

The Odyssey of Women Empowerment through Sports Performance: A Mixed Method Approach

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Received January 30, 2024; Revised March 22, 2024; Accepted April 26, 2024

Cite This Paper in the Following Citation Styles

(a): [1] Kashish Pandey, Khusboo K, "The Odyssey of Women Empowerment through Sports Performance: A Mixed Method Approach," *International Journal of Human Movement and Sports Sciences*, Vol. 12, No. 3, pp. 492 - 503, 2024. DOI: 10.13189/saj.2024.120305.

(b): Kashish Pandey, Khusboo K (2024). *The Odyssey of Women Empowerment through Sports Performance: A Mixed Method Approach*. *International Journal of Human Movement and Sports Sciences*, 12(3), 492 - 503. DOI: 10.13189/saj.2024.120305.

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Abstract Purpose: Sport and digitization have something surprising in common: both are drivers of gender equality and women's empowerment. In sports, performance is the end target for any Asian athlete. Performance is determined psychologically and physiologically. Burgeoning research has shed light on the efficacy of digital devices such as smart watches, biofeedback which can help athletes in their athletic performance and general well-being thus empowering athletes in their progress. However, there has been a gap in identifying the impact of certain psychological variables on performance. Hence, the objective of the present research was to explore metacognition, grit, self-efficacy, and social support on performance among athletes.

Design/methodology/approach: This study intends to fill the research gap by using a mixed method approach. The quantitative part of the section applied a cross-sectional survey design (n=201) for which correlation and regression analysis was used to answer the research questions. For the qualitative part of the study, semi-structured interviews were conducted with the female sub-elite athletes (n=6). The interviews were transcribed and subjected to an interpretative phenomenological analysis. **Findings:** The findings of this research provide a nuanced perspective to the existing literature in understanding the performance facilitators which can help female athletes attain performance subsequently empowering them through their athletic ranking. Additionally, through the results of qualitative part, it has been found that digital devices such as smart watches, biofeedback, other sport science-based

equipment have helped the sub-elite athletes to improve their performance. This suggests that amalgamation of both psychological and psychophysiological process can lead to enhanced athletic performance. **Implications:** Our suggested future directions focus on the development of targeted interventions and programs aimed at enhancing athletic performance through legitimate means, thereby amalgamating sports and technology for the ameliorating effects.

Keywords Digitization, Sports, Performance, Grit, Social Support, Metacognition, Self-Efficacy

1. Introduction

1.1. Sports and Performance

"Women Empowerment can be defined as the process which allows women to take decisions of their own fair laws and rights without gender bias." [1]. Sports is a medium which opens up the avenue for social, political, economic empowerment of women [2]. However, in both subtle and explicit ways, women face many barriers from reaping the benefits that can be gained from playing sports such as lower media coverage, and are subjected to sexist and derogatory language in the media and from the people on the social networking sites through trolls especially

upon losing a medal in any competitive tournament. Hence, performance is the means for attaining dignity and empowerment through impeccable athletic ranking.

“Performance can be publicly observed and even objectively measured in open competition and public performances” [3]. The expert or novice performers have to execute their task under complex environment [4]. Performance of an athlete can be determined by sleep, nutrition, recovery and other blend of factors [5]. In order to effectuate athletic reputation, finance, ranking, performance, athletes have to persevere and sustain for a long period of time in order to achieve athletic ranking [6]. Mental strength, regulation, awareness, self-talk are other key factors which can be instilled through sport psychology interventions [6,7]. Predictably, there is a lack of mental health awareness among athletes as they try to “push through” these issues just like their physical workout [8,9]. These stressors can affect the mental health which leads to low performance and performance dissatisfaction [10]. Track and field sport is an umbrella term for athletics which comprises of different events such as 100m, 400m, pole-vault etc. Be it any sport, performance is the end goal for any athlete to achieve athletic ranking, sponsors and financial benefits.

1.2. Conceptual Background

1.2.1. Metacognition in Sports

Metacognition can be defined as when an individual can focus on his/her own thinking [11]. Focus and concentration are considered to be the pre-requisite for achieving successful performance [12,13]. Athletes are required to focus on task at hand while keeping distractions aside [14,15,16,17,18,19,20].

This can happen through monitoring of cognition and it can be achieved through metacognition which also helps in self-regulation [21,22,23,24,25,26].

1.2.2. Grit and Performance

This term has been pioneered by Duckworth in 2007 [27]. It has been defined as inclusive of two components which are perseverance of efforts and consistency of interests [28]. Grit cannot be inherited but it can be learned through growth mindset. With regard to sport setting, grit is required so an athlete can “stick through” for getting sponsors, medals, reputation, athletic identity and prize money [29,30,31].

Ostensibly, due to uncertainties such as Covid-19 pandemic, the competition can get adjourned [31]. Therefore, the ability to sustain and keep inclination towards passion for sport for a long period of time does not come easily [32].

1.2.3. Social Support and Self-Efficacy in Sports

Social support can be stated as “an exchange of resources between at least two individuals perceived by the provider

or recipient to be intended to enhance the wellbeing of the recipient” [33]. Sources for social support can be parents, teachers or peers. Athletes’ performance, motivation can be affected by social support [34,35,36]. Mental fatigue can be diminished through social support among athletes [37].

Apparently, highly competitive environment takes a toll in an athlete’s life but social support acts as a stress buffer. To exemplify, social support is seen as a moderator of distress among injured athletes [38,39,40]. Female soccer players have succumbed to social support as their coping strategy [41]. Elite track and field runners have reported increased stress while performing when there was no social support [42]. Perceived social support is positively linked to better performance among elite golfers.

Bandura, in 1977 [43] defined self-efficacy as the individual belief of his/her own effectiveness. With regard to sport setting, it can be stated as an athlete’s ability to effectuate the benchmark only when an athlete has a belief to achieve it. In order to explore self-efficacy, various moderators have been used by researchers with regard to sport setting [45,46]. Generally, self-efficacy can be determined through verbal persuasion, performance, vicarious experiences and physiological states which predicts specific self-efficacy also [44,45,46,47].

Various factors such as metacognition can affect self-efficacy and others like social media among athletes do not affect the former [48,49]. Self-efficacy also differs depending on sex, age, skills of an athlete, or absence of practice among athletes [50]. According to previous research [51] self-efficacy and performance are positively correlated with each other where $p < 0.05$ where $r = 0.38$.

2. Study Rationale

Conspicuously, the pressure of winning deteriorates the mental health of the athletes [52,53]. This justifies the lack of awareness, lack of monitoring on one’s own thoughts, actions and emotions when such practices are adopted by elite athletes. In order to achieve performance benchmark, the social support along with grit, metacognition and self-efficacy play crucial roles.

Hence, in the present study, we aim to understand the singular and collect influences of these psychological factors on performance. As there has been lack of literature on these constructs in Indian context, therefore present research implications can help identify influences ascertaining the impact on performance among track and field athletes. Also, quantitative analysis won’t be sufficient to understand subjective and in-depth nature of these variables with regard to performance hence conduction of qualitative analysis gives a broader picture. As compared to mono-method studies, the amalgamation of mixed method involves the compensation of losses served by the other method. Therefore, interpretative phenomenological analysis (IPA) has been used to understand the impact of these psychological factors in

detail. Hence, the hypothesis of the study is: a) Grit, metacognition, social support and self-efficacy and its dimensions would have a significant relation with performance among track and field athletes, and b) Grit, metacognition, social support and self-efficacy and its dimensions would have a significant impact on performance among track and field athletes

3. Methods

3.1. Design

We adopted an explanatory sequential mixed-method design [54] that comprised a first quantitative phase (survey-based) and then a second qualitative phase (semi-structured interview).

3.2. Participants and Procedure

The primary investigator conducted this research and determined the sample size through a priori-prospective analysis using G*Power 3.1 software [55]. A total of 201 participants were recruited to ensure statistical power sufficient to detect small effects (R^2 increase of 0.05) at an alpha level of 0.05. Convenient sampling was employed for participant recruitment, with ethical clearance granted by the university's ethics committee. Participants were informed that their data would remain fictitious and anonymous, and they had the right to withdraw at any point. Informed consent was obtained from all athletes. Additionally, Google Forms were distributed through a QR code-based Android app.

Participants were recruited from various stadiums across Delhi-NCR, including Jawaharlal Nehru, Indira Gandhi Stadium, Tau Devi Lal Stadium, and Thyagaraj Stadium, representing track and field sport. The average survey completion time was approximately 20 minutes. The debriefing form clarified that world-anti doping agency (WADA) was not responsible for the study. See fig.2 for the overview of the recruitment process.

3.3. Study Outline

The study was performed in three phases (see Fig. 1). The first phase of data collection was quantitative and used questionnaires to obtain the relationship between predictor and criterion variables ($n=201$). The second phase included the interview using the guidelines of IPA [56] wherein the

respondents were recruited through different stadiums present in Delhi-NCR. The third phase was characterized by follow-up questions in order to quantitatively confirm some of the findings from the obtained qualitative data. The follow up question was answered by the senior athletes from phase 1.

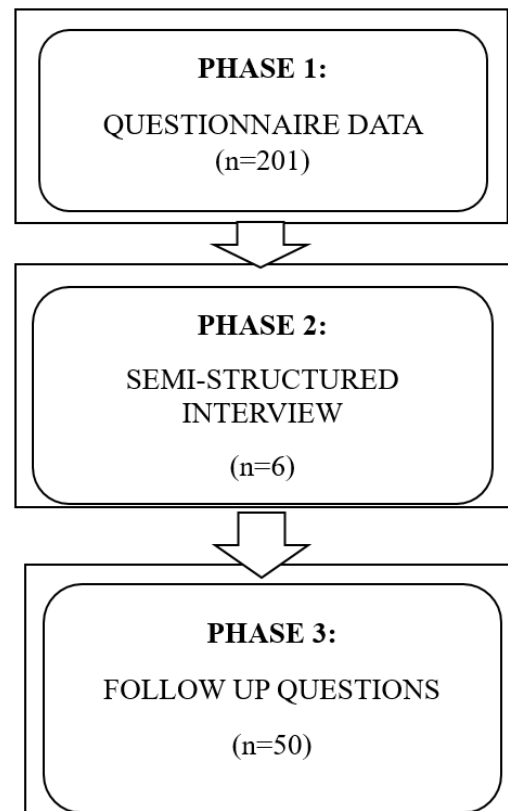


Figure 1. Different phases in the study overview

3.4. Study Participants and Inclusion Criteria

Participants were female athletes who were ≥ 30 years old and not playing in master's category. Participants were also excluded if they were undergoing any medication or pathological illness. Participants who had been banned by WADA were also excluded. The participants who had been playing since past 10 years were involved in the research study.

The recruitment process has been elucidated in Figure 2. assiduously highlighting who initially participated and how many chose to withdraw and total no. of athletes who gave their consent to participate in the study for both quantitative and qualitative phase.

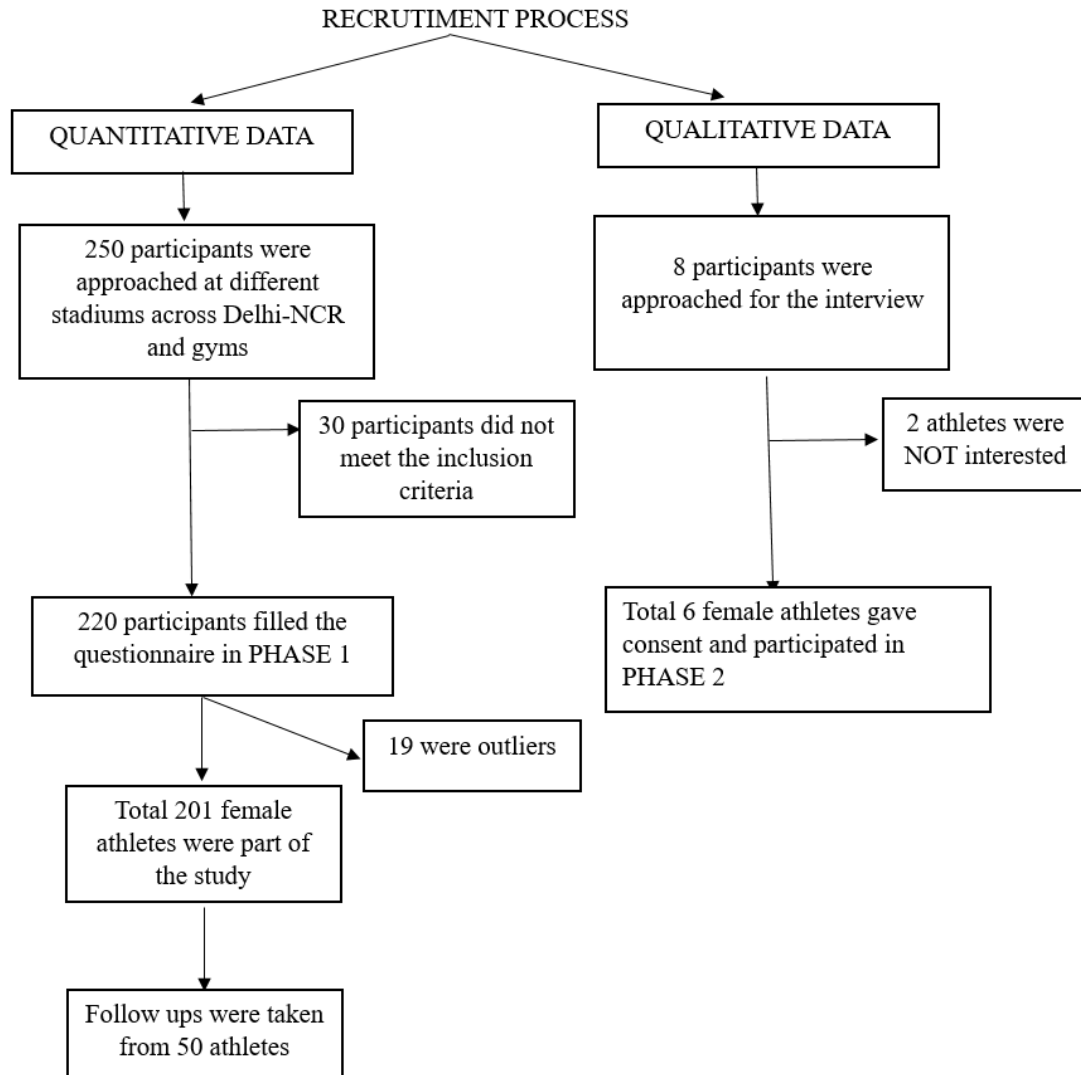


Figure 2. Overview of the recruitment process

3.5. Instruments

3.5.1. Metacognition Self-Assessment Scale

Metacognition Self-Assessment Scale (MSAS) was developed by Pedone et al., [57] and includes 18 items used as a self-report measure. MSAS is scored using a five-point Likert scale. This scale measures five elements namely: 1) monitoring; 2) differentiation; 3) integration; 4) decentration and 5) mastery. In order to check the reliability of the scale Cronbach's Alpha and McDonald's omega coefficients were checked ($\alpha = .86$, $\omega = .87$) which came out to be satisfactory and within the range. Whereas, criterion related validity was 0.56 which is within the acceptable range. The scale has been translated into Indian language earlier when used by primary author of this present study in one of her previous papers using backhand translation and confirmatory factor analysis where in the model came out to be fit as $RMSEA < 0.06$, $CFI > .90$, AND $GFI > .95$ along with $NNFI > .95$ indicating that the parameters within the expected range for considering a model fit.

3.5.2. Short Grit Scale

Short Grit scale which has 8 items has been developed by Duckworth [32]. Total score is divided by 8 where maximum score indicates that the individual is gritty which can range to 5 as compared to the lowest score which can range to 1. Cronbach's Alpha and McDonald's omega coefficients were computed ($\alpha = .80$, $\omega = .84$) for reliability which came out to be satisfactory. Whereas, criterion related validity was 0.61 which is within the acceptable range. The grit scale has been validated on the Indian sample by many Indian authors earlier by converting into Indian language and then performing confirmatory factor analysis where in the model came out to be fit as $CFA > .90$, $GFI > .95$, $NNFI > .90$ and $RMSEA < 0.08$.

3.5.3. Multidimensional Scale of Perceived Social Support

This scale is measured on a five-point Likert scale. It has been developed by Zimet et al., [36]. This scale has been already validated on Indian sample and has been used

across different subgroups, such as university students, females, adolescents, athletes etc. Its reliability is excellent as the McDonald Omega is 0.94 and validity is 0.73. The steps involved in the instrument validation including translating the scale into backhand translation and then performing confirmatory factor analysis.

3.5.4. Self-Efficacy Scale

This scale is developed by Indian authors and already validated on the Indian sample to understand the self-efficacy of students [58]. This scale measures the individuals' belief of his/her own effectiveness and is measured on a five-point Likert scale. It has both positive and negative items. The reliability came out to be sound and reliable as the McDonald Omega was 0.86 whereas test re-test reliability is 0.82 and concurrent validity is 0.92.

3.5.5. Athlete's Subjective Performance Scale

This scale has been developed by Nahum et al. [59]. This scale measures six items about the performance satisfaction of athletes along with an extended one-item scale. The purpose of this measure is to understand general performance among high-performance or amateur athletes. Although the scale was developed for team sports, with the permission of the author, 2nd and 4th items had been removed in order to use it on individual sports. McDonald Omega of this scale is 0.92 and validity is 0.70. Whereas, criterion related validity was 0.56 which is within the acceptable range. This scale has also been validated into the native language and then confirmatory factor analysis was performed where model came out to be fit.

4. Second Phase- Interview

For the analysis of the qualitative data, Interpretative phenomenological analysis was undertaken to analyse the living experiences of the athletes with respect to their performance which was done manually. It is drawn on three underpinnings: phenomenology, hermeneutics and ideography. It is doubly hermeneutic which means it tends to understand the participant's experiences and how a researcher makes sense of the participant's experiences. The preferred number of participants to perform IPA is recommended to "6" as per the guidelines given by Smith et al., [60]. Therefore, a semi structured interview was conducted to verify and elaborate the results of the quantitative research. The interview schedule was rechecked by the panel expert of 4 members. The interview schedule consisted of 14-15 questions which started from asking their interest in track and field sport, duration and later on moved to the construct related questions such as their metacognitive awareness while they are doing the drill, social support sources, self-efficacy to perform a particular task etc. The interview lasted for 45-50 minutes through intensive probing yet in a polite manner. The results were then later combined and themes were decoded upon

transcription.

5. Follow-Up-Question-Phase 3

A follow-up question was prepared and sent to the population of track and field athletes to confirm the findings of the qualitative research. The survey was constructed as a multiple-choice question asking the questions pertaining to performance such as what can possibly help athletes in their performance. The alternatives given were 1) "courage helps me to...", 2) "mental strength helps me to...", 3) "faith helps to...", 4) "support from my love ones is very important...", 5) "pressure of winning can motivate me" where each item was rated on a 5-point scale ranging from "Strongly disagree" to "Strongly agree".

6. Analyses

The quantitative analyses were started with identifying if the data met the assumption of a normal probability curve which was checked through the values of Shapiro Wilk which was $p > 0.05$ and skewness and kurtosis. Additionally, the Q-Plot, histogram was also referred. For the non-metric data (demographic details) and metric data (Mean, SD), demographic details were discerned.

Post which, in order to discern the relationship between the variables, inferential statistics were calculated which included correlation analyses. Further, to understand the impact of the predictor variables on the outcome variable, multiple regression analyses were computed.

For the qualitative part, the semi-structured qualitative interviews were conducted with 6 female athletes following the protocols of interpretative phenomenological analysis [56]. IPA is underpinned by theoretical underpinnings that are idiographic, symbolic interactionism and hermeneutics. Two independent interview sessions were conducted with the respondents. The first interviews lasted 30-35 minutes. The questions were asked from the respondents related to their age, education, marital status, and then subsequently moving to "how their performance is determined", "What impacts their performance", "who all have supported them in their sports career", "what are the challenges they face when they try to meet their performance", what are mental strategies they use to meet their performance goal?". The information gained from the initial interview was not coded. Rather, it prompted further discussion, informed individual narratives, and rich information could be solicited in next session with contextualization. In order to ensure the validity of the research, a reflexive journal, and an audit trail recorded the interview for personal record keeping [60].

The second interviews focused on more in-depth information from the respondents to explore the facilitators

and inhibitors with respect to their performance. These six to ten questions are recommended for 45–90-minute interviews in IPA [60]. The second interview lasted for 60-90 minutes which helped the researchers to explore the phenomenon under investigation. All the interviews were audio-recorded and later the transcription of the verbatim was done.

7. Results

7.1. Quantitative Results

Table 1. Multiple Regression Analysis of Metacognition and Performance among Track and Field Athletes

Variables	B	SE B	β	t	p
Constant	6.55	2.05		-3.18	.002
Monitoring	.358	.109	.186	3.29	.001
Integration	.604	.224	.127	2.69	.000
Differentiation	.122	.157	.034	.77	.003
Decentration	.886	.183	.228	4.84	.000
Mastery	.711	.110	.306	6.44	.000
Metacognition	.358	.109	.485	3.29	.001
R ²	.514				
F (5,396)	85.808**				<.001

Dependent Variable: Performance

*p<0.05

**p<0.01

Table 2. Multiple Regression Analysis of Grit and Performance among Track and Field Athletes

Variables	B	SE B	β	t	p
Constant	14.62	1.51		9.68	.000
Consistency of interests	.260	.063	.170	4.10	.001
Perseverance of efforts	1.032	.082	.524	12.64	.000
Grit	-.563	.049	-.497	11.46	.000
R ²	.326				
F (2,399)	97.960**				<.001

Dependent Variable: Performance

*p<0.05

**p<0.01

The analyses to answer the research questions began with the calculation of the Pearson correlation coefficient between the variables (metacognition, grit, social support, self-efficacy and performance). The results revealed that metacognition (p<.001 which accounted for 51% of

variance and (F=85.808(5,396) as shown in table 1, grit (p<.001 which accounted for 32% of variance and (F=97.960(2,399) as shown in table 2, social support (p<.001 which accounted for 48% of variance, and (F=126.949(3,398) as shown in table 3, and self-efficacy (p<.001 which accounted for 35% of variance and (F=225.091(1,400) as shown in table 4, had significantly impacted the performance of the female athletes except for the friends dimension of social support.

Table 3. Multiple Regression Analysis of Social Support and Performance among Track and Field Athletes

Variables	B	SE B	β	t	p
Constant	10.05	1.38		7.24	.000
Family	.245	.145	.170	1.69	.001
Friends	-.269	.181	-.188	-1.48	.091
Significant others	.424	.067	.328	6.34	.001
Social support	.360	.097	.710	3.71	.000
R ²	.485				
F (3,398)	126.949**				<.001

Dependent Variable: Performance

*p<0.05

**p<0.01

Table 4. Multiple Regression Analysis of Self-efficacy and Performance among Track and Field Athletes

Variables	B	SE B	β	t	p
Constant	47.72	.85		56.10	.00
Self-efficacy	-.341	.023	-.60	-15.00	.00
R ²	.358				
F (1,400)	225.091**				<.001

Dependent Variable: Performance

*p<0.05

**p<0.01

7.2. Qualitative Results-Phase 2

The qualitative findings have been transcribed, coded and presented in Table 1 which are based on the themes and sub-themes following the guidelines of interpretative phenomenological analysis.

Different Psychological Predictors Impacting the Performance of the Athletes

The different superordinate and subordinate themes are presented in table 5.

Table 5. Different superordinate and subordinate themes fetched from the transcription

THEME	SUB-THEME
Courage	1. YouTube videos of role models 2. Reels of elite athletes
Mental Strength	1. Mental awareness 3. Self-talk
Faith	1. Trust 2. Digital devices such as biofeedback 2. Belief 3. Destiny
Support	1. Family 2. High tech sports environment 3. Feedback from the smart watch related to their progress 4. Government
Pressure of winning	1. Diet 2. Ranking 3. Social media

Courage

The first theme emerged for both the groups was courage. It had emerged from the verbatim of all the six participants. Courage according to the Greek philosophers such as Plato and other philosophers stated that “courage was a part of virtuous living.” This theme captures the idea of courage athletes have shown despite of obstacles and challenges on their path. There could be generic challenges such as travelling, balancing work-life, communication with the coach or could be financial ones such as buying equipment’s, supplements when athletes haven’t achieved the support of financial benefits. Courage reflects the gritty behavior of athlete’s despite of these challenges. This theme has got four sub-themes which are: **YouTube videos of role models and reels of elite athletes.** As athletes said:

“I wanted to last longer as I had everything what it takes.... muje bas himmat rakhni aati hai, har man ni nahi ati.” [Kavita]

“I wanted to just do it..there is no backing out or quitting....whenever I felt, I use to watch videos of my favourite role models such as Usain Bolt, the access to youtube and listening to songs has helped me to gain courage and strength” [Dolly]

Mental Strength

The next common theme emerged among both the groups were mental strength. The theme emerged when participants reported the setbacks, they encounter throughout in their journey but it is about their mental strength, awareness and how they continue even when their body has given up. Under this theme, four main sub-themes were identified which were **Mental Awareness and Self-talk.** As athletes reported:

“Whenever I am starting on the starting line, I think I am

the one for this race, I have worked hard... dimaag mei bas yahi rehta hai ki muje pata hai meri body mind sab ready hai, dar lagraha hai par ready hu...” [Dolly]
“I tell myself, jo hoga dekha jayega bas tu bhaag.... muje pata hai meine kitni mehnat ki h, mein yahi bolti hu khudko ki Go Big or Go Home...” [Ancy]

Faith

The very prominent theme identified among youth level athletes was faith. Faith as per oxford dictionary is defined “as the trust in something or someone”. With respect to sport settings, athletes need faith in themselves and in their hard work. Without faith, it is difficult to build confidence. Faith helps athletes to rely on themselves when needed during or after performance. When athletes win, the confidence increases and when athletes lose, confidence fluctuates but it is the faith which athletes need to have in themselves despite of wins or losses. This theme incorporates three sub-themes as well which is trust, belief and destiny. As athletes reported:

“I have trust on my hardwork and practice... I have left my studies and my house for game... mei karke dikhaunga kuch...” [Ancy]

“Meko pura vishwas hai mera jab Olympics mei medal ayega tabhi jab meko respect karenge.... Abhi gali wale bolte hai ki kab tak game karega...game se kya hoga..par vishwas hai khud par...” [Shivani]

“The equipment’s present in sports authority of India lab is very helpful as they give me feedback about my body functionality...” [Palak]

Support

Another indispensable theme identified among youth level athletes is support showered by the significant ones to the athletes. Support is an integral part which serves in anyone’s life. Without support, it is difficult to achieve the success as reaching that stage requires support. Support incorporates many aspects such as esteem support, tangible support, informational support, and motivational support. Also, it depends that from whom the support is received. It could be from family, friends and significant ones. This main theme has got two sub-themes which is **family, high tech sports environment, feedback from the smart watch related to their progress, and government.** As athletes reported:

“Mere husband ne meko bohot support kiya hai aur aaj unhi ki wajah se pregnancy ke baad bhi khel rahi hu aur khelti rahungi...” [Dolly]

“Meko bas yahi Umeed hai ki government ne jaise khelo india mei achi accommodation di vaisi hi jab mei international level pe medal lau toh aur support with sponsors mile...” [Palak]

Sport science lab give me the opportunity to understand my strength as sport science coach is very helpful at IGI stadium... [Shivani]

I see my progress, pace of my running mechanism, time completed after 5km, through my smart watch and then

I post it on social media... [Anita]

Pressure of Winning

Another important theme identified for athletes is the pressure of winning as they need to bag at least in the top 3 positions as only top three rank holders get financial benefits, sponsors, medal and athletic ranking. The winning becomes a pressure for the athletes as they need security in the game through their medals. Off-field activities also play an important role than on-field activities which determine an athletes' performance. This theme includes sub-themes which are **Diet, ranking, and social media**. As athletes said:

"I need performance and for that diet, sleep is important but diet is a problem as I am from a poor background...however, with time once I play at good level, I'll be able to get what I want.....which is good diet, house..." [Anita]

"Sirf top 8 ko world games mei lejte hai, agar performance nahi ayi toh pure saal ki mehnat bekar hojati hai usi ka dar lagta hai..." [Dolly]

"When I see oher athletes on social media, it is scary....sb apni drills daalrae hai, sponsors milrae Hai....." [Ancy]

8. Discussion

The present aimed to study the psychological predictors on performance through a sequential mix-method design. The quantitative data revealed that, metacognition, grit, social support and self-efficacy had a significant impact on the performance of the track and field athletes which suggests that alone physiological or psychophysiological factors do not play role in determining athletic performance. This study also advanced knowledge by responding to the *how* question: how these different psychological predictors impact the performance of the athletes. It has been found that athletes who are metacognitively aware are more likely to deliver better performance as they were satisfied with their performance as per the survey results. This also goes in line with the research done by Pandey et al., [61] who encapsulated the role of metacognitive processes in sports and explained the role of meta-attention for improving performance. Consequently, those athletes who had metacognitive skills performed better than those who did not had metacognitive skills. Also, another research done by Love, et al. [63] explained the role of metacognition in concentration. As the former can help athletes focus and concentrate as metacognition has the ability to focus, monitor and plan accordingly. Another research done by Baspinar et al. [62] gave an insight about how metacognition had been explicitly present in non-athletes as compared to athletes. This can be justified as metacognition has its origin in education sector. Additionally, those athletes who were grittier were more likely to be satisfied with their athletic performance. The

reasons for them to be gritty were fame, money, sponsors, and love for sports. This goes in line with research done by Love et al., [63] who elucidated the role of grit in high-risk sports such as rock climbing. The researchers of this study were intrigued to find that grit could predict high novel-based sport such as rock climbing. Also, predictably, grit is indistinct from conscientiousness. According to them, grit could also predict climbing performance over FFM traits. Their research encapsulated the power of grit in sport settings. Additionally, according to Cormier et al., [64] grit has ameliorating effects as an athlete can suffer from slumps in performance, breakdowns, injury etc but through grit and growth mindset or intervention, it can help an athlete to maintain the perseverance by sticking through the goals assiduously.

The social support also played an indispensable role in determining the performance of the athletes. As athletes encapsulated the role of biomechanics, digital devices such as smart watches, biofeedback gave them prominent feedback about their mind-body activity which helped them regulate their body movements. This indicated that athletes who are given social support are likely to have better performance because as per research, esteem support helps in motivation whereas informational helps in feedback which can improve performance. This goes in line with research done by Hartley, Coffee & Abhyankar [65] who conducted a study among athletes where in it was found the social support acted as a buffer against stress among athletes. The negative, positive effects of social support were dependent on type and nature of social support given to the athletes which can be from peers, family and friends. Another research done by Sheridan, Coffee & Lavalley [66] analysed the role of social support among youths in sports who have advocated that for athletes, coaches were identified as main source for the support. Parents and peers also played the significant role among athletes.

Self-efficacy also had a significant impact on the performance of the track and field athletes as the former empowers the female athletes to do a particular drill or a task. This goes in line with the research done by Horcajo, Santos & Higuero [67] who had analysed the role of self-efficacy on performance. It was found that self-efficacy had greater impact on physical performance. This explains self-efficacy plays an integral role for an athlete to achieve optimal level of performance. Also, metacognitive certainty can be increased by working on self-efficacy among budding and elite athletes.

Furthermore, influence of contributing factors such as grit, metacognition, self-efficacy, social support and its dimensions on performance among track and field athletes was analyzed. As per the results, all the constructs had a significant impact on performance. However, the dimension of friends under social support did not impact the performance which goes in line with the research done by Kim et al., [68] that when athletes discuss their stressors with their friends, there is co-rumination that occurs which

might increase the persistent focus on the negative feelings among the friends. As friends can also be rivals in sports, hence this could be possible reasons for other factors supporting the performance of the track and field but friends not being supportive as the results were insignificant ($p > 0.01$). Hence, it is an amalgamation of not only on-field activities performed by an athlete but rather off-field activities also which determines the performance of an athlete [69,70].

For the qualitative part, all the themes and sub-themes have emerged as contributing factors which play an important role in determining the athlete's performance. These themes were further validated in the phase 3.

9. Conclusions

Our mixed-method results suggest that psychological factors play an important role in determining the performance of female athletes. Thus, the importance of psychological constructs namely metacognition, grit, social support and self-efficacy should not be neglected. These findings are of importance as in future, market intervention can be developed accordingly for the betterment of the athletes which can empower them to achieve performance.

Limitations and Future Suggestions

Despite the best efforts, there are few limitations of this research. Firstly, in the quantitative phase, a cross-sectional design has been utilised however, it does not imply causation and can lead to common method variance. However, to deal with the same, strategies such as collection of the data at different point of time along with temporal, psychological separation were employed. Second, some female athletes who were less articulate during the interviews were less likely to give in-depth information but in order to deal with this limitation, the researchers of this primary study had conducted more than one interview session to mitigate the articulation effects. Third, data could be collected in future across different states to capture the difference between north and south region. Additionally, a longitudinal study can be conducted in future to capture causation and deeper interpretation. A market intervention can be given based on the findings of this present research which could be grit intervention and its implying effects on women empowerment.

Informed Consent Statement

The respondents gave their consent to participate in the study.

Data Availability Statement

The data is confidential in order to protect the privacy

rights of the participants.

Ethics Approval

Authors of the present study got the approval from the university ethics committee board.

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