

Effects of mindfulness training and locus of control on self-efficacy of professional football players in Nigeria

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Abstract

Background: Plethora psychological skills training have proven to be effective on either to improve athletes' performance or parameters that indirectly contribute to overall performance enhancement among elite athletes in Nigeria, while there is little or no studies on the recent recognized mindfulness training in sport psychology. However, the aim of this study was to examine the effects of mindfulness training and locus of control on self-efficacy of elite football players in Nigeria. **Method:** This study employed experimental design of pre-test, post-test control group. The study recruited 35 participants which were randomly assigned into experimental (n=18) and control (n=17) group, age ranged between 16 and 32years (M age = 22.6years, SD = 1.47). Eight weeks intervention program of mindfulness acceptance commitment (MAC) was conducted for experimental group, while control group counterparts received no intervention. The participants completed Five Facet Mindfulness Questionnaire (FFMQ), General Self-Efficacy Scale (GSES) and Adapted Levenson Multidimensional Locus of control scales (ALMLC). Both groups completed the instruments at pre-test and post-test evaluation in about 25-30minutes. The data collected was analysed by using Analysis of Covariance (ANCOVA) and Bonferroni Pairwise Comparison. **Results:** This revealed that MAC was effective in enhancing self-efficacy of the intervention group compared to control group ($F_{(1,30)} = 11.455, p < 0.05$). The study indicated that locus of control increased self-efficacy of intervention group than the control group participants ($F_{(1,30)} = 51.16, p < 0.01$). The study added that participants with internal locus of control had higher mean scores than the participants with external locus of control. There was no significant interaction between treatment, locus of control and self-efficacy ($F_{(1,30)} = 2.537, p > 0.05$). **Conclusion:** This study provided an insight that MAC is an effective mindfulness training program and locus of control to enhance and increase self-efficacy of elite football players which in turn could improve performance and attain success.

Key Words: mindfulness acceptance commitment, non-judgmental, present moment, internal and external agents, capacity, elite players.

Introduction

Performance at elite level in sport demands greater responsibilities from not only the athletes, but also from the coaches, sport administrators and sport scientists. There are more challenges to overcome by elite players as they target peak performance, success and optimum well-being. Self-efficacy is an important aspect of an athlete's cognition due to its effect on motivational factors, emotional cognitions, and effort. Self-efficacy has been found to influence athletes' behaviour, team adaptation, performance and lead to greater sport achievement (Pina et al., 2021; Garcia-Naveira, 2018; Chen et al., 2019). The recent mindfulness training development in sport psychology has been designed to help an individual to increase their ability to be conscious of present moment and this has been found to affect sport performance either directly or indirectly through the variables that impact performance (Bagheri & Dana, 2021; Bühlmyer et al., 2017; Jha et al., 2017; Gardner, 2009). Mindfulness training seems to be a more constant and stable intervention for creating improvements in variables that will improve overall performance irrespective of any challenging situation (Hasker, 2010).

Mindfulness interventions have demonstrated that individuals who are aware and mindful of the task at hand have higher coping self-efficacy, are able to respond and cope with difficult situations without reacting in automatic and non-adaptive ways because they are open to new perceptual categories, tend to be more creative, and can better cope with difficult thoughts and emotions without becoming overwhelmed or shutting down (Luberto, 2014; Langer & Moldoveanu, 2000; Wallace & Shapiro, 2006). Locus of control is one of the four dimensions of a person's fundamental appraisal and predictive of behaviour has been found to be associated with self-efficacy, behaviour and emotions which contribute to success or failure of players in sports (Certel & Kozak 2017; Rutkowska & Gierczuk, 2014; Ajzen, 2002). The new trend mindfulness training together with locus of control have not been given optimum consideration as whether these can influence self-efficacy of elite football players.

Moritz et al. (2000) describe self-efficacy as a situationally specific self-confidence that influence the forms of activities individuals aim to participate, the amount of effort they put forth and the level of persistence they exhibit in situations of failure. Self-efficacy is an important aspect of an athlete's cognition due to its effect on motivational factors, emotional cognitions, and effort. Players' self-efficacy impacts both positive (e.g., enjoyment, satisfaction) and negative (e.g., anxiety, boredom) affective results, mainly through the creation of attention biases and their influence on how important life events are interpreted (Bandura, 1997; 2012). Importantly, individuals who have higher levels of self-efficacy are possible to be attentive on positive domains of life experiences and take responsibilities in more positive manners, whereas individuals with lower levels of self-efficacy tend to attend to negative components and interpret experiences negatively. Previous studies have shown that self-efficacy affects performance, success, behaviour and optimum wellbeing (Pina et al., 2021; Garcia-Naveira, 2018; Lirgg et al., 2016; Chen et al., 2019). Self-efficacy has been found to establish positive relationships with other variables such as task-orientation, team adaptation and self-confidence that foster sport performance (Moloud & Elkader, 2017; Garcia-Naveira, 2018).

Kabat-Zinn (2003) defines mindfulness as "the awareness that occurs by paying thorough attention on purpose, in the present moment and non-judgmentally to the unfolding of experience moment by moment". Wigmore (2014) defines mindfulness training as the process of impacting knowledge or learning of practices designed to help an individual to increase their ability to live fully in the present moment. Mindfulness training mainly focuses on non-judgmental awareness and acceptance, which denotes that athlete do not view their internal conditions as good, bad, true or erroneous, right, or wrong, but rather accept these conditions as they are (Bernier et al., 2009; Gardner & Moore, 2012; Zack et al., 2014; Awamleh, 2014; Goodman et al., 2014; R thlin et al., 2016). This method of mindfulness training is clearly different from the usual practice of traditional psychological skills dominated in the field of sport and exercise psychology.

Mindfulness acceptance commitment (MAC) (Gardner & Moore, 2004; 2007), as one of the sport-specific mindfulness-based interventions is grounded on two established mindfulness- and acceptance-based therapies (i.e., Acceptance and Commitment Therapy (ACT; Hayes, Strosahl & Wilson, 1999) and Mindfulness-Based Cognitive Therapy (MBCT; Segal, Williams & Teasdale, 2002). MAC approach promotes an awareness and acceptance of the internal state of the athlete, suggesting that "internal states need not be disregarded, eliminated, altered, or controlled to enable positive behavioural outcomes. MAC is a yielding protocol that comprises seven modules which include, preparation of participants with psychoeducation, introduction of mindfulness and cognitive defusion, introduction of values and value-driven behaviour, introduction of acceptance, enhancing commitment, combining skills and developing self-assurance, and upholding and enhancing mindfulness, acceptance, and commitment (Moore, 2009). Noetel et al. (2017) suggested that MAC protocols may enhance performance and variables that influence performance, while further research is required to be conducted to ascertain this assumption

A plethora of studies have shown that MAC is able to increase mindfulness and improve both physiological and psychological outcomes (e.g., anxiety, performance, and flow) (B hlmayer et al., 2017), increased exhaustion duration of endurance exercise (Nien et al., 2020) improves one's capacity to maintain performance in high-demand milieus strengthening cognitive resilience (Jha et al., 2017), develop higher mental toughness (Tsebe & van Niekerk, 2021), improves stress-recovery balance (Holgu n-Ramirez et al., 2020), increased accuracy skills and prevent dart throwers from performance slump (Zhang et al. 2016). increased attention of the athletes, decreased sport-specific anxiety, and sport-specific pessimism compared to the control group cyclist (Scott-Hamilton et al., 2016), reduced anxiety and improved self-efficacy and its elements (desire to initiate behaviour, desire to increase the effort, encounter challenges) and enhanced exercise performance (Bagheri & Dana, 2021). Researchers have found that (Luberto, 2014; Pineau et al., 2014; Gardner, 2009), MAC program may not directly affect performance but may indirectly affect performance through hypothesized variable, which in turn can result in improvements in performance-relevant outcomes. In their study, Bul gay et al. (2020) determined that athletes with peak performance had higher mindfulness levels; and professional soccer players had higher mindfulness levels compared to their amateur counterparts (Tingaz et al., 2021). It is important to examine further study since most studies on mindfulness training have focused on improving athletic performance of athletes with little studies on variables that facilitates athletes' performance (Gardner, 2009).

Firth et al. (2004) define LOC as the extent to which people believe they or external factors such as chance and powerful others are in control of the events that influences their lives. The main focus of LOC is the ability to endure and cope with uncertainty. While the individual with less ability or tolerance resist to the change and the ones with high ability tolerance can adapt to the change more easily (Mali, 2013). Studies have found that LOC is associated with plethora variables which directly or indirectly improves self-efficacy and performance. These include feeling of competence and awareness of one's own sports skills (Rutkowska, 2012), greater psychological well-being (Nwankwo, Okechi & Kalu, 2017) significant to success than failure (Rutkowska & Gierczuk, 2014), leads to higher self-efficacy (Certel & Kozak, 2017) and Roshini and Zinna (2019) indicated that athletes possessed internal locus of control when compared to non-athletes' counterparts. Lohan and Kaur (2017) found significant relationship between LOC and the performance of rowers. Denny and Steiner (2009) indicated that locus of control is a significant factor moderating correlations between dimensions

beneficial for a human being. McCorison (2020) study showed that LOC is not significantly related to athletic performance.

Participation in elite football requires being exposed to much stressful training and competition environments. The elite football players encounter multiple stressors (e.g., defeats, team changes, burnout, injuries, loss of the championship, interpersonal issues) that can negatively influence their psychological well-being and performance. Coping with these various stressors in the face of challenges without any negative implication on players performance and well-being require elite football players to make use of the distinct mindfulness acceptance commitment and locus of control. Focusing on the present moment task would make an individual player to maintain, concentrates, pay attention, focus, regulate emotion and indirectly enhance performance (Josefsson et al., 2019; Gross et., 2016; Friesen et al., 2016; Rothlin et al., 2020). Mindfulness training is a technique that could provide a comparatively greater benefit to elite football players because of its ability to help athletes to achieve higher psychological skills and thus improve overall performance, while higher LOC may provide an ability to endure, cope with uncertainty and tolerate resistance to change (Mali, 2013). Finding a way other than the usual traditional psychological skills training may enhance self-efficacy skills of elite football players which in turn may improve performance. Therefore, this study was prompted by the dearth of studies on pro-active ways to improve self-efficacy of elite football players with MAC protocols and locus of control. Accordingly, this study hypothesized that: (i) there would be significant main effect of treatment on self-efficacy of elite football players (ii) there would be significant main effect of locus of control on self-efficacy of elite football players and (iii) there would be significant interaction effect of treatment and locus of control on self-efficacy of elite football players

Methods

Participants

The participants were thirty-five (35) male elite football players of a professional football club in Nigeria with age ranged between 16 and 32years (M age = 22.6years, SD = 1.47). The participants had no previous experience of mindfulness training. The participants were participating in the second tier of Nigerian Professional Football League (NPFL) called Nigerian National League (NNL). The participants were randomly assigned into two groups of experimental (n = 18) and control (n =17). Eight weeks mindfulness training of MAC was conducted for experimental group, while control group received no treatment. All the participants were active football players during the course of the program. The team management of the club played an immense role in organizing and making the players to be well articulated and involved. The purpose of the study was clarified and participants were informed of the confidential treatment of data collected.

Measures

Instruments

Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006) is a 39-item questionnaire that measures five components of mindfulness: observing, describing, acting with awareness, non-judging and non-reacting rated on 5-points Likert Scale ranging from (1=never to 5= very often) was used to assess mindfulness level of the participants. FFMQ reported high internal consistency (coefficient alpha= 0.86). Self-efficacy belief of the participants was assessed with General Self-Efficacy Scale (GSES) (10 items) developed by Schwarzer & Jerusalem (1995). It is scored on a 4-point scale ranging from Not at all true (score of 1) to Exactly true (score of 4). The total score ranges between 10 and 40, and higher scores indicate higher self-efficacy. Cronbach alpha reliability value of GSES was found to be .76 to .90. Adapted Levenson Multidimensional Locus of control scales (ALMLC) was used to measure the participant's locus of control. The original Levenson Multidimensional Locus of control scales (1978) comprises three subscales of internal, powerful others and chance, while this study collapsed and categorized the subscales into two (internal and external). It comprised 24 items questionnaire scored on a 6-point Likert scale ranging from 1=strongly disagree to 6 = strongly agree. A high rating on the Internal Locus of Control scale shows a strong internal locus of control and high score on external locus of control shows that an individual is controlled by external agents. ALMLC reported a high reliability of .88. Mindfulness Acceptance Commitment (MAC) program (Gardner & Moore, 2007) is a semi-structured intervention program where various techniques were used to make players accept their internal states as they focus on the relevant stimuli and tasks in present moment to reach their meaningful values and goals. The program comprised seven group sessions (one session per week) of approximately 45 minutes.

Procedures

Ethical clearance was obtained from the authors' institution of learning, Tianjin University of Sport, Tianjin, China and also, the body controlling the professional football club employed for the study. Elite football players of a particular professional club in the second tier of Nigerian Professional League (Nigerian National League) were recruited for the study. The management of the club responded very well to the authors permission to conduct the research, while the participants together with the coaching crews cooperated with the researchers. Upon securing informed consent, the participants were randomly assigned into experimental and control group. The pre-test was carried out followed by the seven sessions of the intervention program of MAC for experimental group and no intervention was held for the control group. Post-test was conducted after the 8-weeks intervention program.

Intervention

Mindfulness Acceptance Commitment (MAC; Gardner & Moore, 2007)

MAC protocols were employed for the intervention group for 8-weeks. The program was conducted once in a week for 45 minutes. The program was delivered by an expert in sport psychology and mindfulness. The MAC program is a flexible 7-module procedure. The highlight of the MAC program includes;

- a. Preparation of the players with psycho-education: education and information about the theoretical and practical aspects of the intervention, information about ethical guidelines and structure for the full MAC protocol, discussion about thoughts, emotions, sensations and behaviours as related to the past performance experience of the participants.
- b. Introduction of mindfulness and cognitive defusion: the concepts were clarified and justified as they are used in sport settings
- c. Introduction of values and values-driven behaviour: concise relation between goals, values and behaviours were discussed, and the differences between values-driven versus emotion-driven behaviours were accentuated
- d. Introduction of acceptance: clarification on the concept of acceptance and outcomes associated with experiential avoidance, and accrued benefits with practice of experiential acceptance when aiming for self-efficacy
- e. Enhancing commitment: the concepts of motivation and commitment based on their relationship to behaviour were presented. Also, their differences were considered.
- f. Skill consolidation and self-assurance— presentation on combining mindfulness, acceptance and commitment
- g. Upholding and enhancing mindfulness, acceptance, and commitment: explanation on how to integrate and apply mindfulness during soccer training and competition.
- h. General appraisal of the program: the participants were subjected to written and oral assessment

N.B: The participants were subjected to various mindfulness exercises and homework was given at the end each session, while each session started with reflection on prior session of the program.

Data Analysis

Data collected were analysed using Analysis of Covariance (ANCOVA) to examine the hypothesis effect of mindfulness training (MAC) on dependent variable of self-efficacy together with Levene’s Test of Equality of Error, Descriptive Statistics and Bonferroni Pairwise Comparison. The statistical analysis conducted employed the statistical software of SPSS 26.0 version

Results

Table 1: Analysis of Covariance (ANCOVA) summary showing the effects of treatments on self-efficacy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2233.459 ^a	4	558.365	19.089	.000	.718
Intercept	3198.420	1	3198.420	109.346	.000	.785
Pre-test self-efficacy	28.465	1	28.465	.973	.332	.031
Treatment	335.068	1	335.068	11.455	.002	.276
LOC	1209.110	1	1209.110	41.337	.000	.579
Treatment * LOC	74.214	1	74.214	2.537	.122	.078
Error	877.512	30	29.250			
Total	134079.000	35				
Corrected Total	3110.971	34				

a. $R^2 = .718$ (Adjusted $R^2 = .680$)

Results on table 1 revealed that there was a significant main effect of treatment on self-efficacy of elite football players; $F_{(1,30)} = 11.455$, $p < 0.05$, $\eta^2 = .276$. There was significant difference in the self-efficacy among treatment groups. Size of effect revealed that treatment accounted for 27.6% ($\eta^2 = 0.276$) change in self-efficacy; that is, the variance in treatment groups had large effect on self-efficacy of elite football players. For further justification on the margin of difference between the treatment groups, the pairwise comparison using Bonferroni was computed and the result is shown in table 2.

Table 2: Bonferroni Pairwise Comparison showing the significant differences among experimental and control groups.

(I) treatment	(J) treatment	Mean Difference	Std. Error	Sig. ^b
Control group (58.07)	Mindfulness group (64.72)	6.651*	1.965	.002

Table 2 revealed that after controlling for the effect of pre-test on self-efficacy, intervention group demonstrated the highest self-efficacy score (mean= 64.72), followed by the control group (mean= 58.07). By implication, mindfulness training was effective in enhancing self-efficacy of elite football players than the control group counterparts. The coefficient of determination (Adjusted R-squared = .680) overall indicated that the differences that exist in the group accounted for 68% in the variation of self-efficacy among elite football players.

For the second hypothesis, the result from table 1 revealed that there was significant main effect of locus of control on self-efficacy of elite football players; $F_{(1,30)} = 51.16, p < 0.01, \eta^2 = .567$. There was significant difference in the self-efficacy based on locus of control. Size of effect revealed that treatment accounted for 56.7% ($\eta^2 = 0.567$) change in self-efficacy; that is, locus of control had large effect on self-efficacy. For further justification on the margin of difference between the treatment group and the control groups, the pairwise comparison using Bonferroni was computed and the result is shown in table 3.

Table 3: Bonferroni Pairwise Comparison showing the significant differences in self-efficacy based on locus of control.

(I) treatment2	(J) treatment2	Mean Difference	Std. Error	Sig. ^b
External LOC (55.179)	Internal LOC (67.613)	-12.435 ^a	1.934	.000

Table 3 revealed that after controlling for the effect of pre-test self-efficacy, elite football players with internal locus of control demonstrated higher self-efficacy score (mean= 67.61) than those with external locus of control (mean= 55.18). By implication, internal locus of control enhanced self-efficacy of elite football players than external locus of control.

For the third hypothesis, the result from table 1 revealed that there was no significant interaction effect of treatment and locus of control on self-efficacy of elite football players; $F_{(1,30)} = 2.537, p > 0.05, \eta^2 = .078$. This indicates that locus of control did not significantly moderate the effect of treatment on self-efficacy.

Discussion

This study examined effects of mindfulness training and locus of control on self-efficacy of elite football players in Nigeria. The result of the study indicates significant main effect of mindfulness acceptance commitment (MAC) on self-efficacy of elite football players in Nigeria. The study revealed that experimental group demonstrated higher level of self-efficacy than the control group. This shows that MAC may be an effective approach to enhance self-efficacy of elite football players. This corroborates with the findings of Tsebe and van Niekerk (2021) who indicated that MAC intervention group had significantly higher mental toughness than the control group. Similarly, Nien et al. (2020) found that mindfulness training group increased in their mindfulness levels and exhaustion durations of endurance performance than control group. Zhang et al. (2016) found significant result between group differences in dispositional mindfulness and athletic performance following MAC designed program. In their study, Bagheri and Dana (2021) reported reduced anxiety and improved self-efficacy and its elements (i.e., desire to initiate behaviour, desire to increase the effort, encounter challenges) and enhanced exercise performance. Luberto (2014) indicated that greater use of mindfulness skill components was associated with greater coping self-efficacy, while coping self-efficacy partially mediated the relationship between each of these skills and emotion regulation difficulties. The significant effect of MAC intervention in this study could be as a result that elite football players always seek for mental edge opportunity, playing regularly and maintain optimum performance since they are at the higher level of their career and may direct their attention to involve directly in the mindfulness acceptance commitment program. Also, the proper coordination of the program, full awareness of present moment, attention and complete involvement of the elite football players in the program gives insight into inculcating and implementing MAC approach into their football psychological program to further ascertain its effectiveness and usefulness.

Furthermore, the findings indicated that there was significant main effect of locus of control (LOC) on self-efficacy of elite football players. This is consistent with the findings of Rutkowska and Gierczuk (2014) on wrestlers which revealed that higher level of LOC is significant to success than failure in treatment group, while control group adopted the use of LOC more in training than during normal competition. Also, the study indicated that the elite football players with internal LOC demonstrated higher self-efficacy score than those with external LOC. This is supported by the study of Certel and Kozak (2017) that greater internal LOC leads to increased self-efficacy, while greater external LOC leads to serious academic procrastination. Similarly, Nwankwo, Okechi and Kalu (2017) demonstrated that youth athletes with internal LOC reported higher psychological well-being tendency than their control group counterparts with external LOC who reported a low psychological well-being. McCorison (2020) result is against the findings of this present study as there was no significant effect of LOC reported on athletic performance. The author added that the insignificant effect could be as a result of specific difference within the sample population. The study of Rutkowska (2012) found that LOC is correlated

with the feeling of competence and with the awareness of one's own sports skills. In the present study, the result could be linked with the fact that the individual player believed they can only attain the best as a team when they all work together cohesively and improve on various aspects of their physical and psychological skills without allowing any element of external force and distraction.

Finally, the finding revealed no significant interaction effect of treatment and locus of control on self-efficacy of elite football players. This indicates that locus of control did not significantly moderate the effect of treatment on self-efficacy of elite football players. This result is against the expected findings of this study. But this is contrary to previous studies that LOC is a significant factor moderating correlations between dimensions beneficial for a human being (Denny & Steiner, 2009).

Limitations

There are many limitations in the present study. First, there were changes in the time scheduled for the participants to be meeting on every Tuesdays of the week for the period of eight weeks due to changes in the date of league game fixtures. Preferably, MAC program should be considered before the season starts. Second, the effectiveness of MAC program could only be attributed to 8-weeks period of the intervention program which had short-term effects on the participants. Further study should consider follow-up program to see if MAC training could be retained and have long-term effects. Third, the study considered the population of only male elite football players. Other sports and different levels of participation should be considered. Further study should consider other team and individual sports and different levels of participation. The sample size for this study was relatively small. This therefore has limited the generalisation of the study. Further studies should recruit larger sample size that can allow generalization of the findings.

Conclusion

The present study examined effects of mindfulness training and locus of control on self-efficacy of elite football players. Results indicated that mindfulness training of MAC was effective and increased self-efficacy level of experimental group than control group counterparts. MAC intervention program is an important training program to be considered in developing, increasing and improving elite football players' mental skills which in turn can affect overall performance. The study also considered effects of locus of control on self-efficacy of elite football players, LOC was significant and improved self-efficacy of the experimental group compared to control group. The study further indicated that elite football players with internal locus of control had higher self-efficacy scores than participants with external locus of control. There was no significant interaction effects of treatment and locus of control on self-efficacy. This shows that LOC did not significantly moderate the effect of treatment on self-efficacy of elite football players. This study provided an insight that MAC is an effective mindfulness training program and locus of control to enhance and increase self-efficacy of elite football players which in turn could improve performance and attain success.

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Conflicts of Interest

The authors declare no potential conflicts of interest with respect to the research

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