

On Effectiveness of Physical Exercises on Psychological Health of College Students

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Abstract—Through adoption of UPI, University Personality Inventory, this paper divides college students into two groups: students who seldom participate in physical exercises and students who often participate. Both the two groups are investigated by means of questionnaires and the results are tested by X², which indicates that students from the first group have more psychological problems than those from the other group in physical health, emotional health, interpersonal communication, neurosis, etc. In view of the high effectiveness and efficiency of physical exercises on college students' psychological health, it is necessary to organize college students to actively participate in sports in an effort to promote their physiological and psychological quality.

Key words—psychological health; physical exercise; UPI

Psychological health refers to the normal and positive state of individual psychology as well as the ability to maintain sound mental adaptation to the environment ⁽¹⁾, and it reflects the high-standard pursuit by humans of their own psychological system. In 2001, a survey conducted by China Association for Mental Health of over 6000 college students from colleges and universities in Beijing shows that 16.51% of those students have moderate mental problems, and about 3% to 5% have reached the magnitude of severity ⁽²⁾. There is no denying that psychological health of college students has become a problem of great concern. This paper aims to make a detailed analysis of the unique role of physical exercises in promoting college students' psychological health through comparative study of students who seldom participate in physical exercises and students who often participate in terms of their psychological health status, which in turn leads to advocacy of reasonable and scientific physical exercises among college students.

I. RESEARCH OBJECTS AND METHODS

A. Research Objects

4305 college students from Jiangsu University are randomly selected for preliminary investigation on whether they often participate in physical exercises, who are then divided into two groups: students who seldom participate in physical exercises and students who often participate. After that, 1000 students from each group are random picked out for the investigation and research in this paper.

B. Research Methods

1) UPI, University Personality Inventory (provided by University of Tsukuba and revised by China Association for

Mental Health), is adopted. When experimenters finish reading the directions, the students fill in the questionnaires independently on the spot, and turn in their answer sheets about 15 minutes later. 972 valid finished questionnaires are collected from those occasionally taking part in physical exercises and 983 valid finished questionnaires from those regularly taking part in physical exercises, and the effective rates of the two groups are 97.2% and 98.3% respectively.

2) SPSS10.5 statistical software package is adopted for data processing and the results are tested by X².

II. RESULTS AND ANALYSIS

A. Investigation Results Statistics

There are 64 questions in the UPI questionnaire, including 4 pseudo questions (NO.5, 20, 35, 50), 56 negative questions, 4 additional questions (NO.61~64). Here, psychological health conditions of college students from the two groups will be compared based on UPI questionnaires and statistical analyses will be listed in Table 1 to Table 5.

B. Relative Analysis

This survey takes the two groups as matched group. After statistical comparison of the investigation results, it is found that there exist remarkable differences between the two groups in 32 out of 60 questions (4 pseudo questions excluded), accounting for 53.3%, whereas 17 out of that 32 questions witness more remarkable differences, accounting for 28.3%.

Table 1

Thus, it can be seen from the above table that physical exercises are of great importance to promote the development of college students' psychological health and their value of psychological health should never be ignored. Note: X² value is rated with * for remarkable difference and ** for more remarkable difference. (the same below)

Table 2 Table 3

Sports on College Students' Emotional State

Based on the statistical contrast from problems concerning emotion, it is not difficult to find that physical exercises exert great influence on improving college students' emotional state. Of the 11 questions concerning emotion, 10 have witnessed differences, accounting for 90.9%. Differences are especially remarkable in questions NO.12, NO.13, NO.24, and NO.60, whereas difference values (X² Value) are 6.65, 7.82, 6.65, and 9.97

respectively (Table 2). In sports, muscles are actively involved, while excitement transmitted from each muscle group is correspondingly increasing in a rapid way and large quantities of foci of excitation are formed in cortex. This makes students in high spirits and leads directly to feelings of pleasure. Such psychological satisfaction and pleasure caused by physiology is called "Sport Exercise Enjoyment" in sports psychology, a kind of positive emotional experience⁽³⁾. What's more, students achieve self-expression in sports through a great deal of body language. When college students confront setbacks and failures in school or in life, they can consciously use such body language as facial expression, movement and gesture to vent unhealthy emotions in time, like tension, anxiety, dysphoria and depression to positively express themselves, which will in turn achieve the effect of empathy and reduce psychological pressure.

Sports on College Students' Interpersonal Relations

Of the 14 questions concerning interpersonal communication, 13 have witnessed differences, accounting for 92.9%. Differences are especially remarkable in questions NO.10, NO.40, NO.43, NO.56 and NO.59, whereas difference values (X2 Value) are 9.78, 7.04, 7.04, 6.65 and 6.84 respectively (Table 3). In view of the life stage for college students, communication needs play an important part in their lives, in particular the distress and confusion produced in interpersonal communications. Physical exercises are both a kind of open activities, regardless of age, gender hierarchy and status, and meanwhile a kind of collective practice project, always related with a certain group of students, which provide the needed places and opportunities for college students' social communication. Besides, they can overcome loneliness through multidirectional communications featuring unity and friendliness, produce a sense of affinity and trust with others and learn how to help each other with sincerity⁽⁴⁾.

Sports on College Students' Neuroses

As an effective treatment for psychological illnesses, sports are characterized with such advantages as easy acceptance, quick effect, no side effects, almost no rebound and convenience in self-adjustment. According to the survey conducted by American scholar Kyan, of all the 1750 psycho doctors, 60% think that sports should be taken as a kind of treatment to eliminate anxiety whereas 80% believe that sports are an effective treatment of tristimania⁽⁵⁾. Sports can cause changes in neurotransmitters, such as β -endorphin, endogenous opioid, catecholamine and 5-HT. In this case, students will be in high spirits when participating in sports, which will then disturb and sabotage

negative psychological guidance of college students who suffer from psychological diseases. Thus, the emotional center is shifted, negative emotional experiences are vented and largely accumulated psychological energy produced by mental illnesses is consumed, which is of much significance in reducing their mental burden, maintaining psychological balance and eliminating their formed morbid psychological order. Finally, as can be seen from statistical contrast from the 4 additional problems, students who often take part in physical exercises are less likely to think that they have physical and mental health problems (Table 5) than those who occasionally participate in sports and they have higher mental health level, which further demonstrates the importance and necessity of sports.

III. SUMMARY

This paper illustrates the evident and positive influence of physical exercises on promotion of college students' psychological health through a comparative study of two groups of students, who seldom or often participate in physical exercises. It is indicated that those who often take part in physical exercises enjoy better psychological health than those who occasionally participate in sports to a large extent and physical exercises play a very special role in maintaining the psychological health of college students. College physical education teachers are supposed to actively carry out physical education, make full use of the distinctive characteristics and advantages of sports, guide students to take an active part in sports in a purposeful and organized way, lay emphasis on positive psychological health education while improving the students' physique, correct students' misconduct, fully demonstrate the platform for athletic ability, improve college students' psychological quality and finally promote an all-round development of physical as well as psychological health for college students.

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TABLE1. Comparative Statistics Concerning Body Problems

Fragenumber	Students Inactive in Sports	%	Students Active in Sports	%	X2 Value
1 Anorexia	122	12.55	91	5.67	9.26 *
2 Nausea/Gastric distress/Bellyache	115	11.83	85	8.65	5.08 *
3 Easy diarrhea/Constipation	100	10.29	73	7.43	4.89 *

16 Frequent insomnia	280	28.81	237	24.11	5.47 *
17 Headache	114	11.73	90	9.16	3.32*
18 Aching neck/shoulders	95	9.77	62	6.31	7.82 *
19 Thoracalgia/Chest Stiffness	118	12.14	88	8.95	5.08 *
32 Psellism/Tremulous voice	96	9.88	72	7.32	4.11 *
33 Blow hot/cold	143	14.71	103	10.48	8.02 *
46 Fatigue	168	17.28	119	12.11	10.56 *
47 Cold sweat from anxiety	85	8.74	67	6.82	2.35*
48 Dizziness when standing up	160	16.46	123	12.51	6.26 *
49 Unconsciousness/Hyperspasmia	54	5.56	41	4.17	1.96*

TABLE 2 Comparative Statistics Concerning Emotional Problems

Fragenumber	Students Inactive in Sports	%	Students Active in Sports	%	X2 Value
6 More complaint/dissatisfaction	159	16.36	123	12.51	5.87*
12 Lack of passion/enthusiasm	190	19.55	149	15.16	6.65*
13 Pessimistic	163	16.77	121	12.31	7.82*
15 Big mood swings	316	32.51	279	28.3	83.91*
22 Frequently worried	207	21.3	191	19.43	0.98*
23 Restless	184	18.93	151	15.36	4.3*
24 Easily irritated	213	21.91	171	17.4	6.65*
36 Unreasonable anxiety	277	28.5	238	24.21	4.69*
38 Lack of self-confidence	348	35.8	302	30.72	5.67*
44 Sense of inferiority	228	23.46	191	19.43	4.69*
60 Mood easily spoiled	270	27.78	213	21.67	9.97*

TABLE 3 Comparative Statistics Concerning Interpersonal Communication Problems

Fragenumber	Students Inactive in Sports	%	Students Active in Sports	%	X2 Value
10 Reluctant social contact	99	10.19	62	6.31	9.78*
21 Timid	257	26.44	220	22.38	4.5*
30 Over-reliance on others	135	13.9	106	10.8	4.3*
31 Distressed shyness	138	4.2	110	11.19	3.91*
37 Uneasy when alone	305	31.39	269	27.4	3.52*
39 Overcautious	173	17.8	141	14.34	4.3*
40 Easily misunderstood	193	19.86	150	15.26	7.04*
41 Mistrustful	359	36.93	320	32.55	4.11*
43 Antisocial	92	9.47	61	6.21	7.04*
51 Strait-laced	174	17.9	140	14.24	4.69*
56 Doubtful about being spoken to	71	7.3	45	4.58	6.65*
57 Alertive to people around	200	20.58	161	16.38	5.67*
58 Caring others' line-of-sight	306	31.48	262	26.65	5.47*
59 Feeling contempt	243	24.97	197	19.74	6.84*