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RESEARCH PAPER

Junk Food Consumption and Self-Control among Gymnastics Athletes and Non-Athletes

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ABSTRACT

To evaluate the consumption of junk food and self-control among gymnastic athletes and non-athletes was the core objective of this study. The study comprised of 120 participants whose age spanned from 19 to 25 years (M = 20.97, SD = 2.14). The independent t-test, simple linear regression test and descriptive test were used to analyze the data through SPSS version 22. The findings demonstrated significantly higher attitude of non-athletes towards junk food consumption in comparison to their gymnastic athlete counterparts. Moreover, gymnastic athletes showed greater levels of self-control than non-athletes. Furthermore, irrespective of their sports participation, the analysis also depicted an inverse relationship between self-control and junk food consumption. We can suggest that engagement in gymnastics holds the potential to diminish youths' inclination towards junk food consumption and improvement in the trait of self-control. Hence, policy makers should prioritize the promotion of gymnastic sport to improve their overall well-being.

| **KEYWORDS** | Consumption, Gymnastics, Junk Food, Non-Athletes, Self-Control |

Introduction

In In the realm of dietary choices, junk food refers to a class of highly processed and nutritionally inadequate foods that are often heavy in harmful fats, carbohydrates, and salt (Sequeira, Sowmya, Thomas, Mahajan, & Kumar, 2014). These items are frequently distinguished by their appealing taste, convenience, and widespread availability yet lacking essential nutritional value. The fast food, trash food and ultra-processed food are terms that are frequently used as alternate of junk food. These foods are commonly found in packed form on store shelves, boasting extended shelf life and often requiring no refrigeration (Bhaskar, 2012).

There are many different varieties of junk foods ranging from packed foods, bakery items and fried foods accessible in markets. Fast foods, especially fried items that are supplied by many junk food brands, frequently employ unhealthy cooking oils. These types of foods offer minimal to no nutritional value however are typically rich in fat due to deep frying. It is worth noting that some meals that are considered cultural or traditional may not be explicitly labeled as junk foods, however they might still contain significant amounts of sugar, salt, and fat (Bhaskar, 2012).

In the pursuit of saving time, people frequently settle their meals by eating fast food. However, it is also crucial to recognize that eating excess junk food can have detrimental effects on one's health. Previous research indicated that, junk food may contribute to ADHD (attention deficit hyperactivity disorder) and dyslexia (Wiles, Northstone, Emmett, & Lewis, 2009). Some other harmful effects of consuming junk foods include obesity, diabetes, hypertension, heart disease (Nawaz, Ali, & Nawaz, 2023), kidney disease, skin rashes, neurological disorders, cancer, hypoxia, asthma, behavioral problems (Bhaskar, 2012). Moreover, junk food is also associated with non-communicable (chronic) associated diseases, non-insulin dependent diabetes, autoimmune disorders, tumors and neurodegenerative diseases (Bohara, Thapa, Bhatt, Dhami, & Wagle, 2021). Despite accumulating evidences of detrimental consequences of junk food on the human body, individuals continue to indulge in these unhealthy dietary choices (Bohara et al., 2021).

The global prevalence of junk food consumption stands at approximately 70%, making it an escalating public health problem among all age groups. In 2016, The World Health Organization (WHO) estimated that over 340 million children and adolescents aged between 5 and 19 years were overweighed or obese (Bohara et al., 2021). While all regions grapple with the economic and health consequences of this preventable catastrophe, however Asia may face significantly higher challenges in this regard. A higher prevalence of overweight or obese children was discovered in the region of South East Asia. According to Nepal's 2014 Adolescent Nutrition Survey, a great majority (94%) of teens eat processed or junk food on a regular basis. Slightly higher percentage of junk food consumption was observed among early teenage (93%) and late adolescent (89%) groups (Pahari & Baral, 2020). However, reducing the consumption of junk food might contribute to a better lifestyle including increased levels of energy, improved nutrition and better weight management.

Simultaneously, participation in sports has been linked with positive lifestyle and psychological well-being. Engaging in sports activities may also have many productive benefits on physical and psychological health. Participating in sports might also improve physical and psychological health by lowering stress, anxiety, and depression (Hassmen, Koivula, & Uutela, 2000). A study by Jonker, Elferink-Gemser, and Visscher (2011) yielded that regular participation in sports improves self-control among adolescent athletes. Similarly Jonker, Elferink-Gemser, Toering, Lyons, and Visscher (2010) found that football athletes exhibit greater levels of self-control compared to non-athletes. A study by Li, Chen, and Baker (2014) found a strong correlation between positive attitudes towards physical activities and the social, intellectual and personal advancement of students. Moreover, it is also worth noting that those with greater self-control demonstrated superior academics achievements, gratifying social interactions, and psychological well-being (Tangney, Boone, & Baumeister, 2018).

Gymnastics, in particular, require unique energy per unit mass as compared to other sports athletes (Bar-Or, 2000). Nutrition, in this regard, plays a major role in maintaining a healthy lifestyle for both athletes and non-athletes (Seabrook, 2010). The long term effects of junk food consumption can have lasting consequences on the health and future of both athletes and non- athletes (Shrestha). However, cutting back on junk food can also improve digestive health, lower the risk of chronic illnesses, promote better skin, and boost the immune system. (Robinson, Harris, Thomas, Aveyard, & Higgs, 2013). Additionally it is also evident that antioxidant-rich diets and regular exercises improve cognitive functions by reducing harmful radicals, enhancing mitochondrial function, and activating synapses (George & Reddy, 2019).

Hence, to assess how gymnastic athletes and non-athletes behave when it comes to eating junk foods and exercising self-control was the primary objective of this study. It also seeks to investigate the link between their attitudes towards junk foods intake and self-control. Furthermore, the study also aims to determine whether engaging in gymnastics activities can help young people develop better self-control potentially reducing their resilience on harmful eating habits. The outcomes of this study might also bring forth some valuable recommendations and implications for future research examining these interconnected variables.

Literature review

Exercise, sports and Self-control

Prior studies have provided insights into the influence of sports engagement and physical activity on self-control. Regular physical activity has been shown to improve self-control. A study conducted on teenagers by Jonker et al. (2011) indicated that teenagers who regularly participated in sports displayed greater self-control levels compared to their non-participating peers. Consequently, the time spent on athletics practice was positively associated with elevated self-control. A similar study was conducted on 24 undergraduate students who participated in an exercise program for four months. The population was divided into two different groups, the first four-month starting fitness regimen right away and the second waited for two months before beginning a two-month regiment. After a four-month examination, it became evident that the first group demonstrated greater improvements in self-control than the second group. The study determined that physical activity bolstered individuals' level of self-control, that in turn was linked to task completion and academic success (Oaten & Cheng, 2006).

A subsequent study delved into investigating the habits of 123 college students also aimed to determine how different personality qualities impact people's addictions to gambling through the internet. Additionally, their findings indicated a strong correlation between addiction to online gambling and combativeness, self-control, excitement seeking, fear of experience, solicitude, and nervous restlessness (Mehroof & Griffiths, 2010). An additional study to ascertain the relationship between adolescent's internet addiction, self-discipline, and sports engagement was conducted in Korea. This study employed (CFA) and (SEM) on a cohort of 345 school going students aged 15 to 18 years. Sports participation has a significant self-control-mediated impact on internet addiction. Finding of this research also indicated that sports and exercise programs are valuable and essential for treating internet addiction as well as other addictions. Furthermore, engaging in sports yields a broader spectrum of psychological and physical advantages than using pharmaceutical strategies or drug therapy (Park et al., 2016).

Sports, Exercise and Junk Food

A distinct study to examine the eating behavior of elite and sub-elite athletes was conducted in Australia. The study comprised of a total of (n= 1990) upper class and lower-class athletes from 22 recruited sports. The findings of the study implied that elite athletes eat less unhealthy food to support health promotion as compared to sub-athletes (Grunseit et al., 2012). Another investigation comprising of an extensive survey about dieting practices, eating habits, and physical activity was completed by all teenagers (n = 1494) from class seven to ten. For both men and women, principal component analysis revealed comparable factor structures for food preferences and eating behaviors. However, there were gender variations in the types of physical activity. Participation in sports was a strong predictor of eating disorder symptoms and was associated with a preference for healthier

foods. Female eating disorder symptoms were tangentially inversely correlated with junk food preference. Other food preferences and reported food intake were unrelated to the signs of eating disorders. Dietary consumption and physical activity habits only accounted for a minor portion of the difference in risk score (French, Perry, Leon, & Fulkerson, 1994).

Similarly, a study conducted on regular school going students and absentees indicated that 22.86 percent of the individuals were fat whereas, 47.14 percent were considered overweight. It was also discovered that 11.43 percent of ex-athletes drank fizzy beverages and 84.29 percent consumed fast food. Additionally, the study's findings also indicate that there is no link in eating junk food and drinking carbonated beverages and fatness. Students who attended schools close to fast restaurants were heavier than their peers who did not (Altowerqi, Abidin, Sayyd, Alkuhaili, & Alsayegh, 2020). Overall, these studies contribute valuable insights into the complex relationships between self-control, physical activity, dietary habits and their implications for psychological and physical well-being.

Material and Methods

Study Design

This study adopted a cross-sectional study design.

Sample and Population

This study was based on purposive sampling method and data was collected from the gymnastics athletes who belonged to the different provinces of Pakistan. The total number of gymnastics athletes in Pakistan were 100. The only 60 male gymnasts were falling in age range of 19-25 years. This research focused on early adult gymnasts. These athletes participated in different levels of gymnastics competitions like International, National, Inter-varsity and clubs. In contrary to gymnasts, the data was also collected from 60 non-athletes from different backgrounds to differentiate the level of junk food consumption and self-control. The non- athletes (students) were selected randomly. Hence, the total number of participants were 120 (60 gymnastics athletes and 60 non- athletes).

Instruments

Following instruments were utilized to collect the data from sample

Demographic Questionnaire

Basic demographic information of participants having different backgrounds were collected through a self-administered demographic questionnaire. It was composed of following items such as, age, gender, education level, material status, family income, residence, athletic status (whether they are gymnastics athletes and no- athletes). If respondents mentioned themselves as gymnastic athletes, then information related to their training hours in a day, training days in a week, level of participation, year of experience, height, weight, BMI and resting heart rate was also collected.

Junk food consumption questionnaire

A six-item questionnaire focused on junk food consumption determined degree and regularity of junk food consumption in both gymnastic athletes and non-athletes. This questionnaire was developed by Sequeira in (2014) (Sequeira et al., 2014). Extensive validation and reliability assessments have confirmed that this instrument is highly

effective for gathering data from individuals within the age range of 19-25 years. The Cronbach's alpha value of this tool in this study was .91 that showed a high level of validity and reliability. The instrument was used after the permission of author via email.

Brief Self-Control Scale

The 13-item SCS (Self-Control Scale) developed by Tangney et al. (2004) was used to assess self-control characteristics of gymnasts in this study. Previously, this instrument has been used to access self-control among wide range of populations (Ali, Azam, Mattiullah, & Akhtar, 2019). The Cronbach's alpha value in this study was .76 that indicated sufficient level of validity for sample involved in this study.

Procedure

The data collection process involved exclusively in-person interactions with participants. Prior to start of data collection, the researcher explained the process regarding how to respond the item included in data collection questionnaire the participants firstly gave their consents on their study. They were informed that participation in this study was entirely voluntary and any participant not willing to complete the questionnaire can withdraw of any stage. They were further informed by the researcher that the collected data will be completely kept confidential. Everyone who took part received the same treatment.

All participants were both gymnastics athletes and non-athletes completed questionnaires through direct physical engagement, an official authorization, obtained from the relevant authorities. Gymnastics athletes completed the questionnaire in their gymnasium, and non-athletes completed it in their classrooms and cafeterias. The participants gave their consent for the paperwork to be filled out. All of them were instructed to read the entire questionnaire before filling it out. They first received a brief introduction to the research and the research topic before being asked to complete the questionnaire.

Data Analysis

The independent *t*-test, simple linear regression test and descriptive test were used to analyze the data through SPSS version 22 (IBM Crop 2017). The *P* value was fixed at .05. This helped to assess the level of significance.

Results and Discussion

Participants

The study comprised of a total of 120 participants out of which 96 were male whereas 24 were female. The participants' age spanned from 19 to 25 years ($M = 20.97$, $SD = 2.14$). Their education level was categorized into four groups: matric, intermediate, graduate, post-graduate with f = 9, 22, 82, 7 and their percentages were 7.5%, 18.3%, 68.3%, 5.8%. The marital status included 5 married and 115 unmarried with percentage of 4.2%, 95.8%. The location variables include Punjab, Sindh, and KPK with f = 106, 10, 4 and their percentages are 88.3%, 8.3%, 3.3%. The athletics status of the participants are non-athletes and gymnastic athletes which f = 60, 60 and their percentages are 50.0%, 50.0%. the highest level of playing consist of club, interuniversity, national, international, with the f = 19, 18, 20, 3 with their percentages was 31.6%, 30%, 33.4% and 5%.the body mass index consisted of underweight, normal, overweight and obesity with f =19, 77, 21, 3 and their percentages

are 15.8%, 64.2% 17.5% 2.5% respectively. Table 1 shows descriptive of the demographic variables.

Table 1
Demographics Characteristics of the Participants

Variables	f (% age)
Gender	
Female	24 (20)
Male	96 (80)
Level of Education	
Matric	9 (7.5)
Intermediate	22 (18.3)
Graduate	82 (68.9)
Post-Graduate	7 (5.8)
Marital Status	
Married	5 (4.2)
Unmarried	115 (95.8)
Family Income	
Less than 50k	42 (35.0)
50k-1 lakh	49 (40.8)
1lakh-1.50lakh	15 (12.5)
More than 1.5lakh	14 (11.7)
Location	
Punjab	106 (88.3)
Sindh	10 (8.3)
KPK	4 (3.3)
Athletic Status	
Non-Athletes	60 (50.0)
Gymnastics Athletes	60 (50.0)
Highest playing Level	
Club	19(15.8)
Intervarsity	18(15.0)
National	20(16.7)
International	3(2.5)
(BMI)	
Under weight	19 (15.8)
Normal weight	77 (64.2)
Over weight	21 (17.5)
Obesity	3(2.5)

Note: N = 120, f = Frequency, M = Mean, SD = Standard Deviation, BMI = Body Mass Index"

Finings on junk food consumption among gymnastics athletes and non-athletes

The independent *t-test* revealed a noteworthy disparity in mean junk food consumption between gymnastics athletes and non-athletes with $t(120) = 7.444$, $p < .05$. This showed that the consumption of junk food in non-athletes (*M*= 16.92, *SD*= 5.318) was significantly higher than gymnastics athletes (*M*=10.45, *SD*=4.123). The value of Cohen's *d* was 1.36 (>.8 0) which indicated large effect size (Table 2).

Self-control results among gymnastics athletes and non-athletes

The Independent *t-test* yielded significant mean difference between gymnastics athletes and non-athletes in self-control with *t* (120) = -5.107, *p* < .05. This showed that the score of self-control in gymnastics athletes (*M*=44.43, *SD*= 6.272) was significantly higher compared with the self-control score in non- athletes (*M*=37.22, *SD*=8.971). The Cohen's *d* value was.93 (>.80), indicated large effect size See (Table 2).

Table 2
Junk Food Consumption and Self-Control among Gymnastics Athletes and Non-Athletes

Variables	Non-Athletes		Gymnastics Athletes		*t (120)*	*p*	*Cohen's d*
	M	*SD*	*M*	*SD*			
Junk food consumption	16.92	5.318	10.45	4.123	7.444	.000	1.36
Brief self-control scale	37.22	8.971	44.43	6.272	-5.107	.000	0.93

Association between self-control and junk food consumption

Simple linear regression was implied to access the effect of self-control on consumption of junk food. The regression analysis yielded the inverse relationship between gymnastics athletes and non-athletes in self-control on junk food consumption (see table 4.3). The predictor variable was self-control whereas the outcome variable was total score of junk food consumption. The R^2 value was .363 indicated that self-control explained 36 % variance in junk food consumption with *F* (1,118) = 67.148, *p* < .05. This result suggested that the negative association indicating increased self-control was related with decreased junk food consumption behavior (See table 3).

Table 3
Regression Coefficients of Self Control on Junk food Consumption in Gymnastic Athletes and Non-Athletes

Dependent Variable	Predictor Variable	*B*	*B*	*SE*	R^2	*P*
Junk Food Consumption	Self-Control	-.406	-.602	.050	.363	**.000**

Discussion

This study sought to examine the difference regarding attitude towards junk food consumption and self-control among gymnastics athletes and non-athletes. It also aimed to investigate and determine the association between self-control and junk food consumption behavior regardless of whether the participants are athletes or non-athletes. The findings emerged from the data analysis portrayed that the attitude towards junk food consumption was significantly higher in non-athletes in comparison with their gymnastic athlete counterparts. However, the characteristics of self-control were higher among gymnastic athletes when compared with non-athlete participants. In addition, the analysis also indicated that there was inverse association between self-control and attitude towards junk food consumption regardless of their sports participation. Therefore, these findings suggest that participation in gymnastics boosts self-control that further helps in the reduction of attitude towards junk food consumption.

The findings of this study also demonstrated lower attitude of gymnastic athletes towards junk food consumption and higher level of self-control as compared with non-athletes. These results seem in line with previous research articles. For example, a study carried out by Smith et al. (2017) and Johnson & Brown (2019) indicated that athletes exhibited superior dietary practices as compared to non-athletes. Additionally, another study by Smith et al. (2015) demonstrated that those who had good self-control were more likely to follow balanced diet plans and limit their intake of unhealthy foods. Moreover, these findings align with the notion that positive psychological traits can be developed by engaging in physical activity (Shachaf & Katz, 2014) and contribute to psychological and emotional well-being (Donaldson & Ronan, 2006). Likewise, a study on individuals with heightened self-control indicated the maintenance of healthier diets, enhanced stress management abilities, superior impulse control and greater consistency in adhering to exercise regimens (Tangney et al., 2018).

Conversely, our findings also revealed a significant disparity in self-control levels between gymnastic athletes and non-athletes. These findings align with prior studies demonstrating that lower levels of self-control resulted in aggressiveness and dependence Kim, Namkoong, Ku, and Kim (2008), compulsive gambling von Hammerstein et al. (2018), unhappiness and sadness Özdemir, Kuzucu, and Ak (2014), fatigue Seibert, May, Fitzgerald, and Fincham (2016) and losing one's temper Nęcka, Korona-Golec, Hlawacz, Nowak, and Gruszka-Gosiewska (2019). In a similar vein, an inverse relationship between maladaptive behaviors including like risky sexual behavior, substance dependance, suicidal thoughts and trait self-control was demonstrated by Malouf et al. (2014).

Findings of the study also revealed that in case of non-athletes, junk food consumption was significantly higher as a result of low self-control level. A study conducted by Fortes, Kakeshita, Almeida, Gomes, and Ferreira (2014) demonstrated a similar finding indicating that non-athletes were more likely to be engaged in binge eating and have low levels of self-control. Similarly, another longitudinal study by Johnson and Brown's (2018) found that young people who demonstrated more self-control as teenagers went on to have healthier eating habits as adults. The findings of this investigation support a more general theory that self-control has a major impact on range of behaviors relevant to health. Based on these findings we can deduce that engagement in gymnastics holds the potential to diminish youths' inclination towards junk food consumption.

Conclusion

This study explored the significant distinctions in attitude towards junk food consumption and self-control among gymnastic athletes and non-athletes. Moreover, it shed light on the intricate relationship between self-control and attitude towards junk food consumption. These compelling findings suggested that participation in gymnastics might help to reduce unhealthy eating habits and improving self-control among youth. The professionals and policy makers should prioritize the promotion of gymnastic sport among young individuals to improve their physical and psychological health.

Limitations and Future directions for research

This study exclusively focused on male gymnastic athletes having varying levels of experience. Consequently, the findings derived from this study cannot be generalized to female participants. Hence, further studies in this regard should be conducted on female gymnastic population to validate the findings. This study employed a cross-sectional study design that is considered to have limitations in establishing causality. Hence future research endeavors should consider employing a longitudinal design to provide more

robust and conclusive findings. This study had a relatively small sample size of gymnastic athletes due to limited availability of athletes in this particular sport within Pakistan. Future studies conducted with larger sample size in other countries could provide a more comprehensive perspective and increase our understanding of the subject matter.

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