

# Empowering Saudi Women for Sports as a Response to KSA Vision 2030: Attitudes of Undergraduate Female Students toward Practicing Sports

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## Abstract

**Background:** Paying particular attention to women's health is of great significance for ensuring the well-being of the general population. One of the key aspects of caring for their health arises is encouraging active engagement in sports, which is undoubtedly an essential pillar of a healthy lifestyle. Sports activities are important for maintaining physical, psychological, mental, and social health. The objective of this study is to identify the factors affecting the attitude of undergraduate female students in Saudi Arabia towards sports. The relationship between physical fitness, social experience, formal competition, physiological experience and sports attitude of female students has been examined in this study.

**Methods:** For the purposes of this study, a questionnaire survey is conducted to study the factors affecting the attitudes of undergraduate female students enrolled in universities of Saudi Arabia regarding sports activities. The study sample consists of 645 female students from various universities of Saudi Arabia. The collected data has been analyzed and processed using Partial Least Square (PLS).

**Results:** Results of the study report that; physical fitness, social experience and formal competition have a positive effect on physiological experience which in turn has a positive effect on the attitude of female students towards sports.

**Conclusion:** Physical fitness, social experience, formal competition, and physiological experience has the ability to promote a more positive attitude towards sports among the female students in Saudi Arabia. Various factors including physical fitness, social experience and formal competition have positive role in promoting better physiological experience which further lead to a more positive attitude among female students towards sports. Hence, the current study has important role for the management of universities to promote sports attitude among undergraduate students.

**Keyword:** Physical fitness, social experience, formal competition, physiological experience, sports attitude, undergraduate students.

## 1. Introduction

Women playing sports in Saudi Arabia has been a controversial topic for several years due to the constant pressure to suppress female involvement in sports related activities by conservative Islamic religious authorities. Although women's representation in sports has had an important contribution to sports activities among various nations (Tarverdizadeh, 2021; YENİLMEZ, 2021), it is disappointing that the role of women in sports activities in Saudi Arabia remains limited. Limited participation of females in Saudi Arabia is the basic factor accounting for low performance in overall sports industry. The low performance of sports industry also has several drawbacks for the country at large. Restrictions on female participation in sports activities damages the reputation of the sports industry in Saudi Arabia. To achieve the Saudi Vision 2030, the sports industry should be promoted to

enhance the contribution to economic development along with the other industries. As the contribution to sports industry is vital among the nations (Tetyana & Ziming, 2021) in relation to the economy.

The participation of Saudi women in sports activities can be prompted through university level sports activities. Females' graduates may be prepared for sports at graduation level which may contribute to greater participation in national and international sports activities. As highlighted in previous studies, sports activities at university level play an important role in the overall growth and popularity of a country's sports industry (Mao & Zhang, 2012; ZHAO, YAO, WANG, LI, & WANG, 2004). Particularly, women's participation in sports activities at university level has an important role to play in promoting these activities at higher level. In current years, the contribution of Saudi women in sports activities is increasing. The sports activities among female university

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graduates can develop a positive sports culture among members of the female community which in turn enhances women's participation.

More recently, a promising trend is visible in terms of women participation in sports activities increasing in Saudi Arabia. Although, women playing sports remains a controversial issue in Saudi Arabia, this tradition is changing to some extent as the level of participation of women in sports activities is increasing (Lysa, 2020). According to the kingdom's Sports minister, female participation in sport in Saudi Arabia has shot up by almost 150 per cent since 2015. Therefore, women's share of the sports industry is growing day by day – a trend that requires implementation of well-designed strategies. In this situation, the development of female sports undergraduate at university level has a key role in promoting a sports culture in Saudi Arabia.

Traditionally, women in Saudi Arabia are restricted from participating in sports activities, and are therefore, in need of efforts aimed at developing a more positive attitude towards sports. Attitude towards sports has central role in terms of participation and engagement in various sports related activities (Siti, Hazizi, Mohd, & Zubaidah, 2018; C.-C. YANG, YANG, CHING-TE, & WU, 2020). University undergraduate students require a positive sports attitude to take interest in sports related activities. Moreover, better and enhanced performance of individual athletes requires a positive attitude. Low level of attitude by the players leads to low interest as well as low performance in competition. Therefore, it is important to promote university students' attitude towards sports, and for this purpose, it is important to identify and understand the various factors affecting the sports attitude of undergraduate female students in Saudi Arabia.

According to the current study, physical fitness (Drenowatz, Hinterkörner, & Greier, 2021) has the potential to contribute to the sports attitude of undergraduate female students. Along with physical fitness, social experience and formal competition can also promote a positive sports attitude. Therefore, this study is an attempt to examine the role of physical fitness, social experience, and formal competition in the sports attitude of undergraduate female students among the universities of Saudi Arabia. In addition to this, physiological experience is another factor which can promote a health and more positive sports attitude.

Therefore, the objective of this study is to identify the factors affecting the sports attitude of undergraduate female students in Saudi Arabia. To achieve this objective, the relationship between physical fitness, social experience, formal competition, physiological experience, and sports attitude of female students has been examined. To this end, the relationship examined in this study has important implications for the sports industry of Saudi Arabia due to

its vital contribution to the literature as well as practical recommendations. As the identification of various factors affecting sports attitude has vital importance in develop university graduate students' attitude towards sport related activities.

## 2. Literature Review

Sports activities are important for maintaining physical, psychological, mental, and social health (Downs & Ashton, 2011). Undergraduate female students tend to practice sports to gain physical fitness, maintain their health, and reduce anxiety and tension. They also prefer engaging in a myriad of sports rather than walking in isolation with a small number of peers. University female students may have more opportunities to practice women's sports and participate in different sports, particularly marine sports, and have several mobility and tourism activities that allow and encourage students to get involved in a diverse range of activities. Overall, use of affordable sports equipment, setting up women's clubs, and creating awareness regarding sports, especially from families with sports participating members, is expected to promote sports among female students in Saudi Arabia. Being physically active is known to be one of the most beneficial human behavior for maintaining personal health; thus, as Edwards and Sackett stated, "it is imperative that interventions and programs designed to increase physical activity among females take into account the gender-specific psychosocial factors and conditions that may influence a woman's decision to become and remain active" (Edwards & Sackett, 2016). In the Middle East, especially in the Gulf countries, there has been an increasing interest in female athleticism, simultaneous with the rise in women's athletic participation in the region; therefore, understanding micro-level factors that inhibit and/or limit female sports participation allows for the exploration of larger social issues in the Gulf region.

The sports industry of Saudi Arabia is now growing along with the participation of women in various sports activities. The sports industry is an important industry worldwide (Li, 2017; Vos et al., 2012) therefore, it also holds key significance for Saudi Arabia. This industry is important because it has significant contribution to economic development. In several nations, such as China, Australia, Pakistan, India, and Germany etc. the sports industry is contributing significantly to the economy. It has major importance for the economic development because it has an important role on the development of the gross-domestic product (GDP). Contribution to the GDP has vital importance for the overall economic development. As there is an important link between the economy and sports industry (C. Yang et al., 2021; S. Yang, Xu, & Yang, 2020) this industry also has an instrumental role in promoting and ensuring the wellbeing of people.

Moreover, it has the potential to create several job opportunities which has vital contribution to the GDP. Availability of livelihood opportunities for people also points to an important link between sports and economic development. Therefore, it has vital importance at national and international level.

To promote sports activities in Saudi Arabia, the female participation is bound to play an important role. As the female participation in Saudi sports industry is quite low, it is important to enhance the participation levels among female which, in turn, requires a positive attitude toward sports. Among the universities of Saudi Arabia, the participation of female undergraduate students in sports is particularly important. There are several factors which influence the university undergraduate students' decision to take part in sports activities. As identified by the current study, physical fitness plays a vital role in this regard (Drenowatz et al., 2021; Millet, Millet, & Candau, 2001) Along with physical fitness, the social experience of

students is also important in terms of its contribution to the development of a positive student attitude in sports. Additionally, formal competitions also increase the interest of students in various sports activities. Furthermore, physical fitness, social experience and formal competition also lead to the physiological experience which increases the participation of students in sports activities by developing a positive attitude. Therefore, the current study is an attempt to identify factors affecting the sports attitude of undergraduate females' students in universities of Saudi Arabia by examining the relationship between physical fitness, social experience, formal competition, physiological experience and sports attitude of female students. Figure 1 shows the theoretical framework of the study showing the relationship between relationship between physical fitness, social experience, formal competition, physiological experience, and sports attitude of female students.

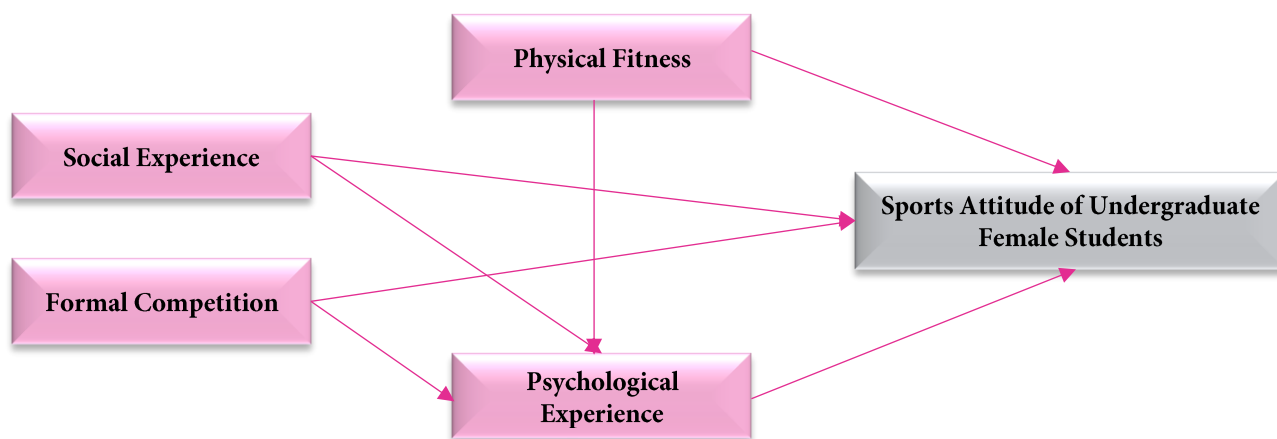


Figure 1. Theoretical framework of the study showing the relationship between physical fitness, social experience, formal competition, physiological experience and sports attitude of female students

Saudi Arabia is witnessing a radical transformation in all governmental and private systems to achieve a sustainable livelihood and realize a future that meets the expectations of Saudi citizens in all aspects of economic, social, legislative, and technological life through the National Transformation Program and Vision 2030. This program primarily focuses on women as the nucleus of a family, influencing them in a unique and distinguished manner from the remaining members of the family. Therefore, attention toward women's health (Loewenson, Nolen, & Wamala, 2010) is of great importance, and one of the aspects of caring for their health arises through engagement in sports, which is undoubtedly an essential pillar of a healthy and active lifestyle.

Physical practices and sports activities are a human necessity and a major requisite for maintaining physical, psychological, mental, and social health. In fact, appropriate and continuous sports performance is one of the positive indicators of the level of health awareness experienced among members of the society as well as one

of the most important methods of preventing multiple modern diseases. The practice of sports and engagement in physical activities emerged as a manifestation of civilization and progress of human societies. This did not occur in a short time; rather, it has occurred because of several years of investigating clear scientific evidence, namely the extent of the impact of those activities on individuals and the extent to which societies require them. Similarly, technological progress has inadvertently resulted in inactivity and lack of physical exertion, which in turn has generated a conducive environment for the development of several modern diseases.

Participating in sports is also one of the essential ways to achieve better health, longevity and a higher quality of life throughout the world, including Saudi Arabia (Hallal et al., 2012). This is true in both developing and developed countries that are exposed to high risks of developing cardiovascular diseases and obesity, where sports activities have significantly contributed to reducing the negative impact of these health risks. This has encouraged Saudi

Arabia to play sports activities compulsory.

Recent research also shows that the participation rate of adolescent men in global sports is very low (Alahmad, 2016) and the same is the case for women (Fallatah, Seok Pyo, & Alsaleh, 2019), which highlights the need for using scientific methods that are consistent with the intellectual renaissance in Saudi Arabia to raise awareness regarding the importance of sports and physical activities, and in doing so, increase the level of sports participation among all members of the Saudi population. Emphasis is placed on “all members” because the achievable benefits of sports are not limited to any gender or segment of the population. Nevertheless, female members are more affected by the lack of opportunities for sports than their male counterparts. This lack of opportunities has a greater impact on women level of participation in sports. As the average female member of a society is, or can be, a mother, preparing her well in a healthy way, physically, mentally, psychologically, and socially, means that she would be in a better and more equipped position to prepare and influence the next generation by making them aware and appreciative of the value of the positive returns of sports and physical activity. This will also reflect positively on the national economy, as it will lead to the reduction of the huge financial expenditures going into the health sector and reduce the volume of sick leaves and absenteeism, while simultaneously generating an increase in human productivity.

Therefore, sports are a necessity for all members of the population, and it must be construed as an intrinsic motivation, desire, and personal attitude. This motivation has its significance in the continuity of participation and its impact on various aspects of personal development, which is in addition to the positive impact on health in all its aspects. Nonetheless, Saudi women face several challenges in terms of engaging in sports activities. Attitudes reflect an individual's beliefs about various issues, events, and individuals. This implies that to the extent that the individual's beliefs are correct, their attitudes toward issues and events are valid, and attitudes are formed and shaped environmentally. (Corbin, Welk, Corbin, & Welk, 2006) indicated that an individual's practice of any given sporting activity and being convinced of its importance depends on the development of positive attitudes, values, and behavioral patterns toward that sporting activity. (Andersen, 2005) report that positive attitudes toward the practice of sporting activities play a vital role in motivating the individual in the actual practice of various sports and encouraging him/her to continue practicing it. The reverse is true for negative attitudes. One of the best ways to understand the behavior of individuals regarding sports is to identify their attitude and motives toward participating in sports activities (Ebbeck, Gibbons, & Loken-Dahle, 1995). Therefore, if university students in

Saudi Arabia have a positive attitude toward sports, their behaviors would reflect these attitudes. One of the most important reasons that university students practice sports activities is to improve one's health and level of physical fitness.

Al-Ohali (2018) found that the general attitude toward sports among female students at King Saud University is positive (85.6%), and walking is the most positive activity that the female students practiced on an on-going basis. One of the major challenges to practicing this activity is lack of time, high temperature, and fluctuations in weather. The most important outcome of community sports activities is increasing the number of women's clubs at the neighborhood level and reducing the subscription fees. In addition, the results of their study indicate obvious differences between science colleges and humanity colleges. Humanity colleges focus on the behavioral component and this sports trend is in favor of humanity faculties. No differences are detected in terms of marital status and income of the family. Various studies also focus on “the cultural and social determinants affecting the practice of women in sports in Saudi society,” where the authors conclude that religious values are the most prominent cultural values affecting women's practice of sports (96%) and that there are customs and traditions that are incompatible with women's practice of sports in the Saudi society. The impact of the family and school on practicing sports is also noteworthy as most respondents (73%) support women's practice of sports. By and large, it is found that the daily lifestyle in Saudi society does not encourage women to practice sports. Approximately 81% of the respondents believe that women's practice of sports in Saudi Arabia requires more official and community support.

The abovementioned studies make it clear that there is a dire need to identify the extent of Saudi women's willingness to practice physical and sports activities as a way of life and their professional and functional involvement in sports. Based on this perspective, it is important to conduct a comprehensive scientific study in all the geographical regions of Saudi Arabia and across socioeconomic classes of families with an aim to identify the attitudes of undergraduate female students toward practicing sports.

## 2.1 Hypotheses Development

Female university students have an understanding of the benefits and importance of sports (Gross et al., 2018) and also indicate that through sports, they learnt much about health and fitness and protection from lifestyle-related diseases. Researcher's attribute this to the fact that physical activity improves health and people enjoy vitality and physical activity. Sports have a beneficial effect on human health in all aspects and particularly increases the body's

level of resistance toward diseases and imparts physical strength. Most important health and physical goals related to the individual health and physical condition of the sports practitioner include the following: improved health, increase in the body's natural immunity and its resistance to diseases, a well-maintained and appropriate body weight, reduced negative effects of psychological tension, anxiety, and stress, physical fitness, rejuvenation and vitality of the body, prevention of body deviations.

Presence of variance in the attitude toward practicing sports among undergraduate female students (Sauder, Mudrick, & DeLuca, 2018) could be attributable to their place of residence. University female students in various regions may have more opportunities for participating and engaging in women's sports. Mobility and tourism activities are also ubiquitous in the Eastern region of Saudi Arabia. However, the situation is different in the Southern regions as they are more traditional in terms of the population's outlook towards life. According to the current study, there is a difference in the attitudes of undergraduate female students toward practicing sports which may be accounted for by the type of sports activity, between walking and exercising in favor of practicing physical exercise. There are also differences regarding the practice of activities, which are in favor of practicing sports activities. This result can be attributed to the tendency of female students to avoid going out for a walk as athletic exercises do not require wide areas in the same way as walking in the open air does. When practicing sports activities and engaging in exercises are compared, students prefer engaging in sports activities. This may be since it is easier and closer to the tendencies of women to go for sports activities. All the factors affect sports attitude of the students among universities. There are various other factors which affect one's attitude toward sports. According to the current study, physical fitness, social experience, formal competition, and physiological experience have a significant and positive influence on sports attitude.

### **2.1.1 Physical Fitness, Psychological Experience and Sports Attitudes of Undergraduate Female Students**

Physical fitness is one of the aspects of an individual's overall health and well-being and, more precisely, it refers to the capability to perform in one's sports, professional occupations as well as daily activities. Physical fitness is usually attained through proper nutrition, moderate-vigorous physical exercise, and adequate rest. This is one of the important motivating or driving factors for individuals to engage or participate in sports activities. Physical fitness poses a major advantage for individuals who are involved in various sports related activities. Therefore, in case of women athletes, it is more important to motivate them in favor of sports activities. As

highlighted in existing literature, sports and physical fitness have an important relationship (Osipov, Kudryavtsev, Iermakov, & Jagiełło, 2018; Zwinkels et al., 2018). Furthermore, physical fitness leads to a better and improved psychological experience. Psychological or mental experience may collectively refer to aspect of one's intellect as well as consciousness experienced as mixtures of thought, perception, memory, emotion, will and imagination, with all unconscious cognitive procedures. The term can denote, by implication, a thought procedure. In the current study, it is proposed that physical fitness positively impacts the psychological experience. The connection between physical fitness and psychological experience further lead to a more positive sports attitude among the students. Therefore, following hypotheses are proposed.

**Hypothesis 1.** Physical fitness has a relationship with psychological experience.

**Hypothesis 2.** Physical fitness has a relationship with sports attitude.

### **2.1.2 Social Experience, Psychological Experience and Sports Attitudes of Undergraduate Female Students**

Social experience is based on one's inter-personal connections and plays a key role in the performance of one's routine and daily life activities. Individuals with a more sociable or people-friendly personality are more likely to learn new things. For a sportsperson, the social experience yields important motivational factors. A person involved in sports activities can benefit from a better and more meaningful social experience. While participating in different sports activities, the individual develops multiple social connections which motivate them to take part in sports activities. As highlighted in several investigations, social experience has an important role to play in an individual's life (Kaiser, Keller, & Kleinen-von Königslöw, 2021; Yamamuro et al., 2020). This study proposes that social experience a significant relationship with sports attitude. Generally, social experience is understood to play an important role in enhancing sports attitude of students in universities. Undergraduate students may be motivated, among other things, by the social experience, which leads to a more positive sports experience. Furthermore, social experience also seems to have an influence on the psychological experience, which further contributes to the developments a positive and healthier attitude towards. Certain types of individual personalities are more likely to be social, and it may be presumed that these people are also more likely to participate in sports activities. Social experience refers to the social connection between different individuals. These social connections motivate people to engage in sports activities. As reported in previous studies, social connection has a significant relationship with one's attitude (Keng, Chen, & Huang,

2018). In the same direction, the social experience also plays an important role in improving an individual's sports attitude. Sports attitude development has an important role in the promotion of sports activities among university-level students. By and large, students like to develop new connections with new people in different settings. In this situation, they like to participate in sports activities which is an important way of developing a positive attitude among students towards sports. Social experience leads to an improved physiological experience which further leads to a more positive sports attitude. Hence, the following hypotheses are proposed.

**Hypothesis 3.** Social experience has a relationship with psychological experience.

**Hypothesis 4.** Social experience has a relationship with sports attitude.

### 2.1.3 Formal Competition, Psychological Experience and Sports Attitudes of Undergraduate Female Students

Competition is the activity or condition of striving to gain or win something by defeating or establishing superiority over others. Particularly, in sports activities, competition is of the essence (Russell, Jenkins, Halson, Juliff, & Kelly, 2021), and this competition may be organized on a local, national and/or international level. At university level, various competitions are organized within a university or between multiple universities. These competitions encourage students to participate in sports activities. Participation of various formal competition leads the students to develop a positive attitude in relation to sport related activities. This type of intra or inter-university exposure is one of the major motivational forces for students to participate in sport activities, and to learn and improve their skills. The passion to win a formal competition is competition notable source of motivation for any individual student, and this may ultimately lead to a better attitude towards sports among female students. The current study proposes that formal competition has a direct and indirect relationship with the sports attitude. Indirectly, formal competition has an impact on the psychological experience which further lead to a more positive sports attitude. Sports competition is studied in various previous studies (Ommundsen & Pedersen, 1999; Piggott, Müller, Chivers, Cripps, & Hoyne, 2020), however, previous studies have not examined the sports competition in relation to the psychological experience and attitude of the undergraduate students in Saudi Arabia. Thus, this study highlights the effect of formal competition in relation to the psychological experience and sports attitude. Thus, it is proposed that.

**Hypothesis 5.** Formal competition has a relationship with psychological experience.

**Hypothesis 6.** Formal competition has a relationship with sports attitude.

### 2.1.4 Psychological Experience and Sports Attitudes of Undergraduate Female Students

The current study proposes both the direct and indirect role of psychological experience. Psychological experience has a direct influence on the sports attitude of students. Better psychological experience can influence the attitude. As highlighted in the several previous investigations, psychology has an important connection with the attitude (Zia-ur-Rehman et al., 2021). Therefore, the consideration of psychology in studies on sports attitude is sufficiently grounded in previous studies. Psychological experience influences an individual's attitude directly as well as indirectly. In terms of its indirect effect, psychological experience has a positive effect on sports attitude in relation to physical fitness, social experience, and formal competition. According to the current study, psychological experience reflects the effect of physical fitness on sports attitude. Psychological experience also reflects the effect of social experience and formal competition on sports attitude. To take psychological experience as mediating variables, the current study follows the instructions of Baron and Kenny (1986). As highlighted in above discussion, physical fitness, social experience, and formal competition have significant effect on psychological experience and sports attitude. Furthermore, psychological experience also has a significant relationship with an individual's attitude towards sports. Hence, the author supports the use of psychological experience as mediating variable. Thus, following hypotheses are proposed.

**Hypothesis 7.** Psychological experience has a relationship with sports attitude.

**Hypothesis 8.** Psychological experience mediates the relationship between physical fitness and sports attitude.

**Hypothesis 9.** Psychological experience mediates the relationship between social experience and sports attitude.

**Hypothesis 10.** Psychological experience mediates the relationship between formal competition and sports attitude.

## 3. Research Methodology

This study examines the relationship between physical fitness, social experience, formal competition, physiological experience, and sports attitude of female students based on primary data collected through a questionnaire-based survey. Therefore, this study follows a quantitative research approach by using the cross-sectional research design. This study is particularly designed to understand the sports participation trends among female undergraduate students in Saudi Arabia. Data is collected in relation to four variables: physical fitness, social experience, formal competition, physiological experience, and sports attitude of female

students. Questionnaires are divided into well-sequenced sections. The first section is based on the profile of respondents and the remaining sections are based on the key variables; physical fitness, social experience, formal competition, physiological experience, and sports attitude of female students. It merits to note that the survey-based method of data collection is the most suitable one for examining the relationship between variables. Furthermore, various previous studies in sports industry have also used the survey technique for data collection (Lera-López & Rapún-Gárate, 2005; Zakinuddin & Ghazali, 2019). Therefore, the current study also chooses to use a questionnaire-based for data collection.

The study sample consists of 645 female students enrolled in universities in Saudi Arabia. A total of 1500 questionnaires have been distributed among female undergraduate students from several universities. Against this, a total of 645 valid responses are returned. Questionnaires are distributed among the respondents by using area cluster sampling which is generally deemed the most suitable technique when collecting data from a widespread population. In the current study, the population is also spread on a wide area, therefore, it

requires cluster sampling. Students from various universities from various areas have participated in the survey. Therefore, to understand the attitudes of undergraduate female students in Saudi Arabia toward practicing sports according to demographic variable, area is also considered. The mean, standard deviation, and geographical distribution, indicating the dominance of the central region, which also includes the country's capital - Riyadh, as 290 students belong to this region. The western region reports to have the least number of 71 female students. Moreover, analysis shows the mean and standard deviation of the axes of the attitudes of undergraduate female students toward practicing sports. Practicing sports to gain physical fitness is placed at number one, followed by psychological aspects, participation in competitions, and social aspects. This indicates that undergraduate female students tend to practice sports to gain physical fitness and maintain health and ideal levels of physical strength, and their interest in social aspects comes last. Furthermore, this study uses Partial Least Square (PLS) to analyze the data. As detailed in the following sections of this paper, while using PLS, the measurement model and the structural model have been assessed.

**Table 1.**

*Data Statistics*

	No.	Missing	Mean	Median	Min	Max	SD	Kurtosis	Skewness
PF1	1	0	2.1	2	1	5	1.213	0.625	1.226
PF2	2	0	1.987	2	1	5	1.004	1.624	1.328
PF3	3	0	1.939	2	1	5	1.056	1.001	1.244
PF4	4	0	2.013	2	1	5	1.055	1.312	1.298
SE1	5	0	1.921	2	1	5	1.142	1.405	1.466
SE2	6	0	2.013	2	1	5	0.955	0.725	1.002
SE3	7	0	2.092	2	1	5	1.206	0.509	1.176
SE4	8	0	1.886	2	1	5	0.932	1.037	1.14
SE5	9	0	1.83	2	1	5	0.921	1.541	1.256
FC1	10	0	2.096	2	1	5	1.186	0.769	1.237
FC2	11	0	2.1	2	1	5	1.161	0.764	1.201
FC3	12	0	1.838	2	1	5	0.969	2.56	1.576
FC4	13	0	1.895	2	1	5	1.044	1.31	1.302
FC5	14	0	2.022	2	1	5	1.008	1.731	1.319
PE1	15	0	2.013	2	1	5	1.158	0.941	1.3
PE2	16	0	2.135	2	1	5	1.31	0.229	1.168
PE3	17	0	2.031	2	1	5	1.169	0.54	1.146
PE4	18	0	1.961	2	1	5	1.115	0.537	1.125
SA1	19	0	1.934	2	1	5	0.989	0.872	1.168
SA2	20	0	2.105	2	1	5	1.101	0.615	1.096
SA3	21	0	1.895	2	1	5	1.077	0.795	1.246
SA4	22	0	1.983	2	1	5	1.178	0.998	1.324
SA5	23	0	1.786	2	1	5	0.972	2.193	1.502
SA6	24	0	1.991	2	1	5	1.041	0.912	1.164

Note: PS = Physical Fitness; SE = Social Experience; FC = Formal Competition; PE = Psychological Experience; SA = Sports Attitude of Female Undergraduate Students

#### 4. Data Analysis

The current study follows PLS to analyze the data collected from universities in Saudi Arabia. While analyzing data from PLS, the structural equation modeling (SEM) is used

for data analysis. According to several previous studies, PLS-SEM is of key significance when analyzing the relationship among variables (JF Hair, Anderson, Babin, & Black, 2010; Joe Hair, Hollingsworth, Randolph, & Chong, 2017; J. F. Hair, Sarstedt, Pieper, & Ringle, 2012; Hameed, Nisar, & Wu, 2021). Therefore, the current study examines the relationship between physical fitness, social experience, formal competition, physiological experience, and sports



attitude of female students by using PLS-SEM. This study follows a two-step approach to analyze the data which is based on a; 1) Measurement model, and 2) Structural model.

**4.1 Measurement Model**

In the measurement model, the current study assesses the reliability as well as validity of a given dataset. To examine

reliability, this study assesses the composite reliability (CR). For this purpose, factor loadings are examined. This study proposes 0.5 as the minimum threshold level to retain the scale items. Scale items are given in Table 2. The measurement model is highlighted in Figure 2 where it is evident that all the scale items have factor loadings above 0.5. Thus, all the scale items have been included in the current study.

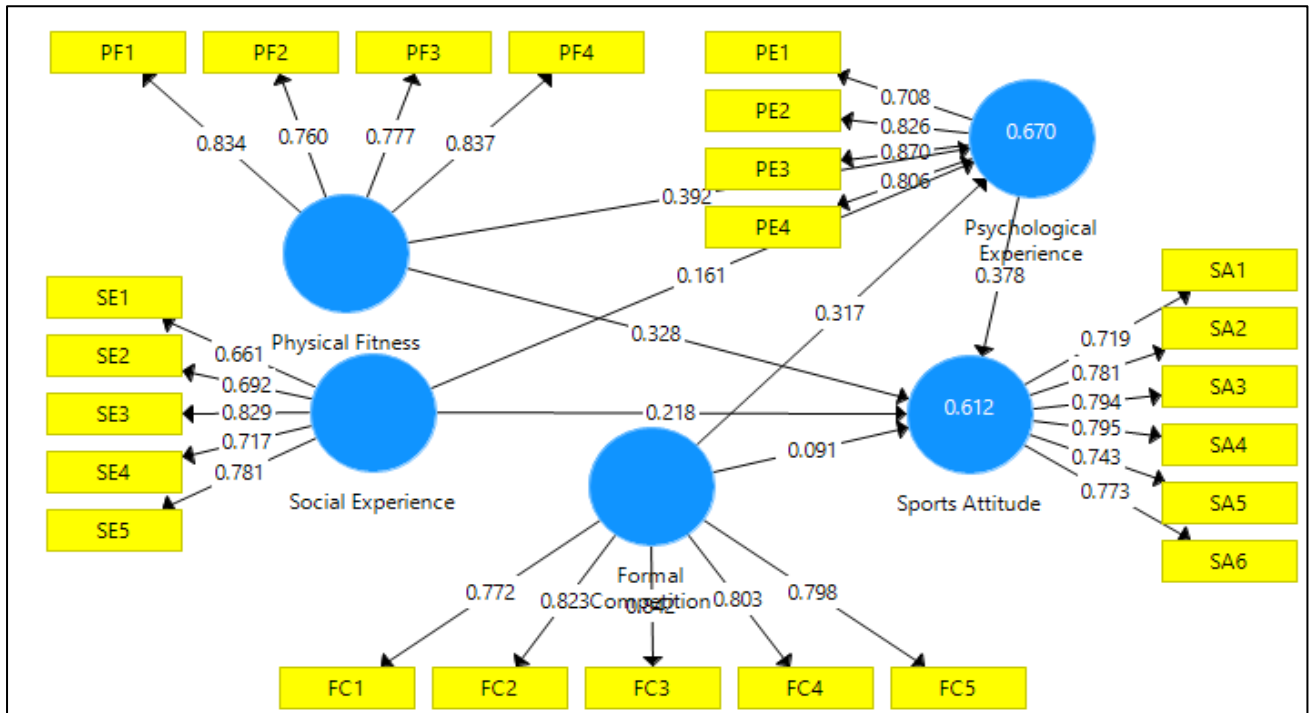


Figure 2. Measurement Model

Note: PS = Physical Fitness; SE = Social Experience; FC = Formal Competition; PE = Phycological Experience; SE = Sports Attitude of Female Undergraduate Students

**Table 2.**  
Factor Loadings

	Formal Competition	Physical Fitness	Psychological Experience	Social Experience	Sports Attitude
FC1	0.772				
FC2	0.823				
FC3	0.842				
FC4	0.803				
FC5	0.798				
PE1		0.708			
PE2		0.826			
PE3		0.87			
PE4		0.806			
PF1			0.834		
PF2			0.76		
PF3			0.777		
PF4			0.837		
SA1				0.719	
SA2				0.781	
SA3				0.794	
SA4				0.795	
SA5				0.743	
SA6				0.773	
SE1					0.661
SE2					0.692
SE3					0.829
SE4					0.717
SE5					0.781



Note: PS = Physical Fitness; SE = Social Experience; FC = Formal Competition; PE = Phycological Experience; SE = Sports Attitude of Female Undergraduate Students

After the assessment of factor loadings, the values of CR are calculated (See Table 3). It is reported that all the variables; physical fitness, social experience, formal competition, physiological experience and sports attitude

of female students have CR above 0.7. Furthermore, to assess the convergent validity, the average variance extracted (AVE) value is determined. It is found that the AVE value is also above 0.5. Finally, the discriminant validity (Henseler, Ringle, & Sarstedt, 2015) is assessed with the help of HTMT and the results are shown in Table 3.

**Table 3.**  
*Reliability and Convergent Validity*

	Alpha	rho_A	CR	AVE
<b>Formal Competition</b>	0.867	0.87	0.904	0.653
<b>Physical Fitness</b>	0.816	0.822	0.879	0.644
<b>Psychological Experience</b>	0.816	0.82	0.88	0.648
<b>Social Experience</b>	0.789	0.793	0.856	0.546
<b>Sports Attitude</b>	0.861	0.862	0.896	0.59

**Table 4.**  
*Discriminant Validity (HTMT)*

	Formal Competition	Physical Fitness	Psychological Experience	Social Experience	Sports Attitude
<b>Physical Fitness</b>	0.752				
<b>Psychological Experience</b>	0.709	0.753			
<b>Social Experience</b>	0.68	0.705	0.529		
<b>Sports Attitude</b>	0.736	0.803	0.664	0.85	

**4.2 Structural Model**

The structural model, presented in Figure 3, has been assessed with the help of PLS bootstrapping, a highly recommended technique for examining the relationship between variables (JF Hair et al., 2010; J. F. Hair, Hult, Ringle, & Sarstedt, 2016; J. F. Hair, Ringle, & Sarstedt, 2013; Hair Jr, Sarstedt, Hopkins, & Kuppelwieser, 2014). In

this process, the relationship between physical fitness, social experience, formal competition, physiological experience, and sports attitude of female students is examined to test the hypotheses. A total of seven direct hypotheses are proposed in this study and the results are given in Table 5, while three indirect hypotheses are proposed, for which the results are provided in Table 6.

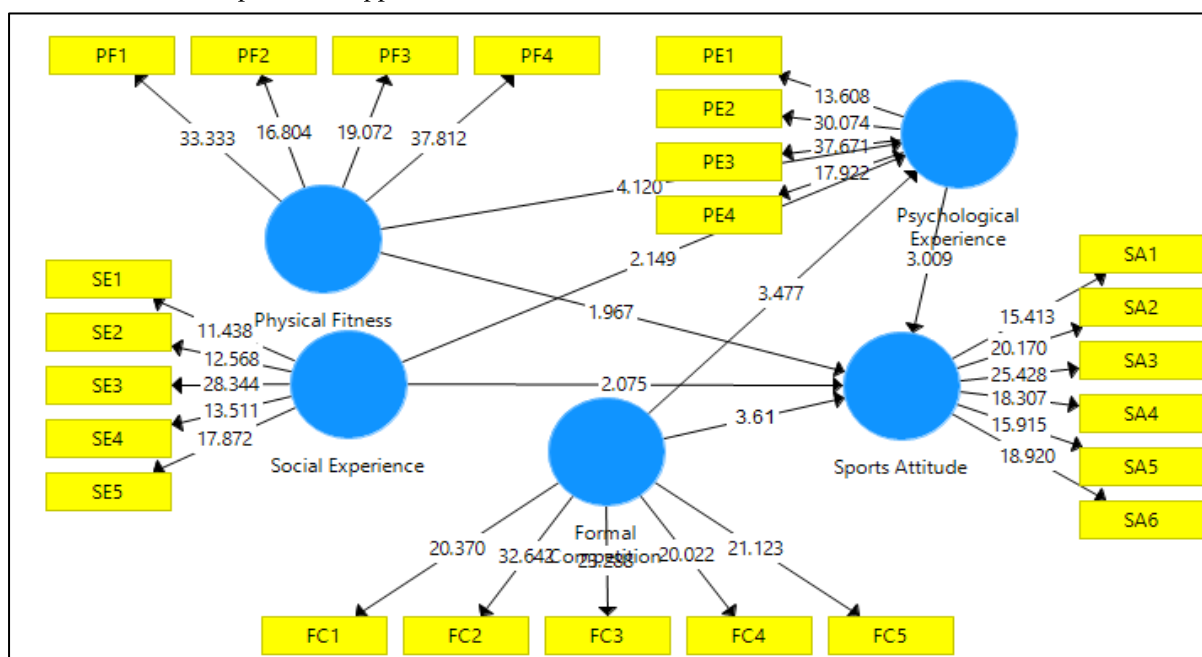


Figure 3. Structural Model

Note: PS = Physical Fitness; SE = Social Experience; FC = Formal Competition; PE = Phycological Experience; SE = Sports Attitude of Female Undergraduate Students

**Table 5.**  
*Direct Hypotheses Results*

	$\beta$	M	SD	T Statistics	P Values
<b>Formal Competition -&gt; Psychological Experience</b>	0.317	0.304	0.091	3.477	0.001
<b>Formal Competition -&gt; Sports Attitude</b>	0.091	0.086	0.025	3.61	0
<b>Physical Fitness -&gt; Psychological Experience</b>	0.392	0.405	0.095	4.12	0
<b>Physical Fitness -&gt; Sports Attitude</b>	0.328	0.332	0.167	1.967	0.05
<b>Psychological Experience -&gt; Sports Attitude</b>	0.378	0.373	0.126	3.009	0.003
<b>Social Experience -&gt; Psychological Experience</b>	0.161	0.158	0.075	2.149	0.032
<b>Social Experience -&gt; Sports Attitude</b>	0.218	0.215	0.105	2.075	0.039

**Table 6.**  
*Indirect Hypotheses Results*

	$\beta$	M	SD	T Statistics	P Values
<b>Formal Competition -&gt; Psychological Experience -&gt; Sports Attitude</b>	0.12	0.11	0.048	2.511	0.012
<b>Physical Fitness -&gt; Psychological Experience -&gt; Sports Attitude</b>	0.148	0.156	0.069	2.141	0.033
<b>Social Experience -&gt; Psychological Experience -&gt; Sports Attitude</b>	0.061	0.056	0.031	1.962	0.05

According to the results of direct hypotheses, it is evident from Table 5, all the hypotheses are supported. It bears to note that all the relationships have a t-value above 1.96 - a minimum criterion to accept the hypotheses. The beta value is positive which shows a direct relationship. Thus, it can be concluded that physical fitness, social experience and formal competition have a positive effect on sports attitude. Furthermore, physical fitness, social experience and formal competition also have positive effect on psychological experience. Finally, it is seen that psychological experience has also has a positive effect on sports attitude.

Finally, mediation effect is examined by following the instructions of Preacher and Hayes (2004, 2008). The mediation effect of psychological experience between physical fitness and sports attitude is found to be significant. Furthermore, the mediation effect of psychological experience between social experience and sports attitude is also significant. Finally, the mediation effect of psychological experience between formal competition and sports attitude is examined which is also found to be significant. Additionally, mediation effect histogram is given in Figure 4, 5 and 6.

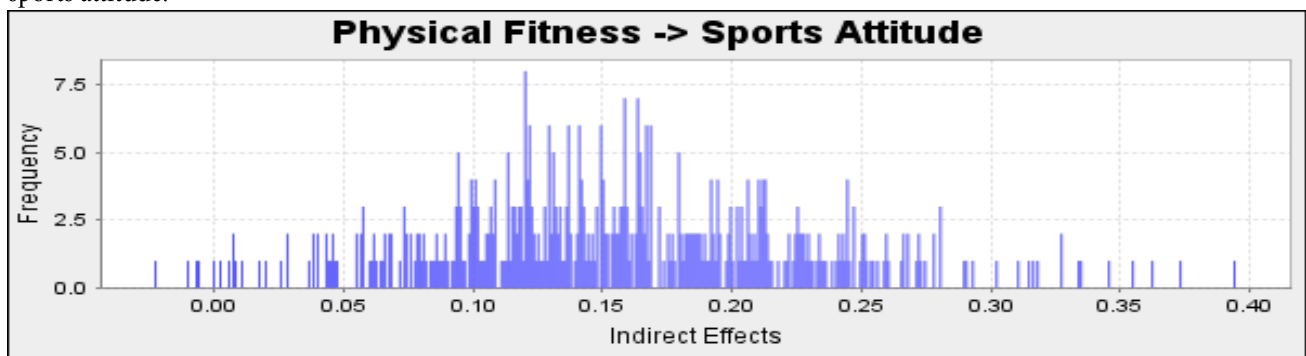


Figure 4. Indirect Effect Histogram between Physical Fitness and Sports Attitude

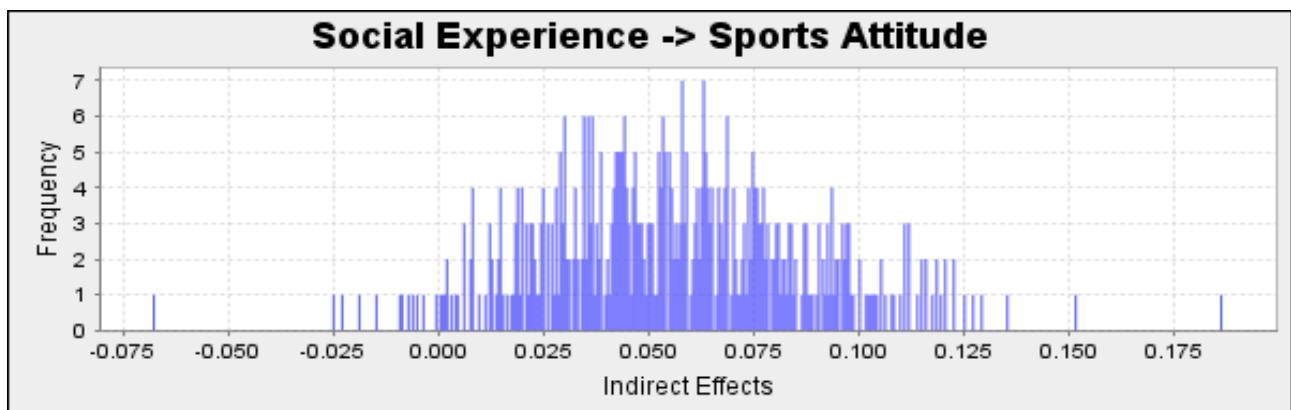


Figure 5. Indirect Effect Histogram between Social Experience and Sports Attitude

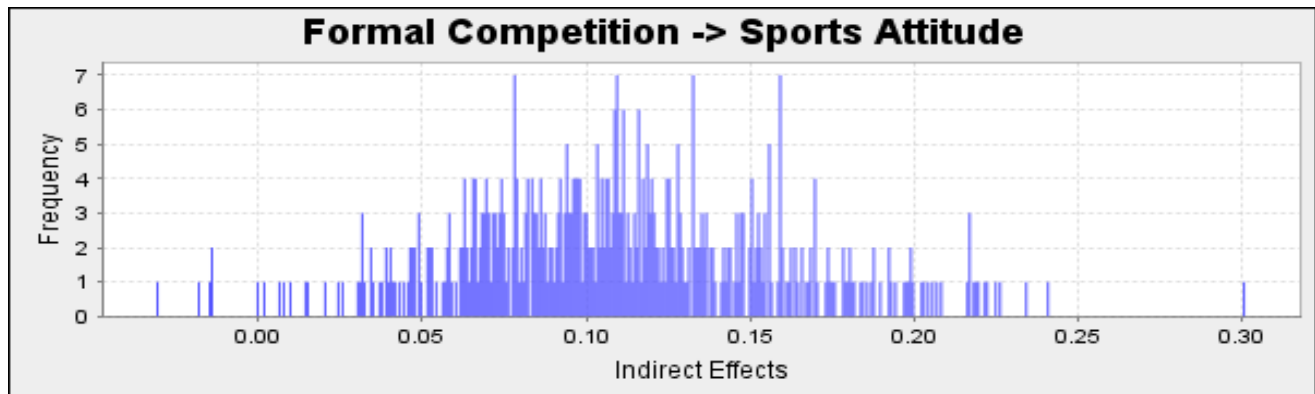


Figure 6. Indirect Effect Histogram between Formal Competition and Sports Attitude

## 5. Discussion and Conclusion

The objective of this study is to identify the factors affecting the sports attitude of undergraduate female students enrolled in universities in Saudi Arabia. For this purpose, the relationship between physical fitness, social experience, formal competition, physiological experience, and sports attitude of female students has been examined. To examine these inter-relationships, a total of 10 hypotheses are proposed which have been analyzed using statistical tools. Results of the hypotheses are designed to fulfil the key objectives of this study.

First, the effect of physical fitness is examined on the sport-related attitude of the students. A significant positive relationship is found between physical fitness and the attitude of the students. It shows that increase in physical fitness increases the positive attitude of the undergraduate students to carry out sports activities. These results are consistent with findings from previous studies which show that physical fitness and attitude have a significant relationship with each other (Gouveia et al., 2019; Stanghelle et al., 1988) Furthermore, physical fitness also has a positive role in improving the psychological experience which in turn has an important role in developing an attitude of the sportsmen which is positively influenced by the physical fitness. Increase in physical fitness, therefore, increases the psychological experience. Furthermore, social experience also leads to a better attitude among students in terms of promoting sport activities. It has a positive effect on attitude of the undergraduate students. Along with this, social experience also affects the psychological experience. Ability of social experience to influence the psychological experience has the prospective potential to enhance the attitude of students towards sports within the universities of Saudi Arabia. Moreover, formal competition also plays a similar role along with physical fitness and social experience. Formal competition increases the motivation levels among students towards improving their skills which eventually leads to the development of a more positive attitude towards sports. As highlighted in existing literature, competition and attitude has are related to one another

(Stefani, De Marco, & Gentilucci, 2015). In addition, psychological experience also enhances the sports attitude of students among universities.

This study proposes that there is an indirect effect of psychological experience between physical fitness, social experience, formal competition, and sports attitude of female students. According to this effect, it can be demonstrated that psychological experience reflects the positive effect of these factors on sports attitude of female students. Hence, results of the study show that physical fitness, social experience, and formal competition have a positive effect on the sports attitude of female students and their psychological experience. The positive effect of physical fitness, social experience and formal competition on psychological experience leads to an improved sports attitude of female students in Saudi universities.

Lastly, it bears to note that with new developments in our social, cultural, and physical environment in KSA, the driving factor for women to engage in sports have also tended to change. Today, practicing sports has become one of the key components of a health-positive lifestyle, and a key pre-requisite for maintaining one's health and improving one's psychological, emotional, and social profile. However, to inculcate a positive attitude toward practicing sports, it is important to redesign and refurbish the major sporting facilities in the Kingdom of Saudi Arabia to enable women to access any type of sporting event.

## 6. Implications of the Study

The current study has several theoretical and practical implications. Examining the relationship between physical fitness, social experience, formal competition, physiological experience, and sports attitude of female students, it explores a dynamic and culturally sensitive relationship. Although several studies are carried out on the sports activities in universities (Huri, Sulaiman, & Saad Allah, 2021; Partington et al., 2013; Sayyd, Zainuddin, Ghan, & Altowerqi, 2020), these studies do not examine the sports attitude of students in relation to physical fitness, social experience, formal competition and

physiological experience which is unique in nature. Furthermore, the current study also examines the mediating role of physiological experience which makes an important contribution to the existing body of literature on the subject. Along with these implications, this study has several implications that are important for Saudi higher education system in terms of its goal to promote the sports industry with the help of promotional activities particularly targeted at the female student population. Saudi Arabia is regrettably lacking female athletes; therefore, this study recommends that female participation must be encouraged to enhance the scope of the local sports industry.

## 7. Limitations and Future Directions

The current study introduces several key insights; however, at the same time, it also has limitations which can potentially help in designing studies in the future. The current study explores various factors which have an

influence on the attitude of students for sports' however, this study may be followed up by another study to explore the actual practice of sports activities among university female students in various facilities, through which it may be possible to determine the extent of agreement or contradiction with the positive attitude toward physical activity demonstrated by the students' responses in the present study. Studies on sports practice in other geographical regions for all segments of the population can be conducted to enrich the understandings and insights developed in the present study. This study only targets undergraduate students; therefore, future studies should aim to expand the scope and include other students.

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