

The Impact of Outdoor Running on Campus on Students' Personality Development

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Abstract: This study examined the effects of the "Campus Sunshine Running" program on students' personality development. Using a stratified random sampling method, 80 students were recruited to participate in the study, including 40 men and 40 women. The participants were divided into an experimental group and a control group, and their personality traits were assessed using Cartel's 16 Personality Factors (16PF) questionnaire before and after the intervention. The study results show that, following the intervention, the experimental group exhibited significant changes in several personality indicators ($P < 0.01$). The experimental group participated in the "Running in the Sun on Campus" program for 12 weeks, with three training sessions per week, while the control group maintained its initial physical activity habits.

Keywords: Sunshine Running; Students; Personal Development; Influence

1. Introduction

The 'Sunshine Exercise' program is a long-term, nationwide physical fitness initiative in China, designed to improve the physical fitness of adolescents. Its main goal is to ensure that students engage in at least one hour of physical activity each day, and to help them develop at least two athletic skills. This initiative was launched jointly in 2007 by the Chinese national authorities responsible for education and sports. As part of the "Sun Movement" program, the "Course Sunshine on the campus" initiative aims to address the problem of a sedentary lifestyle, which is very common among students by encouraging them to go running regularly. The aim of this study is to investigate the impact of the 'Campus Sunshine Run' on the personality development of university students and to identify the factors that may influence this relationship. This project also aims to promote the practice of 'running towards the sun' on

university campuses, in order to support students' physical and mental development.

2. Materials and Methods

In order to establish the theoretical foundations of this study and to provide a basis for its overall design, a systematic review of the literature and of national and international publications issued between 2010 and 2025 was carried out.

80 undergraduate and postgraduate students, aged between 19 and 21, were selected at random from among undergraduates at traditional higher education institutions. The participants were divided into two groups. One of the two groups was designated as the control group, whilst the other was designated as the experimental group; each group comprised 40 participants. The students in the experimental group took part in the 'Sunshine Campus Run' programme for one term. Personality traits were assessed using the Cartel's 16 Personality Factors (16PF) questionnaire both before and after the intervention.

All data from the personality tests were analyzed using SPSS 26.0 software. An independent samples t-test was employed to compare the personality indicators of male and female participants in the experimental and control groups before and after the intervention, and to assess the extent of the differences between the groups.

3. Results and Discussion

As shown in Table 1 and Figure 1, the t-test for paired samples indicates that the personality factors of the pupils in the experimental group changed significantly following the intervention. Twelve factors, including social boldness (H), autonomy (Q2), nervousness (Q4) and agreeableness (A), showed significant differences ($P < 0.05$), whilst the following three factors: emotional stability (C), conformity (G) and perfectionism (Q3) showed highly significant differences ($P < 0.01$). These findings suggest that the 'Campus Sunshine Run'

programme may effectively enhance university students' willingness to engage in social interaction, their emotional regulation skills, their sense of responsibility and their willingness to take risks, whilst also reducing anxiety and psychological stress, thereby helping to foster more positive and stable personality traits. Following the intervention, the scores obtained

for the dominant factor (E) were significantly higher than before the intervention ($P = 0.038$), suggesting that the 'Race to the Sun on Campus' activity could strengthen students' sense of autonomy and self-confidence, thereby enabling them to be more self-assured and determined both in their daily lives and in their studies.

Table 1. Paired-Samples T-Test Results for Personality Factors in the Experimental Group before and after the Intervention (n = 40)

Factor	Before (M $\pm$ SD)	After (M $\pm$ SD)	t	p
Reasoning (B)	7.15 $\pm$ 1.30	7.51 $\pm$ 1.12	1.24	0.218
Social Boldness (H)	7.05 $\pm$ 1.48	8.92 $\pm$ 1.28	3.21	0.002
Self-Reliance (Q2)	7.05 $\pm$ 1.45	8.82 $\pm$ 1.18	3.02	0.003
Vigilance (L)	6.88 $\pm$ 1.35	6.15 $\pm$ 1.22	-1.89	0.062
Abstractedness (M)	7.08 $\pm$ 1.28	7.58 $\pm$ 1.40	1.32	0.190
Tension (Q4)	7.35 $\pm$ 1.40	5.68 $\pm$ 1.26	-3.15	0.002
Warmth (A)	6.98 $\pm$ 1.52	8.26 $\pm$ 1.35	2.89	0.005
Sensitivity (I)	6.92 $\pm$ 1.25	7.26 $\pm$ 1.31	1.05	0.297
Openness to Change (Q1)	7.18 $\pm$ 1.38	8.65 $\pm$ 1.25	2.75	0.007
Privacy (N)	6.85 $\pm$ 1.26	7.22 $\pm$ 1.15	1.18	0.241
Dominance (E)	7.22 $\pm$ 1.31	8.15 $\pm$ 1.26	2.11	0.038
Emotional Stability (C)	7.33 $\pm$ 1.45	9.02 $\pm$ 1.08	3.56	0.001
Liveliness (F)	7.45 $\pm$ 1.50	8.88 $\pm$ 1.42	2.95	0.004
Apprehension (O)	7.12 $\pm$ 1.42	5.85 $\pm$ 1.30	-2.68	0.009
Rule-Consciousness (G)	7.28 $\pm$ 1.36	9.35 $\pm$ 1.15	3.82	< 0.001
Perfectionism (Q3)	7.22 $\pm$ 1.32	9.15 $\pm$ 1.05	3.68	< 0.001



Figure 1. Paired-Samples t-Test Results for Personality Factors in the Experimental Group Before and After the Intervention (n = 40)

As shown in Table 2 and Figure 2, in the control group, significant changes were observed only in terms of social assertiveness, anxiety levels and openness to change, whilst the mean scores for other personality factors showed only minor fluctuations that did not reach statistical significance. This suggests that the experimental intervention had no substantial effect on these personality traits in the control group. These changes may be attributable to other factors, such as regular physical education lessons, extracurricular sporting activities and the sporting culture at the school, which may also have a positive influence on pupils' personal development.

Table 2. Paired-Samples T-Test Results for Personality Factors in the Control Group before and after the Intervention (n = 40)

Factor	Before (M $\pm$ SD)	After (M $\pm$ SD)	t	p
Reasoning (B)	7.13 $\pm$ 1.25	7.43 $\pm$ 1.35	1.03	0.305
Social Boldness (H)	7.10 $\pm$ 1.28	8.13 $\pm$ 1.18	3.74	< 0.001
Self-Reliance (Q2)	7.09 $\pm$ 1.21	7.56 $\pm$ 1.37	1.63	0.107
Vigilance (L)	6.75 $\pm$ 1.13	6.27 $\pm$ 1.34	-1.73	0.087
Abstractedness (M)	7.23 $\pm$ 1.31	7.73 $\pm$ 1.35	1.68	0.096
Tension (Q4)	7.28 $\pm$ 1.35	6.38 $\pm$ 1.36	-2.97	0.004
Warmth (A)	7.03 $\pm$ 1.41	7.52 $\pm$ 1.25	1.64	0.104
Sensitivity (I)	6.88 $\pm$ 1.35	7.24 $\pm$ 1.36	1.19	0.238

Openness to Change (Q1)	7.09 ± 1.25	7.85 ± 1.24	2.73	0.007
Privacy (N)	7.03 ± 1.31	7.43 ± 1.23	1.41	0.163
Dominance (E)	7.28 ± 1.43	7.78 ± 1.28	1.65	0.103
Emotional Stability (C)	7.41 ± 1.33	7.93 ± 1.43	1.68	0.096
Liveliness (F)	7.36 ± 1.42	7.95 ± 1.42	1.86	0.066
Apprehension (O)	7.41 ± 1.39	6.64 ± 1.30	-2.56	0.012
Rule-Consciousness (G)	7.51 ± 1.28	6.95 ± 1.53	-1.78	0.079
Perfectionism (Q3)	7.47 ± 1.29	8.05 ± 1.13	2.14	0.035

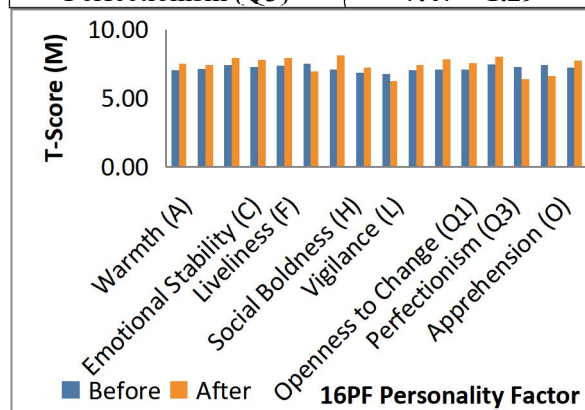


Figure 2. Paired-Samples t-Test Results for Personality Factors in the Control Group Before and After the Intervention (n = 40)

As shown in Table 3 and Figure 3, the independent samples t-tests carried out after the intervention revealed several significant differences between the experimental group and the control group. Firstly, the experimental group showed highly significant advantages on eight personality factors ($P < 0.01$), including autonomy, emotional stability, dynamism, openness to change, social boldness, anxiety, rule-following and perfectionism. These results show that pupils in the experimental group demonstrate greater independence and greater emotional stability than those in the control group. Furthermore, the experimental group

showed a significant advantage ($P < 0.05$) on two factors, namely affinity and stress levels, reflecting a stronger willingness to engage in social interactions and lower levels of psychological stress. Thirdly, no significant differences were observed between the two groups for the following six factors: reasoning, alertness, abstract thinking, sensitivity, privacy and authority ($P \geq 0.05$). Overall, the results of these studies show that, following the 'Running in the Sun on Campus' intervention programme, pupils in the experimental group exhibited more positive personality traits than those in the control group.

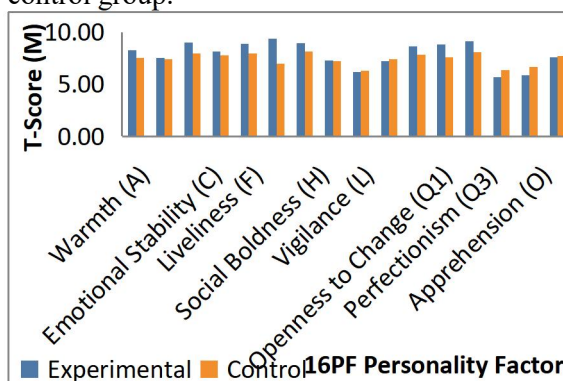


Figure 3. Independent-Samples t-Test Results for Personality Factors Between the Experimental and Control Groups After the Intervention (n = 40 per group)

Table 3. Independent-Samples T-Test Results for Personality Factors between the Experimental and Control Groups after the Intervention (n = 40 per Group)

Factor	Experimental Group (M ± SD)	Control Group (M ± SD)	t	p
Reasoning (B)	7.51 ± 1.12	7.43 ± 1.35	0.29	0.773
Social Boldness (H)	8.92 ± 1.28	8.13 ± 1.18	2.87	0.005
Self-Reliance (Q2)	8.82 ± 1.18	7.56 ± 1.37	4.41	< 0.001
Vigilance (L)	6.15 ± 1.22	6.27 ± 1.34	-0.42	0.760
Abstractedness (M)	7.58 ± 1.40	7.73 ± 1.35	-0.49	0.627
Tension (Q4)	5.68 ± 1.26	6.38 ± 1.36	-2.39	0.019
Warmth (A)	8.26 ± 1.35	7.52 ± 1.25	2.54	0.012
Sensitivity (I)	7.26 ± 1.31	7.24 ± 1.36	0.07	0.946
Openness to Change (Q1)	8.65 ± 1.25	7.85 ± 1.24	2.87	0.005
Privacy (N)	7.22 ± 1.15	7.43 ± 1.23	-0.79	0.432
Dominance (E)	8.15 ± 1.26	7.78 ± 1.28	1.30	0.196
Emotional Stability (C)	9.02 ± 1.08	7.93 ± 1.43	3.85	< 0.001
Liveliness (F)	8.88 ± 1.42	7.95 ± 1.42	2.93	0.004

Apprehension (O)	5.85 ± 1.30	6.64 ± 1.30	-2.72	0.008
Rule-Consciousness (G)	9.35 ± 1.15	6.95 ± 1.53	7.93	< 0.001
Perfectionism (Q3)	9.15 ± 1.05	8.05 ± 1.13	4.51	< 0.001

4. Conclusion

In summary, the 'Sunshine Campus Running' programme appears to be an effective way of helping to improve pupils' character traits. It showed particularly notable effects on enhancing social competence, emotional stability, sense of responsibility, and stress resilience.

5. Suggestion

Recommendation: Based on the findings of this study, the following recommendations are hereby made for the implementation of the 'Outdoor Running on Campus' project at universities. The campus running programme should be designed on a scientifically sound basis so that it is tailored to the physiological and psychological characteristics of the students. Running activities should be designed to take into account pupils' age, physical fitness, gender differences and psychological needs. Activities that are too intense may reduce participation rates, whilst those that are not intense enough

may fail to produce significant results.

Pupils should be given guidance on warm-up exercises, suitable footwear, staying hydrated and injury prevention. Proper preparation helps to reduce the risk of sports injuries and enhance the overall experience of the 'Race to the Sun on Campus'.

References

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