EFFECTS OF CHRONIC CIGARETTE SMOKING ON AEROBIC AND ANAEROBIC PERFORMANCES OF SECONDARY SCHOOL AGE BOYS

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ABSTRACT

This study investigated the effects of cigarette smoking on aerobic and anaerobic performances of secondary school age boys. 26 subjects were randomly selected from secondary schools in Alimosho Local government Area of Lagos State; 13 of them were tobacco smokers while the remaining 13 were non-smokers. Anaerobic and aerobic performances were measured using100mdash and 1.5km run-walk respectively. Data collected were analyzed using mean, standard deviation, range and Nest Findings showed that tobacco smoking have negative effects on both aerobic and anaerobic performances of the students. It was therefore recommended that students should be enlightened more on the effects of tobacco smoking; they should be encouraged to spend more time in recreational sports to reduce smoking among them. Government should also enact laws prohibiting adolescents from cigarette smoking or any form of tobacco use.

Introduction

Just about everyone agrees that smoking is a health hazard, but because it appears to take years or even decades to catch up with them, sometimes young people feel they can go ahead and smoke, and not worrying about its effects. According to Fajewonyomi and Ugboma (1995), the adverse effects upon health attributed by smoking have been well documented; and despite these mounting evidences in reports relating smoking to disease, rates of morbidity and mortality attributable to cigarettesmoking have increased.

The worst of the phenomenon is the increase in theprevalence of smoking among adolescents and a lowering of the age at which smoking begins. However, Otiono (1991) citing Shaper (1981) and Udoh and Amusa (1984) have identified cigarette smoking as one of the major cardiovascular risk behaviours among sports men and women. Likewise, Bally (1999) asserted that smoking could hinder sports performance or reduce endurance for people who lead an active life, even if they are not athletes.

Moronkola and Onuoha (1997) also asserted that despite the significant knowledge of young men and women about the effects smoking and the awareness of warning on cigarette advertisement, they still go ahead to smoke. Cigarette smoking has been found to be addictive because of the presence of nicotine, the most active substance in tobacco leaf, which results in Neuro-adaptation (Agbonjinmi &Hassan-Biu, 1994). Hence many people, including athletes, smoke because of the addictive nature of nicotine. Agbonjinmi and Hassan-Biu (1994) however, were of the opinion that we owe most smokers who attempt to quit smoking a duty of care by providing information on "safety" smoking. Explaining how tobacco smoking affects sports performance, Bally (1999) asserted that studies have shown that smoking increases airway resistance, which means that the energy and oxygen cost of breathing increase, as much as three folds, leaving less oxygen to be used for other activities.

Bally (1999) further explained that inhaled carbon monoxide travels through the blood stream attached to hemoglobin; the same as oxygen. The problem is that carbon monoxide gets there first, blocking out the oxygen, so there is less oxygen delivered to the working muscles, thus, the overall effect is that the smoker has less oxygen available for metabolism than would be available if he or she did not smoke.

The purpose of this study therefore is to investigate the effects of tobacco smoking on aerobic and anaerobic performances of secondary school age boys.

Methods and Procedures

Thirteen students who are habitual cigarette smokers and another 13 students of the same average age who are non-cigarette smokers were selected at random from three secondary schools in AlimoshoLocal Government Area of Lagos State. The following instruments of which their validity has been established were used as instrument for data collection in this study.

1. Stadiometre: This was used to measure heights of subjects. They were instructed to stand bare-footed, with eyes looking straight ahead and the back towards the measuring bar. Measurements were taking to the nearest centimeter.

2. Health-O-metre Scale: This instrument was used to measure body weight, Subjects were asked to step on the scale bare-footed with eyes looking straight. Body weightswere there after recorded inkilograms (kg) and to the nearest tenth of kg.

3. 100-Metre Dash: This test was used to determine the anaerobic performance level of subjects. The equipment used were stopwatches and a whistle. Subjects took the "on the mark" and "set" positions on the commands, and on the blast of the whistle; they sprinted as fast as possible to the finish line. The scores were recorded as the time lapse between the starting signal and when the finish line is crossed. These were recorded to the tenth of a second.

4. 1.5Km Run-Walk: This test was used to determine aerobic performance of the athletes (Bulugbe, 1991). The equipment used was stopwatches and a whistle. Subjects were in standing position on the starting line of the track, and on the blast of the whistle, ran at their own pace to cover the 1.5km within the shortest possible time. Subjects were allowed to walk in the process if necessary.

The data collected for the purpose this study were coded and analyzed using descriptive statistical tools of mean, standard deviation and range, while inferences were made using student's, t-test statistics. Level of significance was, set at 0.05 alpha level.

Results and Discussion

The mean age for the tobacco smoking students used in this study was 14-77+1.59 within the range of 13-17 years, and it was 14.77 within the range of 13-18 years for their non-smoker counterparts.The means height for the smokers was 158.12 +9.05 within the range of 144-173cm while that of the non-smokers was 156.08+9.88 within the range of 144 - 173cm, and the mean weight was 58.90 + 6.74 within the range of 46-72kg for the nonsmokers, and 57.85 + 5.76 within the range of 49- 71kg.

Table I: Mean, standard deviation, range and t-test analysis of data on aerobic performance of subjects

Group	**X(Min)**	**SD**	**R**	**t-cal**	**t-cri**	**df**	**α**	conclusion
Smokers	10.76	3.09	9.24-15.3	3.96	2.06	24	0.05	S
Non-smokers	8.15	2.59	3.01-11.23					

The results presented in table 1 shows that the mean for smokers group in aerobic performance was 10.76 ± 3.09 within the range of 9.24-15.3 minutes, while that of the control group was 8.15 + 2.59 within the range 8.01- 11.23 minutes.

Further analysis shows that the calculated t-value of 3.96 was greater than 2.06 critical value at 0.05 level of significance. This result was significant; indicating that there was a significant difference in the aerobic performance of the tobacco smoking students and their non- smoking counterparts.

This finding is in line with previous studies that reported increase in the resting heart rate (two to three beasts per minute faster than those of non-smokers) due to tobacco smoking (CDC, 2000); reduction of the amount of oxygen available in the body, (Nonsmokers Movements of Australia, 2003), reduces maximal oxygen uptake by 10 percent; and less oxygen delivery to working muscles during aerobic performance (Bally, 1999).

According to Bally (1999), inhaled carbon monoxide attached to hemoglobin first before oxygen, therefore, blocking out the latter. The effect is that the smokers have less oxygen available for metabolism. This leads to fatigue, reduction in endurance level and performance suffers. Escobed et al (1993) asserted that athletics and smoking have never been able to co-exist for many reasons including physical damage to the body,which inhibits performance.

Table II: Mean, standard deviation, range and t-test analysis of data on aerobic performance of subjects

Group	X (Min)	SD	R	t-cal	t-cri	df	α	Conclusi
Smokers	13.32	1.82	11.2-15.8	3.25	2.06	24	0.05	S
Non-smokers	12.41	1.84	10.7-15.6					

The results presented in table II shows that the mean for smokers group in anaerobic performance was 13.32 + 1.82 within the range of 11.2-15.8 seconds, while it was 12.41 + 1.84 within the range of 10.7 - 15.6 seconds for the non-smokers. T-test analysis shows that the calculated value of 3.25 was greater than 2.06 critical value at 0.05 level of significance. The result was also significant; meaning that there was significant difference in the anaerobic performance of tobacco smoking students and their non-smoking counterparts.

The finding corroborates the report of Non-smokers' Movement of Australia (2003) that smoking reduces individuals'fitness level. Explaining how it affects performance, Bally (1999)reports that studies have shown that smoking increases airwayresistance, which means that energy and oxygen cost of breathing increases, as much as three fold, and the implication of this is reduction performance level.

Reports have also shown significant negative effects of smoking on body systems and individuals health (Thun, 1995; Rimm, Cham, Stampfer, Colditz and Whilleter, 1995; Napier, 1996 Symmous, 1997; Lukadiko, 1998; and CDG, 2000; 2001). It is obvious that good health is essential for a good sports performance.

CONCLUSION AND RECOMMENDATIONS

Based on the findings of these study, it is concluded that there were variations in both aerobic and anaerobic performances of smoker and non-smoker boys. That is the non-smokersperformed better in both activities than the smokers. This implies that tobacco smoking among secondary school age boys have negative effects on their aerobic and anaerobic performances. The researchers therefore recommended as follows: -

1. Students should be enlightened more on the effects of tobacco smoking. This should be done through emphasis on the subject matter during lessons of related subjects, talks and symposia.

2. Government should enact law(s) prohibiting adolescents from the use of tobacco in any form.

3. Students should be encouraged to spend more time in recreational sports, since studies have shown that students who take part in sports are less likely to be regular and heavy smokers (Escobed et.al 1993).

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