

Physical Activity, Learning Experience, and Their Influence on Athletic and Sports Performance in the United States: The Mediating Role of Quality of Life

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Abstract

The purpose of this study is to examine the associations between physical activity (PA), sportsman learning experiences (SLE), and sports performance in a sample of football players from the United States. The study specifically aims to explore the potential moderating effect of physical health impairments (PHYI) and the mediating role of quality of life (QOL) in these relationships. A quantitative cross-sectional methodology was employed to gather data from 300 football players. The data collection process involved the use of self-administered questionnaires, and a convenient sampling technique was utilised. The data that was gathered was subjected to analysis using both demographic and inferential statistics with the assistance of SPSS. The regression analysis demonstrates a statistically significant and positive relationship between physical activity (PA) and both quality of life (QOL) and subjective life expectancy (SLE). Furthermore, the findings suggest that QOL partially mediates the association between PA and SLE. It is worth mentioning that the inclusion of PHYI significantly amplifies the beneficial impact of physical activity on systemic lupus erythematosus (SLE). The aforementioned findings underscore the necessity of implementing all-encompassing athlete development initiatives that prioritise both the physical and mental well-being of individuals, particularly those athletes who are confronted with health-related obstacles. The present study makes a valuable contribution to the ongoing exploration of athlete development and provides practical implications for the design of comprehensive athlete support systems with the goal of improving athletic performance and overall life satisfaction.

Keywords: athletics performance, quality of life, USA, soccer.

Introduction

Meanwhile, performance in athletics assumes a critical role as it serves as an indicator of an athlete's physical prowess, commitment, and proficiency in various skills (Hrysomallis, 2011). The concept being discussed here is the role of competitive excellence as a metric for evaluating the performance of an individual or a team. This evaluation can have various outcomes, such as personal achievement, recognition, and the fulfilment of sporting objectives (Hrysomallis, 2011). The phenomenon of high-level athletic performance is widely recognised for its ability to inspire and captivate audiences, thus holding significant cultural and sporting importance (Ostrander, Huson, & Ostrander, 2009). In order to impact the performance of athletes, it is widely acknowledged that learning experiences play a crucial role in improving their abilities, strategic comprehension, and psychological fortitude (Dunn, 2009). Athletes who actively participate in well-organised and intentional educational endeavours, such as receiving guidance from coaches, adhering to structured practice routines, and utilising mechanisms for

receiving feedback, frequently exhibit notable enhancements in their athletic performance (Dunn, 2009). These experiences not only enhance technical skills but also foster a profound comprehension of game strategies, bolster self-assurance, and cultivate the capacity to adapt to dynamic sporting situations. In addition, it is widely recognised that learning experiences have a significant impact on the development of discipline, teamwork, and goal-setting skills among athletes. These skills are crucial for achieving and maintaining high levels of performance in the realm of sports (Stavrou et al., 2007). The inherent significance of ongoing growth, development, and adaptation within the realm of competition is underscored by the interplay between effective learning experiences and athletic performance. This interaction serves to propel athletes towards the realisation of their maximum capabilities.

The acquisition of knowledge and skills through educational encounters is a crucial element in enhancing athletic performance. Physical activity (PA) has been found to have a significant impact on enhancing the learning experience (Budzynski-Seymour, Jones, & Steele,

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2022). Physical activity (PA) has been found to enhance the learning experiences of sportsmen by improving cognitive functions, alleviating stress, and refining skill development. Engaging in regular physical activity that is tailored to one's specific sport has been found to enhance muscle memory and facilitate cognitive clarity, thereby facilitating more efficient skill acquisition during both training sessions and competitive events. Team sports play a crucial role in fostering camaraderie, trust, and teamwork, which are fundamental for promoting effective learning in a collaborative environment. Physical accomplishments frequently lead to heightened motivation and enhanced self-confidence, thereby driving athletes to excel in their educational pursuits (Goodyear et al., 2023). Furthermore, physical activity (PA) plays a significant role in promoting overall well-being, exerting a positive influence on various dimensions of life, including physical, mental, and emotional aspects. This fosters an optimal setting for athletes to excel in their educational and performance endeavours (Azzi et al., 2022).

However, physical activity (PA) has been shown to enhance the overall quality of life (QOL) for athletes by improving their learning experiences in sports (Rödger, H. Jonsdottir, & Börjesson, 2016). Participating in sport-specific physical activities enhances cognitive functions, diminishes stress levels, and fosters the development of skill mastery, thereby promoting more efficient learning in both training and competitive contexts. The term "quality of life" (QOL) is frequently used as a comprehensive concept to assess an individual's functioning across various dimensions, including mental, psychological, emotional, and cognitive aspects. Consequently, the significance of physical activity (PA) in relation to quality of life (QOL) is widely acknowledged. This viewpoint aligns with the findings of prior research conducted by Warburton et al. (2012), which elucidated the significance of physical activity (PA) in enhancing the educational experience. In a similar vein, additional research has posited that the concept of quality of life (QOL) underscores its association with the attainment of optimal cognitive and physical functioning, as well as the pursuit of the most favourable experiences (Herbert et al., 2020). Previous research has established a correlation between quality of life (QOL) and physical activity (PA), as well as mental health conditions including depression and anxiety (Hasson et al., 2022).

Failure to prioritise physical activity (PA) can have detrimental effects on one's health, leading to an elevated susceptibility to conditions such as diabetes, migraines, hypertension, and cardiovascular ailments (Zayed & Elshaer, 2022). Based on the findings of the World Health Organisation (2018), insufficient physical activity has been

identified as the fourth most significant risk factor for the global population, contributing to approximately 3.2 million fatalities on an annual basis. The Centres for Disease Control and Prevention (CDC) have reported that engaging in regular physical activity is associated with a decreased likelihood of developing chronic diseases and an enhancement in quality of life (McGuire, 2014). Consequently, the presence of health impairments has been shown to significantly contribute to the enhancement of physical activity (PA), thereby improving the overall learning experience and subsequently enhancing an athlete's sports performance.

Previous studies have provided empirical evidence supporting a substantial correlation between physical activity (PA) and multiple indicators of quality of life (QOL) (Konopack & McAuley, 2012; Lee, 2021). The investigations conducted by Awick et al. (2017), as well as Motl et al. (2009), primarily focused on older individuals or individuals with existing medical conditions. A limited number of scholarly studies (Maher & Conroy, 2015; Rodríguez Macías, Abad Robles, & Giménez Fuentes-Guerra, 2021) have investigated the impact of physical activity (PA) on the quality of life (QOL) and learning outcomes among individuals in the adolescent and college student population who are in good health. There is a dearth of research on the integrated model encompassing physical activity, quality of life, and learning experience. Previous studies have primarily concentrated on examining the influence of physical activity and quality of life on the learning experience, with limited attention given to the performance of athletes (Saleh et al., 2022). Hence, the primary focus of this study has been on examining the influence of these indicators on the performance of athletes.

However, it is worth noting that prior research has yielded conflicting results regarding the relationship between physical activity (PA), quality of life (QOL), learning experience, and athletic performance (Arria et al., 2017; Capozzi et al., 2016). These findings suggest that further research should be conducted in different contexts to gain a more comprehensive understanding. Physical health impairments can serve as a noteworthy moderating factor, as the engagement in physical activity among athletes with such impairments has the potential to greatly enhance their learning experiences. Consequently, this improvement in learning experiences can lead to an elevation in their sports performance. The customization of physical activity programmes to accommodate impairments can contribute to the development of crucial skills, the enhancement of mental resilience, and the promotion of camaraderie among these athletes (Saleh et

al., 2022). By implementing tailored training programmes and providing comprehensive coaching, individuals with impairments have the opportunity to optimise their learning experiences by surmounting distinctive obstacles. As individuals' learning abilities progress, there is a corresponding improvement in their overall quality of life, leading to a subsequent enhancement in their sports performance. By catering to the unique requirements of athletes who experience physical health impairments, the sports community can actively foster inclusivity and establish a conducive environment for these individuals to thrive in their respective sports disciplines. Consequently, this endeavour not only enhances the quality of life for these athletes but also contributes to the overall development and diversity of the sporting domain.

In addition to previously identified paradoxes, the existing body of literature has predominantly concentrated on well-established nations, with comparatively less emphasis on developing economies. Moreover, previous scholarly investigations have predominantly concentrated on examining the direct impact of physical activity (PA) on psychological well-being (PLE) as well as the indirect influence mediated by PA (Zayed & Elshaer, 2022). There is limited focus on the moderation of physical health impairment in the context of the relationship between physical activity (PA) and the learning experience. Moreover, existing literature primarily emphasises the impact of physical activity (PA) and quality of life (QOL) on the learning experience while giving limited attention to the influence of the learning experience on sports performance (Rosenkranz, 2012). Furthermore, it is worth noting that prior scholarly works have paid scant attention to the context of Germany (Diehl & Hilger, 2016). This also serves as a motivation for researchers to conduct research in the United States. Therefore, building upon the preceding discourse, the objective of this study is to examine the influence of physical activity and the associated learning experiences on the athletic performance of individuals engaged in sports in the United States of America. The present study additionally examined the mediating function of quality of life and the moderating impact of health impairments.

The results of this study conducted in the United States demonstrate a multifaceted interaction of various factors. The concept of quality of life serves as a mediator, indicating that individuals who partake in consistent physical activity and have favourable educational encounters are inclined to experience an elevated quality of life. This, in turn, contributes to the improvement of their athletic performance. In addition, the significance of health impairments in moderating sports performance

underscores the necessity of addressing and mitigating health concerns in order to optimise athletic capabilities. The aforementioned findings highlight the comprehensive aspect of athletic achievement, emphasising that the success of athletes is not solely dependent on physical activity and skill development but also on their overall well-being and health condition. The acquisition of this knowledge has the potential to ultimately optimise the athletic performance and overall well-being of individuals within the sports community in the United States.

Critical Literature Review and Hypothesis Development

Physical activity and learning experience

The enhancement of learning is facilitated by fundamental cognitive processes that are associated with memory and attention and can be augmented through physical exercise and cardiovascular fitness. Engaging in physical activity has been found to enhance cognitive function and promote optimal brain health, both in the immediate and extended periods. Their physiological systems exhibit enhanced capacity to cope with the stressors commonly associated with the process of acquiring knowledge. Exercise not only provides physical advantages but also enhances children's ability to concentrate. The augmentation of neurochemical production in the brain as a result of physical exercise has been found to enhance the capacity for memory consolidation. There is empirical evidence supporting the notion that engaging in physical exercise can have a positive impact on the educational experience of students studying sports (Bentsen et al., 2022). Another recent investigation revealed that engagement in physical activities yields positive and significant impacts on students' educational achievements (Bentsen et al., 2022). A different investigation has also indicated that when students engage in increased physical activities, their learning experiences are also enhanced, resulting in improved academic performance (Cairney et al., 2019).

According to a systematic review and intervention study by Chaddock et al. (2011), children of school age consistently benefit from regular physical activity, particularly aerobic exercise. The researchers' intervention study demonstrated that including physical activity in children's regular schedules improved academic performance, highlighting the potential benefits of physical activity in relation to learning. Another noteworthy contribution is a study on cognitive ageing in the elderly population (Smith & Sparkes, 2019). The findings of their longitudinal study indicate that older

adults who engage in consistent physical activity exhibit a decelerating rate of cognitive decline over an extended period. These results are consistent with a significant body of existing literature that suggests maintaining an active lifestyle during midlife and beyond can serve as a protective factor against cognitive decline and dementia. Ultimately, this can enhance the learning capabilities of older individuals. The aforementioned studies collectively emphasise the significant importance of engaging in physical activity in order to enhance cognitive function and enhance the quality of learning experiences throughout one's entire life. Therefore, research has following research hypothesis.

H1: *Physical quality has significant impact on learning experience.*

Physical activity and quality of life

In the opinions of scholarly experts and individuals involved in the field, enhanced quality of life is recognised as a key benefit and outcome of engaging in physical activity. Regrettably, assessments of the quality of life pertaining to health often exhibit inaccuracies and fail to sufficiently incorporate the viewpoints of the individuals involved. Numerous scholars and experts, including those who have conducted extensive investigations on the correlation between physical activity and quality of life, have detected significant deficiencies in our conceptual frameworks and assessments of quality of life. These deficiencies pose obstacles to both research endeavours and initiatives aimed at promoting health. According to McAuley et al. (2005), the determination of whether exercise enhances the quality of life remains inconclusive due to the absence of a dependable means of assessment. The absence of consensus regarding the correlation between physical activity and quality of life can be partially attributed to the lack of a precise definition of quality of life, as stated by Fanning et al. (2018). The concept of quality of life has been subject to thorough examination and discourse within the medical and academic communities, yet its precise delineation remains ambiguous. Certain scholars make a distinction between the concept of quality of life and health-related quality of life, where the latter places emphasis on an individual's subjective perception of their physical and mental well-being. However, there are certain individuals who hold the belief that there is an excessive focus on health outcomes. The perception of one's health did not significantly influence overall life satisfaction (Wu et al., 2018).

Knight et al. (2007) conducted a study which revealed that the educational experience is positively and significantly influenced by the quality of life. Self-esteem (SE) refers to an individual's comprehensive evaluation of their own

value, which is determined by their personal assessments of their capabilities and moral principles (Afari, Ward, & Khine, 2012). The susceptibility of adolescents' self-esteem to volatility can be attributed to minor changes in their social positions and commitments (Saricilar et al., 2023). Typically, there is a decline in self-esteem among teenagers during the early years of adolescence, followed by a subsequent increase during the later years of adolescence (Orth, Trzesniewski, & Robins, 2010). Adolescents who possess high levels of self-esteem are inclined to exhibit greater satisfaction with themselves, establish fulfilling interpersonal connections, and encounter enhanced physical and mental well-being (Cameron & Granger, 2019; Peng et al., 2019). Individuals who possess a favourable self-perception are more inclined to demonstrate a strong commitment to their educational pursuits and attain favourable outcomes (Fang, 2016). The study conducted by Allen, Vella-Brodrick, and Waters (2017) revealed a positive correlation between self-efficacy (SE) and learning experience (LE), indicating that SE has an impact on various aspects related to learning. According to a recent study by Filippello et al. (2020), the standard of living has a significant impact on the educational experiences of athletes.

Based on previous studies, it has been established that engaging in physical activity significantly and positively impacts one's overall quality of life. It was found that engaging in physical activities had a positive impact on the overall well-being of the players, thereby augmenting their educational encounters (Joseph et al., 2014). Numerous studies have additionally posited that physical exercise can potentially exert an indirect influence on learning experiences (Li et al., 2018). Therefore, study has following research hypothesis,

H2: *physical activity has significant impact on quality of life.*

H3: *Quality of life has significant impact on learning experience.*

The moderating effect of Physical Health Impairments

The association between physical activity (PA) and learning experiences among athletes appears to be inconclusive. Several studies have reported positive effects, while others have found negative effects on the learning experience of athletes. Therefore, it is necessary to introduce a moderating variable between the independent and dependent variables (Baron & Kenny, 1986). Previous studies (Budzynski-Seymour et al., 2022; Kirk, 2005) have also demonstrated that physical exercise may have an indirect impact on the educational encounter of athletes. Therefore, it is possible that physical health impairment could act as a moderating factor in the relationship between physical exercise and the experience of athletic

learning. As the degree of health impairment increases, there is a corresponding increase in physical activity, which has the potential to enhance the athlete's learning and experience (Cruickshank, Pill, & Mainsbridge, 2021). Thus, based on previous discussion, study has following research hypothesis,

H4: *Physical health impairments significantly moderates between physical activity and learning experience.*

Learning Experience and sportsman performance

The correlation between learning experiences and sports performance has been a topic of extensive theoretical investigation. The theoretical framework employed to comprehend this association frequently derives insights from cognitive psychology and educational theories. Bandura's Social Cognitive Theory posits that the acquisition of new skills and behaviours is facilitated by a dynamic interaction among personal factors, environmental influences, and cognitive processes. When applied to the domain of sports, this implies that the learning experiences of athletes, including structured training programmes, coaching styles, and feedback mechanisms, can have a substantial influence on their performance outcomes. Furthermore, the notion of deliberate practice, as popularised by Ericsson and his associates, asserts that consistent and purposeful endeavours in particular domains of skill can result in the acquisition of expertise and the attainment of optimal performance in sports. Theoretical models of this nature place significant emphasis on the crucial role of learning experiences in influencing an athlete's potential for performance, thereby establishing their fundamental importance in the realm of sports development and achievement.

Moreover, a substantial body of empirical research consistently substantiates the notion that learning experiences exert a profound influence on the performance of athletes in sports. A plethora of scholarly investigations have been conducted to explore the correlation between training methodologies, the efficacy of coaching, and the progression of athletes. An investigation conducted by Macnamara, Hambrick, and Oswald (2014) examined the relationship between deliberate practice and expertise in sports among expert performers. The findings of this study revealed that both the quantity and quality of deliberate practice were significant indicators of expertise. In the realm of youth sports, a study conducted by Côté et al. (2020) emphasised the significance of a constructive and encouraging coaching atmosphere in facilitating the sustained growth and progress of athletes over time. In addition, the field of sports science has made significant progress in enabling the systematic tracking of athlete development using methods such as performance

analysis, biofeedback, and wearable technology. These advancements have yielded empirical data that supports the notion that focused learning experiences can result in quantifiable enhancements in sports performance. The aforementioned findings highlight the importance of optimising learning experiences in order to improve the performance of athletes. Additionally, they emphasise the practical implications of utilising theoretical frameworks in the realm of sports development. Thus, based on previous discussion, following research hypothesis of the study are formulated below,

H5: *learning experience has significant impact on sportsman performance.*

Research Objects and Conceptual Framework

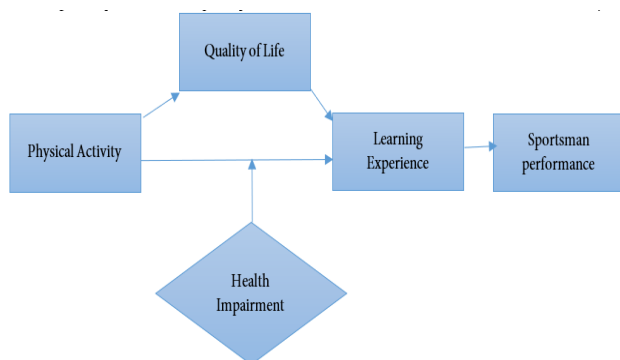
In order to examine the influence of physical activity and learning experiences on the athletic sports performance of individuals in the United States, this study will utilise a quantitative cross-sectional research design. The primary objective is to explore the mediating role of quality of life and the moderating effect of health impairments. The rationale for employing this methodology is grounded in its capacity to gather data from a heterogeneous sample of athletes across different sports disciplines in the United States, thereby offering a momentary depiction of their present experiences and performance (Fernández-Alonso et al., 2023). The use of a cross-sectional design is deemed appropriate for the purpose of investigating the associations between variables and evaluating the potential mediating and moderating influences within a specific time frame. The data was obtained via self-administered questionnaires that assessed physical activity, learning experiences, quality of life, and health impairments. Subsequently, statistical methods such as regression and mediation analysis were employed to analyse the collected data. The research questionnaires utilised in this study were derived from previous scholarly investigations, as outlined in Table 1.

The survey instrument Table 1 presents a comprehensive summary of the instrument's constitution, which is obtained from two separate references: Zayed and Elshaer (2022) and Cho et al. (2011). The scope of this study includes three components pertaining to physical activity (PA) and four components that specifically address impairments in physical health. In addition, an assessment of quality of life (QOL) was conducted using a set of four questions. Additionally, the performance of football athletes was evaluated using a series of four items. The items were assessed using a five-point Likert scale, with a rating of 1 indicating strong disagreement and a rating of 5 indicating strong agreement. All of the aforementioned variables are also depicted in Figure 1 below.

Table 1*Research Instrument*

Construct	Items	Adopted from
Physical Activity (PA)	3	(Zayed & Elshaer, 2022)
Sportsman Learning Experience	3	(Zayed & Elshaer, 2022)
physical health impairments	4	(Zayed & Elshaer, 2022)
Physical Quality of Life (PQOL)	4	(Cho et al., 2011)
Sportsman performance	4	(Ferreira, Crespo, & Mendes, 2022)

Following the modification of the questionnaire, it was subsequently disseminated among the football players residing in the United States. A structured data collection procedure was implemented in order to gather data from a sample of 300 football players in the United States. Initially, a random sampling technique was utilised to ascertain a representative sample of players encompassing diverse age cohorts, skill proficiencies, and geographical locations throughout the nation. Following the acquisition of the requisite permissions and informed consent, data was collected via a survey instrument.

**Figure 1:** Conceptual Framework**Statistical Analysis**

The study examined two distinct phases, specifically descriptive and inferential statistics. Firstly, the topic of description is addressed, followed by an examination of inference in subsequent sections.

Demographic Profile

Table 2 displays the demographic profile of the respondents, offering a comprehensive overview of the characteristics of 300 soccer players from the United States. This profile is based on several important variables. Regarding the categorization based on age groups, a significant proportion of individuals, comprising 40% of the sample, belong to the 18–24 age range. Subsequently, individuals aged 25–34 constitute 31.67% of the sample. The player population is significantly skewed towards males, who comprise 80% of the total. Females constitute 16.67% of gamers, while non-binary or other genders represent 3.33% of the population.

Table 2*Demographic Profile*

Demographic Variable	Number of Players	Percentage of Players
Age Group		
- Under 18	45	15%
- 18-24	120	40%
- 25-34	95	31.67%
- 35 and over	40	13.33%
Gender		
- Male	240	80%
- Female	50	16.67%
- Non-binary/Other	10	3.33%
Ethnicity		
- White/Caucasian	170	56.67%
- Black/African-American	50	16.67%
- Hispanic/Latino	40	13.33%
- Asian	25	8.33%
- Other	15	5%
Playing Level		
- Amateur	100	33.33%
- Semi-Pro	140	46.67%
- Professional	60	20%

The sample's ethnic composition is primarily White/Caucasian (56.67%), with significant amounts of Black/African-American (16.67%), Hispanic/Latino (13.33%), Asian (8.33%), and Other (5%) ethnicities. The playing level of individuals participating in the activity is predominantly comprised of semi-professionals, accounting for 46.67% of the total. Amateurs constitute the second-largest group, representing 33.33% of participants, while professionals make up the remaining 20%. The presented demographic profile provides valuable insights into the heterogeneous composition of football players in the United States. This information serves as a foundation for understanding the demographic characteristics of individuals involved in the sport and also highlights potential areas of interest for targeted research or initiatives.

Multicollinearity and Construct Reliability

Table 2 presents the predicted values, which provide insights into the presence of multicollinearity as well as the reliability and validity of the constructs. The obtained results encompass the Variance Inflation Factor (VIF), factor loadings, and alpha values.

Table 2*VIF and Reliability Results*

Construct Name	Factor Loadings Itemwise				Multicollinearity	Reliability
	1	2	3	4	VIF Values	Alpha
Physical Activity (PA)	0.80	0.75	0.68	0.71	2.23	0.783
Sportsman Learning Experience	0.70	0.65	0.60		1.723	0.892
Physical Health Impairments	0.85	0.78	0.72	0.76	1.234	0.921
Physical Quality of Life (PQOL)	0.75	0.72	0.68	0.70	1.783	0.821
Sportsman Performance	0.90	0.82	0.75	0.78	0.843

The present study examines the results of a factor analysis conducted using the Statistical Package for the Social Sciences (SPSS) software. The analysis focuses on five distinct constructs, as presented in Table 3. The factor loadings obtained from the analysis are reported. The "item-wise" columns present the extent of the relationship between each item and its corresponding construct (De Roover, Vermunt, & Ceulemans, 2022). The factor loadings provide an indication of the extent to which each item aligns with the latent construct (De Roover et al., 2022). The generally accepted threshold for factor loadings is typically set at 0.5 or higher, indicating a moderately strong relationship between the items and the corresponding constructs. The factor loading values in Table 3 exceed 0.5, indicating that the construct is deemed to be suitable. The column labelled "Multicollinearity" displays the values of the Variance Inflation Factor (VIF), which is used to evaluate the presence of multicollinearity among the variables. The constructs with VIF values below 5 are generally regarded as low, indicating that multicollinearity is not a major concern for these constructs (Kyriazos & Poga, 2023). Finally, when assessing reliability, the most widely accepted measure of internal consistency reliability is Cronbach's alpha (Wang, Rau, & Yuan, 2023). All constructs exhibit alpha values exceeding 0.7, which suggests favourable levels of internal

consistency. In general, the findings indicate that the measurement model exhibits a high level of reliability, as the items demonstrate strong alignment with their respective constructs. Furthermore, the presence of multicollinearity does not pose a significant concern for the analysis at hand.

Regression Result

Following the assessment of construct reliability, the subsequent stage involves the examination of the study's hypotheses. In order to achieve the intended objective, the study utilised the statistical technique of multiple regression analysis. The results presented in Table 4 are derived from a regression analysis that examines the associations between different factors. The results of this study demonstrate a high level of reliability and are consistently reinforced by statistically significant evidence, as indicated by all p-values being less than 0.001. The "Beta" coefficients provide insight into the magnitude and direction of the relationships between physical activity (PA), quality of life (QOL), and sportsman learning experience (SLE), thereby supporting the proposed hypothesis. These coefficients demonstrate that PA is significantly and positively associated with both QOL and SLE.

Table 5*Direct and Indirect effect results*

	Unstandardized Beta	T Statistics	Sig.Level	Proposed Hypothesis
PA -> QOL	0.567	4.937	0.000	Supported
PA -> SLE	0.548	7.387	0.000	Supported
QOL -> SLE	0.495	8.759	0.000	Supported
PA-> QOL -> SLE	0.387	5.311	0.000	Supported
PA*PHYI-> SLE	0.633	7.798	0.000	Supported
SLE->SP				Supported
R Square before moderation	45%			Substantial effect
R square after moderation	50%			Substantial effect

Note: PA-physical activity, QOL-quality of life, SLE-learning experience, PHYI-physical health impairment, SP-sportsman performance.

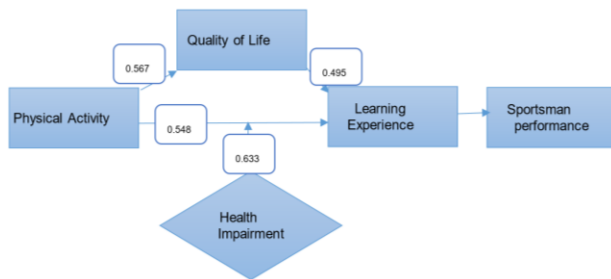


Figure 2: Regression Results

Additionally, the physical quality of life (PQOL) has a positive and significant impact on SLE, which provides support for the proposed hypothesis. On the contrary, physical activity (PA) has a notable and favourable influence on systemic lupus erythematosus (SLE), with the presence of quality of life (QOL) acting as a mediating factor, thus providing support for the proposed hypothesis. Furthermore, the presence of the interaction term "PA*PHYI->SLE" reveals a statistically significant and positive impact. This finding suggests that the combined influence of physical activity and physical health impairment (PHYI) on the learning experience of athletes is considerable, thus providing support for the proposed hypothesis. Finally, it can be observed that the relationship between self-efficacy and self-perception also has a noteworthy and constructive impact on the overall performance of football players, thus providing support for the hypothesis put forth. The analysis demonstrates a significant impact, as these variables account for 50% of the variability in SLE. This suggests that they play a crucial role in improving athletes' performance and learning experiences, especially when taking into account the moderating effect of physical health impairment. The aforementioned results are presented in [Table 5](#) above.

Discussion

The objective of this study was to evaluate the influence of physical activity (PA) on the learning experience (SLE) of athletes and its subsequent impact on athletic performance. Additionally, this study investigated the mediating and moderating impacts of quality of life (QOL) and physical health impairments (PHYI). Existing literature provides evidence that there is a consistent and increasing amount of research supporting the notion that there are reliable and positive connections between physical activity (PA) and systemic lupus erythematosus (SLE) ([Arnett, 2007](#); [Miller, Bartholomew, & Springer, 2005](#)). There is a need to look into potential moderating and mediating effects despite the scant attention that previous studies have received. Therefore, the study's motivation came from the significant and transformative

roles that other factors played in mediating and altering the phenomenon under investigation. Previous empirical research ([Elavsky, 2009](#); [Lustyk et al., 2004](#)) has identified positive associations between subjective life experiences (SLE). This relationship suggests that physical activity (PA) is a significant factor in enhancing the susceptibility to soccer-related lower extremity (SLE) injuries among players in the United States.

The regression analyses conducted on USA football players provide significant insights into the interrelated factors that impact both the well-being and performance of individual players. The correlation between physical activity (PA) and both quality of life (QOL) and sportsman learning experience (SLE) is positive, which emphasizes the significance of regular exercise for football players. Significant beta coefficients (0.567 and 0.548, respectively), T statistics (4.937 and 7.387), and p-values (0.000) all support this correlation. Numerous academic studies, such as those by [Oja et al. \(2015\)](#) and [Hillman, Erickson, and Kramer \(2008\)](#), have emphasized the benefits of physical activity on both physical and mental well-being. These benefits encompass enhancements in quality of life and cognitive performance. The maintenance of an active lifestyle among football players not only positively impacts their general well-being but also serves to enhance their educational encounters within the realm of the sport, potentially resulting in enhanced performance.

Additionally, a beta coefficient of 0.495, a T statistic of 8.759, and a p-value of 0.000 highlight the relationship between quality of life (QOL) and systemic lupus erythematosus (SLE). A higher level of physical quality of life (QOL) has been associated with better overall life satisfaction and health outcomes, according to a study by [Mohamedali et al. \(2012\)](#). The aforementioned discovery implies that football players who place a higher emphasis on their physical welfare are inclined to have more rewarding educational encounters, which could potentially result in improved athletic performance. We found that quality of life (QOL) has a big and positive effect on the relationship between physical activity (PA) and sports-related life events (SLE). This is shown by the beta coefficient of 0.387, the T statistic of 5.311, and the p-value of 0.000. These results underscore the significance of adopting a comprehensive approach to the development of athletes. This discovery is consistent with prior studies that suggest physical activity (PA) is linked to improved quality of life (QOL) ([Oja et al., 2015](#)) and that a higher QOL is connected to more fulfilling subjective life experiences (SLE) ([Mohamedali et al., 2012](#)). The sequential relationship suggests that as athletes participate in increased physical activity, there is a subsequent

enhancement in their overall quality of life. This improvement, in turn, has a positive impact on their experience of learning as sportsmen. This observation underscores the interdependence between physical well-being and the learning environment in the realm of sports, emphasising the significance of holistic athlete support programmes that take into account both the physical and psychological dimensions in order to cultivate an environment conducive to athlete growth.

In conclusion, the observed association between physical activity (PA) and physical health impairment (PHYI), as indicated by a beta coefficient of 0.633, a T statistic of 7.798, and a p-value of 0.000, underscores the significance of effectively addressing and minimising physical health challenges within the population of football players. This interaction suggests that the influence of physical activity (PA) on systemic lupus erythematosus (SLE) is contingent upon the presence of physical health-related quality of life impairment (PHYI). The optimisation of learning experiences is contingent upon the effective management of health, which, in turn, has the potential to positively influence the performance of athletes. This discovery is consistent with the pragmatic reality that athletes must diligently oversee their physical well-being in order to achieve excellence in their respective athletic disciplines (Wind, Schwend, & Larson, 2004).

Contributions and Future Recommendations

The study has made a significant contribution in both theoretical and practical aspects. Initially, it is important to acknowledge that studying plays a crucial role in enhancing our comprehension of athlete development, specifically in the realm of USA football players. This statement underscores the complex relationship among physical activity, impairments in physical health, the quality of life, learning experiences in sports, and sports performance. The discovery that engaging in physical activity has a beneficial impact on both quality of life and learning experiences, with quality of life playing a partial role in mediating this relationship, is consistent with recent research that highlights the comprehensive nature of athlete development. This finding supports the notion that the cultivation of successful athletes requires a holistic approach that goes beyond mere physical training, encompassing the broader aspects of athletes' well-being and mental health. The significance of the moderating impact of physical health impairments emphasises the necessity for customised support initiatives designed specifically for athletes who encounter health-related obstacles. In summary, this study makes a valuable

contribution to the ongoing theoretical framework of athlete development by providing insights into the intricate dynamics that underlie it and emphasising the significance of holistic methodologies.

Conversely, the practical findings have multiple implications for the advancement and assistance of football players in the United States. First and foremost, this highlights the importance of implementing comprehensive athlete development programmes that prioritise physical activity and overall well-being. It is imperative for these programmes to not solely prioritise skill and fitness enhancement but to also place significant emphasis on mental health, nutrition, and the effective management of physical health impairments. This insight can be utilised by coaches and sports organisations to develop comprehensive training and support systems that effectively cater to the varied requirements of their players. Moreover, the research emphasises the significance of quality of life as a mediator, suggesting that interventions targeting the enhancement of football players' overall life satisfaction and well-being have the potential to result in more rewarding learning experiences and enhanced performance. The research findings have significant practical implications for the design of athlete development programmes, healthcare support, and mental health initiatives that are specifically tailored to meet the unique needs of football players in the United States. These implications aim to enhance not only their performance on the pitch but also their overall life satisfaction and well-being.

In addition to its contributions, the study is subject to certain limitations. One such limitation pertains to the relatively modest sample size of 300 football players in the United States. This limited sample size may restrict the extent to which the findings can be generalised to larger athlete populations. Moreover, the use of self-reported data to measure variables such as physical activity, quality of life, and sportsman learning experiences presents the possibility of response biases. Subsequent investigations should strive to utilise more extensive and heterogeneous participant pools, contemplate longitudinal or experimental methodologies to ascertain causal relationships, integrate objective metrics to assess pertinent variables, and undertake qualitative inquiries to delve into the comprehensive experiences of athletes. Furthermore, research endeavours can examine the effects of different interventions and customised athlete development initiatives designed to cater to the specific requirements of football players with physical health limitations. This, in turn, can enhance their educational encounters and overall athletic prowess.

Conclusion

The objective of this study was to examine how physical health impairments (PHYI) moderate the relationship between physical activity (PA) and sportsmen's learning experiences (SLE), while also considering the mediating role of quality of life (QOL) among football players in the United States. The study also investigated the impact of sportsman performance learning on the outcomes. The results suggest that engaging in physical activity has a positive effect on both quality of life (QOL) and systemic lupus erythematosus (SLE). Additionally, it appears that football players who engage in higher levels of physical activity generally experience improved well-being and enhanced educational opportunities. Moreover, the presence of a mediating effect of quality of life (QOL) indicates that a portion of the association between physical activity (PA) and systemic lupus erythematosus (SLE) can be elucidated by the improvement in an individual's overall well-being. This underscores the significance of comprehensive athlete development initiatives that prioritise not solely physical conditioning but also the holistic welfare of football athletes.

Additionally, the study demonstrates the presence of the moderating influence of physical health impairments (PHYI). This implies that the influence of physical activity (PA) on systemic lupus erythematosus (SLE) is particularly significant in the presence of physical health limitations experienced by football players. This discovery highlights the necessity of providing athletes who are facing health challenges with tailored assistance and attention in order to optimise their educational experiences within the realm of sports. The aforementioned results demonstrate the correlation between physical activity, physical well-being, quality of life, and the acquisition of sportsmanship skills among football players in the United States. Additionally, these findings shed light on the intricate array of factors that impact the development of athletes. The results of this study provide insight into the multifaceted elements that impact the development and encounters of football players in the United States. This statement underscores the importance of addressing physical health concerns, promoting physical activity, and enhancing overall well-being as means to enhance the educational experiences of athletes. The findings of this study contribute to our understanding of the potential physical and psychological benefits that athletes may experience during their engagement in competitive sports.

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