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**Impact of Pandemic-Related Training
Disruptions on Jumping and Throwing Abilities
in Athletes**

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Abstract

The proposed study was suggested to increase the knowledge about the suffering impact of COVID-19 shut down in sports person and suggest smearing accurate well-being protocols in terms of the exercise reintroduction with consideration of gender, sports type, and participant competitiveness. The goal of the study is to understand how the corona virus lockdown measure affected athletes jumping and throwing ability who were unable to participate in their regular daily practise. Methodology: Based on the design of the study, Convenient Sampling technique was adopted including male and female age between 15 to 30years old. In 3 physical best performance only best, one considered as a best performance. Throwing events (shotput, hammer throw, discuss throw & hammer throw). In Long jump & triple jump were taken within 30mins recovery time. Psychological parameters (Anxiety, visualization, motivation & Self-confidence) were determined through modified questionnaire. From assessing the physical personal best of the athletes, it was found out that athletes participating in discuss throw, hammer throw and shot-put shows significant reduction in their peak performance (P values= 0.007, <0.001, 0.028 & 0.08 respectively). Athletes from javelin throw, long jump and triple jump showed a decrease in performance, however, it was not significant. Results: Of the recruited 64 athletes 76% participants were males and 24% were females with mean age of 20.51 ± 3.59 years. Male were taller and heavier than female athletes (P =<0.001, & 0.04 respectively). Based on the performance level of athletes, 50% of the participants were performing at district level, while 25% each were performing at provincial and national level. From assessing the impact of the psychological parameters, it was observed that corona virus pandemic affected both males and females equally psychologically (mean 3.89 ± 1.02) and exhibited signs of depression (3.76 ± 1.01). from the lock down it was observed that males were more uneasy in confined situation as compared to female (3.01±1.103 Vs. 3.37±.942, P=0.05) and they felt their body less relaxed than female (3.37±.942 Vs. 3.37±.942, P= 0.05).

Keywords: Covid-19, Athletes, Psychological parameters, Lock down

INTRODUCTION

The year 2020 presented one of the most daunting survival challenges in the form of the Covid-19 pandemic, which was declared by the WHO on 11th March, 2020. The pandemic caused widespread devastation across the globe, with a staggering 181,760,885 confirmed cases and 3,937,410 deaths as of June 2021, as reported by (Sohrabi et al., 2020). The use of lockdowns as an effective strategy for social distancing in the fight against the Covid-19 pandemic has been well established. However, there is growing concern about the psychological impact of lockdowns on the general public. Evidence from previous pandemics, such as SARS outbreak in 2003, suggests that quarantine and isolation measures may lead to a range of negative psychological consequences, including stress, dread, depressing signs and symptoms, solitude, insomnias, and resentment (Tang et al., 2020). The Covid-19 pandemic has significantly impacted the mental health of individuals in Pakistan, with 75% experiencing moderate to severe stress and over one-third suffering from moderate to severe anxiety, according to initial findings from the Agha Khan University in 2020. Athletes have also been affected by the pandemic, with restrictions preventing them from participating in regular sporting and routine events. The inability to engage in physical activity can compound the stress and anxiety caused by social isolation. The closure of training arenas has negatively affected the mental well-being of athletes, and all national and international sporting events have been banned or postponed to protect the health of athletes worldwide. (Gautret, Al-Tawfiq, & disease, 2020). The limitation on movements and training has not only affected the mental health but also the physical health of athletes. Many athletes have been without training or have had very little training for around one year, which could have detrimental effects on their overall well-being and performance. Thus, there is a need to investigate and quantify the impact of the Covid-19 pandemic on the psychological well-being and best performances of players in Peshawar. This study aims to explore the influence of the pandemic on the psychological well-being and physical performance of athletes, which could have important implications for developing interventions to support the well-being of athletes during pandemics and other situations of restricted mobility.

LITERATURE REVIEW

The breakout of COVID-19 as a major medical disaster had adversely influenced everyday life, affected physical and mental health, and has threatened economic and social progress (Kang et al., 2020). Social distancing measures have been discovered to be particularly harmful to mental well-being in studies investigating the psychological effects of past pandemics and epidemics (Taylor, 2022), with signs for instance, post-traumatic stress disorder due to infection concerns, lengthier quarantine period, anger, exhaustion, insufficient supplies, insufficient data, and economic damage (Brooks et al., 2020). Same results in the COVID-19 epidemic have been observed, including a link between damaging alterations in health behavior (activity level, sleep, alcoholism, and smoking) and higher emotional stress (anxiety, stress & depression) (Stanton et al., 2020) ,in addition to higher psychosocial distress among those recognized as existence in risk of being infected with virus (Gao et al., 2020). The hypothesis that athletes are more

susceptible to mental problems compared to non-athletes in population, there is a developing evidence base focusing on understanding the psychological impact of the COVID-19 pandemic on sportspeople. This forced solitude has create anger and dissatisfaction amongst athletes as the daily training has been disrupted and the majority of the competition has been cancelled. (Toresdahl & Asif, 2020) Numerous sporting events, as well as the 2020 Tokyo Olympics and Paralympics, have been cancelled or postponed in order to adhere to physical distance standards; most athletes have been forced to cease training due to limitations on public gatherings. During the lockdown, professional athletes' total training volume and performance declined significantly (Muriel, Courel-Ibáñez, Cerezuela-Espejo, Pallarés, & Performance, 2020). Some specialists have observed a decrease in physical activity among young athletes in a socially isolated world (Papaioannou et al., 2020). Researchers have reported that long-term limitations may result in widespread youth dropout from sports (Watson & Koontz, 2021). When athletes restart sports activities after an unplanned and enforced suspension, they sustain more injuries (Myer et al., 2011). This causes further decline in their overall physical fitness as a result of the inactivity necessary for rehabilitation. To avoid such injuries, adolescent athletes' fitness levels should be checked before they resume athletics (Al Attar & Husain, 2021)

METHODOLGY

The study was conducted between April 2020- November 2021 in Qayyum Sports Complex, Hayatabad Sports Complex, and Islamia College Peshawar during the annual district games from April 2020 to November 2021. **Study Design** Current study employed cross-sectional design, whereas observation about the psychological parameters as impacted by COVID-19 was gathered followed by recording of the personal best performances of the athlete in their respective games. **Sampling Technique** Based on the design of the study, Convenient Sampling technique was adopted. In 3 physical best performance only best, one considered as a best performance. **Participants Selection** The inclusion study of the current study was as under:

- The study included athletes who had been exercising or practicing their skills prior to the Covid-19 outbreak, as well as after the pandemic.
- Athletes who participated at domestic, national, and international championships
- Athletes in the age range of 15 to 30 years confirmed by their respective sports record
- Athletes who participated jumping events (long jump, triple jump) and throwing events (discuss throw, shot put, hammer and javelin throw).

Exclusion criteria

- Participants that never competed in any championship and age range do not fall in the limit of 15 to 30 years.
- Participants participated in other athletic games.
- Participants which play for recreational purposes or physical fitness.

Sample Technique and Sample Size

The sample size of the study was calculated through openepi software for calculation of sample size, whereas by keeping the power of the study at 80%, margin of error α at 0.5% and assuming the prevalence of the psychological problems due to Covid at 50%, it was calculated that a total of 64 participants would be required to be sign up. Participants belong to 2 different sports categories i.e jumping events (Long jump and Triple jump) and throwing events (Discuss, Hammer, Javelin and shot put). Psychological parameters were determined through modified questionnaire.

- Questionnaire adapted from different motivation-based tools (Michelle Fortier, 1995 Journal of Sports & Exercise Psychology,17, 35-53) consisting of 48 responses about psychological parameters was used for the psychological parameters assessment of the participants.
- Questionnaire was translated into local Urdu language for the easy understanding of the participants.
- After validation of the questionnaire, reliability of the questionnaire was determined through a small scale pilot study $n= 10$, whereas Cronbach alpha value was determined as 0.85 showing acceptable reliability of the questionnaire for gathering the information under investigation
- Questionnaire was provided to all participants & asked to fill out the questionnaire according to their different psychological experiences during Covid-19 Pandemic
- Participants demographic data was gathered that includes weight, height, BMI and age range.

Data Analysis

A detailed record of the participants' routines during the Covid-19 pandemic, as well as any exposure to the infection, was also documented.

The study reported all data in terms of mean values and standard deviation (SD), which were calculated using SPSS software, (Version 20 or above, IBM). The normality distribution of data was assessed using the Shapiro–Wilk test. The psychological parameters of male and female players were determined by conducting independent sample t-tests. Additionally, the analysis of variance (ANOVA) test was used to compare the mean differences in performance between different events such as running, jumping, and throwing. Furthermore, the ANOVA test was utilized to determine the mean difference in performance between athletes competing at the national, provincial, and district levels. The athletes' pre and post-Covid personal best performance was evaluated using paired sample t-tests.

RESULT

The current study recruited a total of 64 athletes with age range 20.51 ± 3.59 years. The data for all the participants were analyzed through SPSS and after confirming the normality of the data through Shapiro-Wilk test, descriptive and inferential statistics were calculated. The data is presented with mean and standard deviation and tabulation of the data has been made where necessary.

Table 1.1: General Effects of Covid

Variables	All participants (n= 64)	Male (n= 35)	Female (n=29)	P value
The Coronavirus (COVID-19) outbreak impacted my psychological health negatively	3.89 ± 1.02	3.91 ± 1.04	3.86 ± .97	0.83
I am depressed due to of the Coronavirus (COVID-19)	3.76 ± 1.01	3.73 ± 1.02	3.65 ± .86	0.64
The Coronavirus pandemic has NOT made me feel any worse than I did before	2.28 ± 1.05	2.24 ± 1.03	2.40 ± 1.12	0.62
Having Fever, flue, and cough means you are infected	3.79 ± 1.02	3.82 ± .992	3.69 ± 1.10	0.73
General effects of Covid	13.72 ± 1.65	13.70 ± 1.71	13.80 ± 1.47	0.73
Average of General effects	3.43 ± .41	3.42 ± .42	3.45 ± .36	0.75

Table 1.1 shows that on average the corona outbreak affected the general health of the athletes (mean 3.43 ±.41). They showed to be impacted by corona pandemic psychologically (mean 3.89 ± 1.02) and exhibited signs of depression (3.76 ± 1.01). They were also equipped with relatively good knowledge about corona pandemic. The comparison between male and female as determined through independent sample t-test did not show any significant difference and equally affected both female and male athletes($p>0.05$).

Table 1.2: The effects of lockdown and the coping mechanisms of all participants divided by gender

Variable	All participants (n= 151)	Male (n= 116)	Female (n=35)	P value
I feel unease at home	3.31 ± 1.06	3.01 ± 1.10	3.37 ± .94	0.05
I feel comfortable when I am alone during Covid 19 pandemic	3.34 ± 1.10	3.30 ± 1.07	3.49 ± 1.19	0.32
I feel nervous to go back to playgrounds	3.02 ± 1.11	3.02 ± 1.13	3.03 ± 1.04	0.8
I feel jittery to go to gym	3.15 ± 1.05	3.13 ± 1.05	3.20 ± 1.05	0.86
I am worried about how to perform well after a lockdown	3.62 ± 1.01	3.62 ± 1.06	3.60 ± .81	0.89
My body feels tight during lockdown	3.08 ± 1.07	3.14 ± 1.06	2.89 ± 1.10	0.05
I feel my stomach sinking during lockdown	3.26 ± 1.02	3.28 ± 1.03	3.20 ± .99	0.89
I am concerned that I won't be able to concentrate on my game	3.13 ± 1.17	3.09 ± 1.18	3.23 ± 1.16	0.56

I am thinking to reset my goals	2.96 ± 1.08	2.95 ± 1.11	3.00 ± 1.00	0.67
I had exciting experiences in lockdown	2.81 ± 1.06	2.79 ± 1.04	2.89 ± 1.15	0.72
I discovered the new training techniques during lockdown	3.18 ± 1.06	3.18 ± 1.09	3.17 ± .98	0.93
I feel a lot of personal satisfaction while mastering certain activities during lockdown	3.07 ± 1.24	3.09 ± 1.28	3.03 ± 1.09	0.93
Lock Down	37.93 ± 5.61	37.88±5.85	38.09 ± 4.81	0.85
Average	3.16 ± .46	3.15 ± .48	3.17 ± .40	0.81

Table 1.2 shows that corona equally affected male and female athletes such as going to the gymnasium or returning back to training. Both genders were equally concerned about how would they perform after corona lockdown and therefore both were of the view to reset their goals. Both males and females tried to discover new techniques of training during lockdown which remained a point of satisfaction for them. However, males were more uneasy in confined situation as compared to female (3.01 ± 1.103 Vs. 3.37 ± .942, P=0.05) and they felt their body less relaxed than female (3.37 ± .942 Vs. 3.37 ± .942, P= 0.05). The reason could be that female culturally passes a lot of time in home and confined environment compared to females. The overall score of 37.93 ± 5.61 on a scale of 60 shows that lockdown situation in Covid exhibited 63% deleterious effects on the psychological health of the athletes.

On the Basis of Events

Throwing Events

From the throwing events, 04 categories i.e Discuss throw, Hammer throw, Javelin Throw and Shot put players participated and their best performance was compared with pre-Covid best through paired sample analysis. The details are as under **Table 1.3**

Event	Number of Participants	Pre Covid Best	Post-Covid best	P value
Discuss throw	11	33.02 ± 4.36	31.88 ± 3.21	<0.001
Hammer Throw	4	34.08 ± 7.19	32.88 ± 6.7	0.028
Javelin Throw	16	45.25 ± 11.25	45.97 ± 10.48	0.45
Shot Put	16	8.57 ± 2.46	7.59 ± 2.05	0.08

From the table 1.3 it could be ascertained that majority of the players in throwing events were significantly affected by the Covid-19 pandemic. The decline in performance is visible in all the events except Javelin throwers.

Jumping Events

Players from 2 categories i.e. triple jump an long jump were recruited and their best performance was assessed with old performance with the following details in **Table 1.4**

Event	Number of Participants	Pre Covid Best	Post-Covid best	P value
Long Jump	10	5.31 ± 0.91	5.17 ± .77	0.94
Triple Jump	7	9.85 ± 2.26	9.69 ± 2.74	0.65

From the table 1.4, it is obvious that the performance of the players in long and triple jump was minimally affected during the time of the COVID 19 epidemic.

DISCUSSION

In the global effort to suppress and control the spread of Coronavirus disease, various countries have implemented mandatory communal distancing measures as a means of mitigating the pandemic's impact. Our main findings showed that on the average the corona outbreak affected the general health of the athletes. They showed to be impacted by corona pandemic psychologically and exhibited signs of depression. They were also equipped with relatively good knowledge about corona pandemic. In corroboration to our results, a study found out that the affected athletes' Following a positive COVID-19 test, there was a reduction in overall wellness, elevated stress levels, and negative mood state. (Wagemans et al., 2021). It further found out a rise in the events of hopelessness feelings such as anxiety, weariness, and sadness. A literature review identified three studies that analysed the effect of the COVID-19 outbreak on the psychological health of professional athletes. It is worth noting that all of these studies reported a decrease in the total mental state score of the athletes. (Villaseca-Vicuña, Pérez-Contreras, Merino-Muñoz, González-Jurado, & Aedo-Muñoz, 2021). Additionally, the study conducted by Krzywański et al. revealed that COVID-19 infection in athletes is typically mild with less complications. Athletes who are under 26 years old, particularly females, shows lack of noticeable symptoms when infected with COVID-19. (Krzywański et al., 2022). In our study the athletes belonged to 2 different event categories i.e., **jumping and throwing**. Their physical personal best were determined and compared with their previous best authenticated by their peers and coaches. According to a study, infection with COVID-19 results in a decline in muscle strength and endurance, enzyme activity, and malformed mitochondrial activity. (Börjesson, Arvidsson, Rensburg, & Schweltnus, 2018). This results in deficit athletic performance, which may persist for several weeks following the infection (Pillay et al., 2020). Players from 2 categories i.e. triple jump and long jump were recruited and their best performance was assessed with old performance. Performances of the players in long and triple jump were minimally affected during the covid 19 pandemic. Similar to our results, A study demonstrated that physical performance in athletes varied significantly before and after COVID-19 infection and did not reveal any significant difference in the height of countermovement jumps (Wagemans et al., 2021). Another study has found that the training volume during lockdown confinement period was likely inadequate for professional athletes to maintain their competitive-level jumping power. These finding were reported by (My et al., 2022). The impacts of the COVID-19 lockdown on lower body strength assessment were also examined in another study by (Tsoukos et al., 2022) which found a decrease in performance in both male and female athletes. Specifically, the Countermovement jump proficiency of athletes in the year 2020-2021 was considerably decreased compared to their competency and performances in the pre-COVID period of 2016-2017 and 2018-2019. Present study encourages specialists and health care practitioners to provide sufficient mental health support to athletic community amid the Covid-19 pandemic through consultation, guidance, counselling sessions and cognitive skills training

programmes. As far my knowledge, there is no current research that investigates the effect of the pandemic on selected mental health parameters and physical performances of athletes in Peshawar district. The results of this study have been assessed with reliable and valid measuring tools and methods, in standardized conditions. This study has many methodological strengths that make it noteworthy. To start with, the diversified sample comprised of athletes from various ages and career phases, including individual belongs to different sports teams categories and from various parts of the country. The results of this study are quite conclusive; however, our findings could not be generalised. Additionally, present research could provide the basis for a broad scale, anticipated study investigating the impact of COVID-19 infection on physical performances and cognitive health of athletes. The bulk of the athletes in the study were from Pashtun ethnic community hence it is essential that future research studies programs should include athletes from different racial backgrounds in order to provide a comprehensive detail of impacts of COVID-19.

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