locate the global ecological situation. Enlightenment.

Key words: social psychology - Crosby Foster ecological empire - development trend - proximity-inhibition theory

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INTRODUCTION

Ecological theory is a realistic reflection of ecological crises. Its connotation has been enriched with the diversification of crises, just as the crises in the early 20th century manifested themselves in the destruction and grabbing of the harmonious order of nature by war, machinery, and chemicals. Early ecological theories focused on natural values and the overall aspects of nature (Wang et al. 2021). The critical form at the end of the 20th century is no longer the early barbaric violent plunder of resources. The developed countries are more inclined to promote their governance ideas through the established hegemonic order, through the use of concealed and soft means such as ideas, theories, technology, and funds. And strengthen the ecological dependence and ecological control of backward areas, and finally create a naked ecological empire. Therefore, the later ecological theories are not only concerned with the integral connection between nature and between humans and nature. They pay more attention to capital and Nature, developed countries' ecological hegemony control over backward countries, and global unequal ecological exchange cracks are contradictions. It can be seen that enriching and perfecting the critical theory system of ecological imperialism and clarifying the concept, essence, logic,

form, and harm of ecological imperialism are not only the contemporary reflection of ecological theory on the form of ecological crisis, but also an inevitable requirement for the development of ecological theory (Krausmann & Langthaler 2019).

Undoubtedly, Crosby Foster's critical theory of ecological imperialism has great reference value for the construction of China's ecological civilization and participation in global environmental governance. It is not only the inevitability of the development of ecological theory, but also the inheritance and innovation of Marxist ecological theory and an attempt of Lenin's theory of imperialism is an important theory that China needs to understand and possess when facing the global environmental situation in the new era (Christmas 2019). First, the critical theory of ecological imperialism can enable China to identify the traps of ecological imperialism when conducting international ecological exchanges and avoid falling into the trap of ecological imperialism. The developed countries that Crosby Foster criticized have used economic and hegemonic advantages to set ecological traps for backward countries, such as the guano and nitrate curse, the oil curse, the foreign garbage trap, the financial and technical assistance trap, and the maintenance of resource security. A series of new forms, such as traps, traps for the implementation of universal