Mindfulness For Sports Performance In Female Athletes

Aqsa Shamim Ahmed[1], Gul-E-Sehar[2], Saira Maqsood[3], Amna Hassan[4], Saadia Hassan[5], Rabia Karim[6], Muhammad Farhan Tabassum[7*]

[1]Department of Sports Sciences & Physical Education, Faculty of Allied Health Sciences,
University of Lahore, Lahore, 54000, Pakistan.
[2]University Institute of Physical Therapy, Faculty of Allied Health Sciences, University of Lahore, Lahore, Pakistan.
[3]Department of Psychology, Lahore Garrison University, DHA Phase 6, Avenue 4, Sector C, Lahore, Pakistan.
[4]Department of Psychology, University of Wah, Wah Cantt, Pakistan
[5]University Institute of Diet & Nutritional Sciences, Faculty of Allied Health Sciences, University of Lahore, Lahore, Pakistan.
[6]University of Home Economics, Lahore, Pakistan.
[7]Department of Mathematics, University of Management and Technology, Lahore, Pakistan.
[*]Corresponding Author: Muhammad Farhan Tabassum, _farhanuet12@gmail.com_

Abstract: The study was conducted to find the impact of Mindfulness on sports performance of female athletes. For this purpose, a sample of 200 female athletes was selected from Public and private sector universities of Lahore. Data was collected using two valid and reliable instruments. Mindfulness was measured through Five Facet Mindfulness Questionnaire (FFMQ) by Baer et al., (2006) consisting of 39 items whereas, Sports Performance was measured through Self-Rating Scale of Athletic Performance by Wolanin, (2004). Results of the study showed that the overall reliability of the scale was 0.83. The age range of most of the female athletes was 21-25 years playing mostly volleyball at the University level. Regression analysis showed that there was a positive but less significant impact of mindfulness on performance of female athletes.

Keywords: Mindfulness, Performance, Female Athletes, Lahore, Meditation

Introduction

Sports performance has been a hot topic in the past few decades and many studies have been done on factors that affect sports performance. Everything from diet to training methods has been studied. Perhaps one of the most important aspects of sports performance is the athlete's ability to train the mind to put themselves in the best situation to compete. This can come in many different forms. Mindfulness is the main focus. Mindfulness, a concept that originated from Buddhist meditation practices and was later developed and adapted by various scholars (Ludwig &. Kabat-Zinn, 2008; Crane, Brewer &Feldman et. al, 2017). Mindfulness involves

non-judgmental and moment-to-moment awareness of the present experience (Kabat-Zinn, 2003). The number of evidence showing that there is a positive relationship between mindfulness and athletic performance (Gooding & Gardner, 2009; Josefsson, Gustafsson, Iversen Rostad, 2020; Karim et. al, 2020) and that mindfulness-based interventions increase athletic performance has been growing.

Stress in professional sports is often experienced during training and competitions as well as during the competition period (Vveinhardt & Kaspare, 2022). According to research conducted by Borkoles et al. (2018) (Borkoles et.al, 2018), competitive sport is always associated with

stressful experiences. Garinger et al. (2018) argue that athletes experience a host of stressors, including daily worries, conflicts, relationship problems, and training difficulties. If stress is not managed effectively, it can intensify over time and, in the long run, can have negative consequences for the athlete. One of the most popular stress management measures is mindfulness. Mindfulness can be cultivated through thought training, and accumulated rigorous evidence has indicated that mindfulness-based interventions can enhance physical health, mental health, cognitive and affective outcomes, and interpersonal outcomes (Creswell, 2017).

Successful sport performances in high-level competitions require harmony among the given athlete's physiological, psychological, and interpersonal capacities and readiness, with mindfulness potentially affecting an athlete's ability to achieve peak performances (Vignaud, et al. 2018). Mindfulness is dedicated to the pursuit of excellence in a given field, such as athletes (Buhlmayer et. al, 2017; Pineau et. al 2014). Mindfulness has been found to be positively associated with flow in athletes, regardless of gender or sport type (Creswell, 2017, Vignaud, et al. 2018) and mindfulness-based interventions have been demonstrated to enhance sport-associated physiological activations (e.g., salivary cortisol levels and immune responses) and psychological status indicators (e.g., flow and anxiety reduction), as well as sport performances themselves (e.g., shooting and dart throwing performances) (Buhlmayer et. al, 2017; Ahmed, Sadeea & Hassan; 2020).

It should be noted, however, that the majority of sport studies regarding mindfulness have emphasized either mindfulness-related physiological or psychological aspects of fine motor performance (e.g., shooting), with few studies investigating gross motor performance (e.g., running). Mindfulness-based interventions have been linked to increased executive functions where mindfulness affects specific brain regions to enhance executive functioning (De Petrillo 2009). In the study conducted by Gross et al. comparing the traditional Psychological Skills Training (PST) and Mindfulness-acceptance-commitment (MAC) programs, it was notably found that the MAC intervention reduced depression, anxiety, and distress in athletes (Gross et al 2018). Preliminary studies conducted reveal some of the benefits of mindfulness for athletes. One of them is to make it easier for athletes to process muscle memory, feeling, and cognition. In addition, these benefits will prevent athletes from being on autopilot by increasing attention, affection, and behavior according to the conditions (Kaufman et al., 2018).

Mindfulness is considered a viable alternative approach to preparing athletes for optimal performance. (Harita, Suryanto, & Ardi, 2022). This preparation is done by training the athlete to focus on the goal in the present moment and without judging the experience (Kaufman et al., 2018). In addition, mindfulness practice can change negative emotions into positive emotions, peace of mind, and relaxation (Mutohir et al., 2017). This happens through paying attention to what it is, acceptance of experience, disconnection, and clarity about the internals of one's life (Ie, Ngnouen, et al., 2014). Mindfulness has a more beneficial potential related to the mental readiness of athletes to support performance on the field. This is because athletes are trained to develop awareness and acceptance of the present moment without having to scan for negative experiences (Pineau et al., 2014). Furthermore, the increased performance of athletes after receiving mindfulness interventions shows a positive impact on making it easier for athletes to be in the flow zone. A good flow balance combines action with awareness with intrinsic satisfaction (Chen & Meggs, 2021). This indicates that the athlete's flow zone will affect the resulting performance. Therefore, mindfulness interventions are interesting to study

because the intervention is given so that athletes can better deal with an experience.

Athletes spend much of their time mentally and physically preparing for athletic competitions in hopes of improving playing performances. However, many athletes are inconsistent with their athletic performances due to anxiety, lack of self-confidence, eating disorders and other barriers (Mamassis & Doganis, 2004; Ahmed, Tabassum & Younas, 2019). Some athletes dwell on past performances or worry about future actions, and they may lose focus on their current situations. Such athletes attend to their internal thoughts and feelings instead of fully immersing themselves in the present moment. Mindful athletes may have heightened awareness and acceptance of internal and external stimuli that may allow them to devote their attention and energy to their athletic performances (Moore, 2009). Mindfulness, or non-judgmental present-moment awareness, may help athletes improve their concentration, thus helping them improve their sports performances (Bernier, Thienot, Codron, & Fournier, 2009; Gardner & Moore, 2004). Being mindful can also help athletes enjoy their sports, which can reduce the potential for burnout. Despite how physically ready athletes are for competition, their performances may suffer if they do not have control over their minds therefore, the present study is an endeavor to study the effects of mindfulness practices on sports performance of female athletes.

Methodology

Sample: Sample of the study was 200 female athletes playing Basketball, Volleyball, Table Tennis and Badminton of Government and Private Sector Universities of Lahore with the help of simple random sampling. The design of the study was cross-sectional in nature. Data was collected using the following tools:

Five Facet Mindfulness Questionnaire: The 39-item Five Facet Mindfulness Questionnaire (FFMQ) was used as a reliable and valid comprehensive instrument for assessing different aspects of mindfulness in athletes (Baer et al., 2006). The five facets are observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience.

Self-Rating Scale of Athletic Performance: Self-Rating Scale of Athletic Performance was developed by Wolanin in 2004. The rating scale is a direct measure of athletic performance and includes variables of performance such as concentration, strength, competitiveness, motivation, quickness, fitness, endurance, mechanics, aggressiveness, agility, and team cohesion.

Demographic Variables: Along with the questionnaires a separately developed demographic sheet was used.

Procedure: Two factors were utilized including Care preparing and Sports Performance. Data was gathered utilizing the two unique apparatuses including A Mindfulness Questionnaire (FFMQ). The 39-item was utilized as a dependable and legitimate thorough instrument for surveying various parts of care in competitors. The other scale was Self-Rating Scale of Athletic Performance, created by Wolanin. The rating scale is an immediate proportion of athletic execution and incorporates factors of execution, for example, fixation, quality, intensity, inspiration, speed, wellness, perseverance, mechanics, forcefulness, deftness, and group attachment

Data Analysis Procedure: Data was tabulated and analyzed with SPSS version 23.0. Descriptive statistics was used to classify and summarize the data. Regression Analysis was

used for examining the effect of mindfulness on sports performance of female players.

Results

To find out the consistency of the collected data, Cronbach's Alpha reliability test is applied and the results are listed in table-1.

Table 1 Cronbach's Alpha Reliability Statistics (n=200)

Scales	No. of Items	Reliability Statistics
Mindfulness Training	39	0.83
Athletic Performance	11	0.77
Over-All	**50**	**0.83**

Table-1 shows the data consistency of the questionnaire "Impact of Mindfulness training on sports performance of athletes. The same table shows that the overall (α=0.83) and partially reliability (α=0.83 & 0.77) of the collected data through the said instrument are very good. Therefore, it is a evidence that the responses of the female athletes of the universities (PU, GCU and UMT) are reliable.

Table 2 Age Distribution of the Participants (n=200)

Age	Frequency	Percent	Cumulative Percent
16—20	36	18.0	18.0
21—25	155	77.5	95.5
26—30	8	4.0	99.5
31 & Above	1	0.5	100.0

Table-2 shows the age frequency distribution of the athletes. The mean age of the students is 22.03 with 1.93 standard deviation (SD).

**Figure 1** Pie Chart of Age Distribution of the Participants
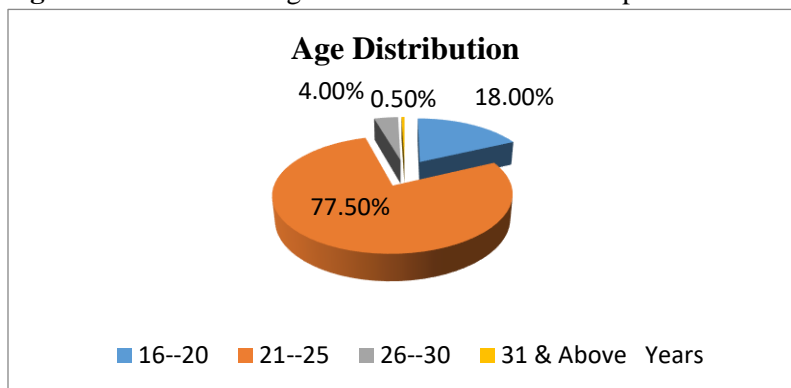
Note: Figure-1 shows that the majority (77%) of the student are age between 21 to 25 Years. There is only one athlete who is more than 30 years. 95.5% of the participants are age of 16 to 25 years.

Table 3

Game Wise Distribution of the Participants (n=200)

Games	Frequency	Percent
Basket Ball	58	29.0
Volley Ball	84	42.0
Table Tennis	27	13.5
Badminton	31	15.5

Figure 2 Pie Chart of Game Wise Distribution of the Participants.

Games Wise Distribution

- Basket Ball
- Volley Ball
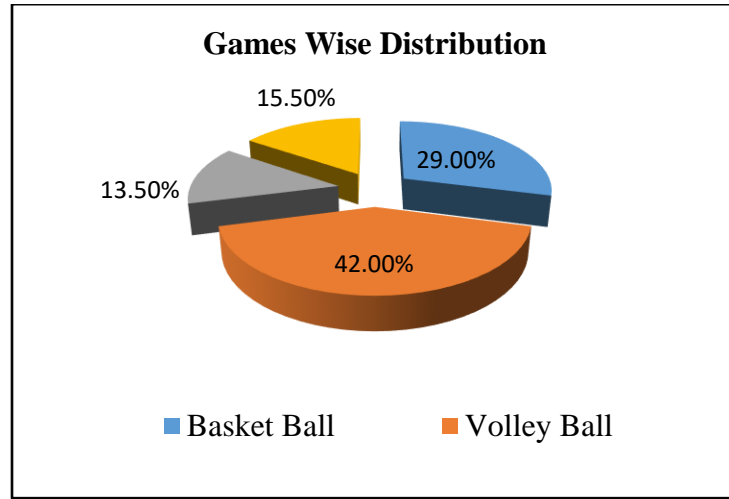
Note: Games wise distribution of the participants is listed in the table-2. The table shows that 82 (42%) students out of 200 are volleyball players. This figure shows that volleyball is most popular game in female students of the universities while the least number (15.5%) of players are from table tennis. The figure-5 shows a big slice for volleyball game.

Table 4 Playing Levels of the Participants (n=200)

Playing Levels	Frequency	Percent
District	42	21.0
University	113	56.5
National	45	22.5

Playing levels of the participants is listed in the table-5. The same table shows that 56% of participants are playing at university level.

Figure 3 Pie Chart of Playing Levels of the Participants

Playing Levels of the Participants
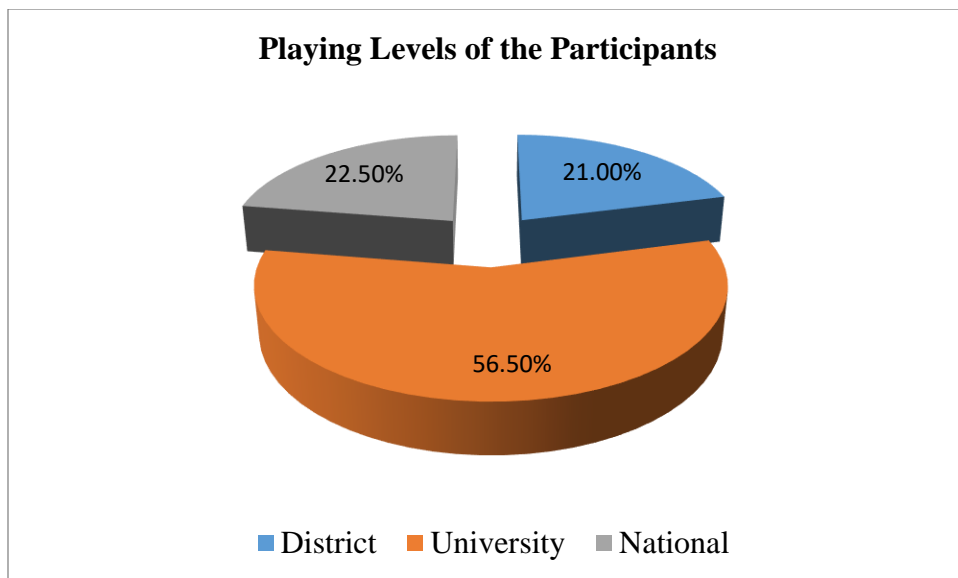

District ■ University ■ National

Figure 3 indicates a big slice for university level players while a small portion is for national level players.

The same table and figure also show that there is no international level player is included in the sample.

Regression analysis technique is applied to determine the impact of mindfulness training on athletic performance of the university students. The generated score variables of mindfulness (MFN) and athletic performance (AP) are used to find out the regression model. The following regression model is designed to measure the effect of mindfulness training on athletic performance.

Model-1: Athletic Performance = f (mindfulness training) + ε

$$AP = \beta_0 + \beta_1 (MFN) + \varepsilon$$

Where β_0 is intercept, β_1 is slope of the line and ε is random error.

Table 5 Model Summary (n=200)

Model	R	R^2	Adj R^2	SE
1	0.187	0.035	0.30	0.59

Predictor= Mindfulness Training, Dependent Variable= Athletic Performance

The table 5 shows the summary of regression model. This table includes correlation (R), coefficient of determination (R^2), Adjusted R^2 and standard error (SE) of the estimate of the model. The value of R^2=0.035 shows that only 3.5% of the variability in athletic performance of the university students may be explained by the regression model (Eq-1). The value of adjusted R-square is very low but the over-all model is significant as shown in table-18.

Table6 Analysis of Variance for Significance of the Models (n=200)

Model	Items	Sum of Squares	df	Mean Square	F	P
1	Regression	2.490	1	2.490	7.195	0.008
	Residual	68.530	198	.346		

Predictor= Mindfulness Training, Dependent Variable= Athletic Performance, df= Degree of freedom, F= F-distribution statistic, p=probability value

To examine the significance of the fitted models, the analysis of variance (ANOVA) technique is used under the regression analysis. The results of ANOVA table show that the p-values for the model is less than α=0.05, therefore, it is concluded that fitted model is significant (p<0.01).

Table 7 Regression Coefficients of the Models (n=200)

Model	Coefficients	B	SE	t	P
1	(Constant)	2.83	0.36	7.94	.000
	MNF	0.27	0.10	2.68	.008

Dependent Variable= Athletic Performance, Independent Variable = MNF

The regression coefficients (β), standard error of the estimate (SE), t-statistic value and significant p-values for both the models are listed in table-7. The β_1 (slope) coefficient for the regression line has positive value ($\beta_1=0.27$) which indicates that mindfulness training has positive impact on athletic performance of the university students. The t and p-values show that the MNF has significant (p<0.01) impact on athletic performance. On the basis of the results in table-6 &7, the fitted model can be written as:

Model: Athletic Performance = f (Mindfulness Training) + ε

$$AP = 2.83 + 0.27 \text{ (MFN)}$$

Discussion

Present study is intended to examine the impact of mindfulness training on sports performance of female athletes. For this purpose, two hundred female athletes from the universities of Lahore were selected. Results of the study showed that the Mean age of the students was 22.03±1.93 years, mostly students (42%) were playing volleyball game in their universities and 56% were playing at university level. Over-all Cronbach's Alpha reliability statistic of the instrument was 0.83. This study showed that the impact of mindfulness training on athletic performance had less but positive and significant. These findings in line with other notable systematic reviews and meta-analysis studies showing that mindfulness-based interventions increase athletic performance (Bühlmayer. Et. al, 2017; Noetel, Ciarrochi, Van Zanden & Lonsdale, 2019).

Similarly, Gardner and Moore (2007) reported that the mindfulness approach suggested that through mindfulness and acceptance-based strategies, athletes increased acceptance of internal and external experiences, remained fully focused and behaviorally engaged in performances related tasks which indicated improvement in performance.

Although, the results show less positive but significant impact our findings have suggested that mental training is an integral part of athletic performance along with physical training. A wide literature has shown that mindfulness training of 5-6 weeks can enhance the athletic performance (Aherne, Moran, & Lonsdale; 2011; Nien. Et. al, 2020; Javed et. al, 2022). Less positive relationship of mindfulness with athletic performance might be due the less awareness of mindfulness training in the sports realms in Pakistan. Moreover, the mean of the sample is 20-22 years and this is the time of their early sports career where youngsters are mostly involved in the physical trainings and don't focus on the mental trainings. Also, more than half of the sample includes the players participating at the University level which do not involve mental training of any kind. The results could be more promising if study was done only on the elite athletes the sample had more variability regarding to age.

Birrer et al. (2012) assume that mindfulness interventions change behavior by helping individuals deal with cognitive and emotional processes. Mindfulness interventions lead a person to be open to negative thoughts, resulting in positive coping with negative conditions in various conditions and everyday life. Individuals trapped in negative expectations tend to have difficulty concentrating attention on signals relevant to the stimulus in the field. Mindfulness exercises oriented toward training acceptance of stimuli will lead individuals to effective stimulus control strategies. This helps the athlete to remain open-minded and non-judgmental in every condition experienced (Goodman et al., 2014; Khan et al, 2021).

Conclusion

Based on the research that has been done, it can be concluded that Mindfulness has a positive impact on athletic performance of female players. For trainers, these findings can provide insight into the importance of mental training. These exercises need to be done side by side with physical exercise. This condition will prepare athletes to be optimal physically and mentally when facing matches. In addition, these findings are also a reference for developing coordination with various parties in dealing with problems experienced by athletes. On the other hand, this research can also be a reference for practitioners and researchers. MSPE training can be developed as an effort to improve or solve problems related to an athlete's condition.

Recommendations: The results of the study will be helpful for the researchers, students, teachers and school administration to improve performance of the athletes through mindfulness training sessions. Further study may be carried out at the elite level and comparison of different games should be made. The results will also be helpful for government to make policies in the country. This study suggests that universities should have more structured programs for competitive sports from grass root to district or province level.

Limitations: This descriptive and analytical study is conducted on the reposes of the female students in only four universities of the Lahore district. The instrument was predetermined and subjective in nature. The study lacks the experimental nature of the study. Only 200 females were selected.

Conflict of Interest: The authors report no conflict of interest.

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Contribution: ASA and GES conceptualized the study, developed basic framework and compiled results section, SH and MFT conducted the analysis and prepared data sheet, SM and RK wrote the manuscript, did data collection and conceptualized the study. All the authors finalized the manuscript for publication.

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